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Jerzy ADAMEK, Henryk BIAŁOWAŚ, Andrzej PILARCZYK and Franciszek PISTELOK
Acceleration of sexual maturity of carp (*Cyprinus carpio* L.) through alternate rearing in ponds and under controlled conditions.

Acta Hydrobiol., 34, 87-98.

Abstract - In order to shorten the periods of obtaining successive generations of spawners, a whole year's rearing of carp was carried out: in ponds in summer and in tanks in warm-water unit during the winter. Mature milers of carp, 12 months old, and spawners 24 months old, were obtained. 30-month-old spawners were used for mass spawning. Their unit weight was great enough to guarantee obtaining a sufficient amount of spawn for both experimental and commercial purposes.

Key words: carp, rearing, genetics, stimulation of maturation.

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Henryk BIAŁOWAŚ

Possibilities of application of the heterosis effect in commercial production of common carp (*Cyprinus carpio* L.). 1. Production of fingerlings.

Acta Hydrobiol., 34, 319-334.

Abstract - Five crossbreds of carp produced on the basis of Polish breeding line 3 and the Hungarian lines W and T were tested by comparing them with the above lines. The results of the first production season are presented. A relatively strong heterosis effect was obtained in such features as survival rate, feed consumption, and yield per 1 ha. With respect to the growth rate the effect was slight or did not appear at all.

Key words: common carp, heterosis, crossbreeding.

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Diatom communities on aquatic macrophytes of pampasic lotic environments (Argentina).

Acta Hydrobiol., 34, 195-208.

Abstract - In the period 1985-1986 diatom periphyton communities growing on 15 aquatic macrophytes were harvested from 12 rivers and streams belonging to the Delta Sub-basin. 75 species were determined, most of them alkaliphilous and corresponding to eutrophic environments with high conductivity. The maximum density and species richness peaks, generally took place during spring and fall. Different species were greater in number according to the season. The configuration of the cluster diagrams is due to the dominance of 9 species.

Key words: diatoms, periphyton, cluster analysis, lotic environments.

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The food of fish from streams of the northern part of the catchment area of Lake Balaton (Hungary).
Acta Hydrobiol., 34, 149-160.

Abstract - The results of food analyses of the dominant fish species from the tributary streams of Lake Balaton are described. In the upper stretches the amount of food in the brown trout stomach was half that in the middle ones, but the average prey size was larger. *Gammarus* sp. and Ephemeroptera larvae were the dominant prey of this species. The roach yearling was found to be an opportunistic specialist, the white bream an opportunistic generalist, and the bitterling a detritus feeder.

Key words: stream fishes, feeding strategy, food overlap.

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Andrzej GÓRNIAK¹ and Modest MISZTAL²

Dissolved organic matter in the waters of the catchment basin of Lake Piaseczno, Łęczyńsko-Włodawskie Lake District, Poland.

Acta Hydrobiol., 34, 17-29.

Abstract - The contents of DOC and N_{org.} in the ground waters under forest and fields, on a fen, and in the littoral of an alpha-mesotrophic lake were investigated. The highest concentration of DOC was found on the peat bog. The greatest variations in DOC and N_{org.} content occurred under the fields, and the ratio C:N revealed the presence of great amounts of protein substances in these waters. The waters of the lake showed fairly small variations in the DOC content with a low C:N ratio. The mean ground export of DOC from the catchment basin to the lake was estimated at 13.7 kg C ha⁻¹ y⁻¹.

Key words: lakes, DOC, export from catchment basin, ground water, littoral.

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Robert B. IKOMI

Observations on the bonga (*Ethmalosa fimbriata* (Bowdich, 1825)) in Kulama Creek (Niger Delta, Nigeria).

Acta Hydrobiol., 34, 335-344.

Abstract - *Ethmalosa fimbriata* occurred in the creek throughout the year and constituted 60% of the clupeid catch. It attained a maximum standard length and weight of 22 cm and 223.5 g. The specimens exhibited isometric growth. The condition factor was higher in the dry season. It increased with increasing fish size. The major food items were diatoms and detritus. There were seasonal variations in selection of food items.

Key words: brackish waters, distribution, growth, diatoms, food selectivity, *Ethmalosa fimbriata*.

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Maciej KAMIŃSKI

Feeding of the freshwater bryozoan *Plumatella fungosa* (Pall.). 1. Food composition and particle size selection.

Acta Hydrobiol., 34, 229-239.

Abstract - The main component of the diet of bryozoan *Plumatella fungosa* were fine nanoplankton algae and filamentous Cyanophyta and Chlorophyta. Comparing the frequency of various kinds of particles in the seston and in the content of the alimentary canal of *P. fungosa*, a selective assimilation of algae of various sizes was observed. The finest cells (<10 μm or 10-20 μm) and particles of about 40-170 μm were filtered most intensively. The mechanism of selection of food particles by bryozoans are discussed.

Key words: Bryozoa, Phylactolaemata, *Plumatella*, feeding, diet, food selectivity.

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Maciej KAMIŃSKI

Feeding of the freshwater bryozoan *Plumatella fungosa* (Pall.). 2. Filtration rate, food assimilation, and production of faeces.

Acta Hydrobiol., 34, 241-251.

Abstract - Investigations have shown the mean filtration rate of natural seston by *Plumatella fungosa* to be 2.2 $\text{cm}^3 \text{mg}^{-1} \text{d.w. of a colony h}^{-1}$. On the basis of experiments using artificial food (Sephadex), a strong dependence of the filtration rate on concentration and particle size as well as on the size of the zooids was determined. Assimilation of food was estimated at 41.6%, the mean time of food passage through the gut at 3.2-4.6 h, and the defecation rate at 0.13 mg d.w. of faeces $\text{mg}^{-1} \text{d.w. of a colony } 24 \text{ h}^{-1}$.

Key words: Bryozoa, Phylactolaemata, *Plumatella*, feeding, filtration rate, assimilation, production of faeces.

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Henryk KASZA

Bibliography of the Goczałkowice Reservoir (southern Poland) for the period 1956-1990.

Acta Hydrobiol., 34, 161-174.

Abstract - The bibliography includes 168 publications concerning investigations on the Goczałkowice Reservoir in the period 1956-1990 comprising studies on prognosis of the reservoir and its catchment area in the future and carried out during the 35 years of its existence. The papers included in the bibliography concern the avifauna, phytoplankton, pedology and geology, hydrochemistry, hydrology, ichthyofauna, macrophytes, microbiology, radioactivity, zoobenthos, microfauna, and zooplankton.

Key words: bibliography, Goczałkowice Reservoir, hydrobiological investigations.

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Edward KRZYŻANEK

The formation of bottom macrofauna communities in three dam reservoirs in Silesia (southern Poland) from the beginning of their existence.

Acta Hydrobiol., 34, 265-305.

Abstract - In the Goczałkowice, Wisła-Czarne, and Rybnik dam reservoirs the process of formation of bottom macrofauna occurred in three stages: 1 - the stage of development of pioneer communities during the first two years after filling; 2 - the stage of transition communities from the third to the tenth year after filling; 3 - the stage of permanent communities ten years after filling. Two types of dam reservoir were identified: 1 - of the Oligochaeta type, Wisła-Czarne, and 2 - of the midge type, Goczałkowice and Rybnik.

Key words: dam reservoirs, bottom macrofauna, settlement succession, numbers, biomass.

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Mirosław KUCZYŃSKI and Barbara BARSKA-KLYTA

Estimation of utility of various fats in feeding carp fingerlings (*Cyprinus carpio* L.).

Acta Hydrobiol., 34, 379-388.

Abstract - The investigations were carried out in the years 1987-1989 at the Fish Culture Experimental Station of the Polish Academy of Sciences at Gołysz. The fish were fed with pellets enriched with various fats. In most of the groups fed with fatty food a greater increase in fish mass were obtained than of the control. Soya bean oil had the strongest effect.

Key words: carp, feeding, fats, pellets.

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Krzysztof KUKUŁA

Mayflies (Ephemeroptera) of the Wołosatka stream and its main tributaries (The Bieszczady National Park, southern Poland).

Acta Hydrobiol., 34, 31-45.

Abstract - 38 mayfly species were found to occur in the investigated streams, among them some rare species being observed (*Rhithrogena gorganica*, *R. wolosatkae*, *Ecdyonurus* cf. *subalpinus*). In all the distinguished habitats species from the Baetidae family dominated. The habitat preferences of larvae of some larger species are discussed.

Key words: mountain streams, mayflies, communities, habitat preferences.

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Jerzy KWAPULIŃSKI, Danuta WIECHUŁA and Barbara ANDERS

The occurrence of selected heavy metals in bottom sediments in the Goczałkowice Reservoir (southern Poland).

Acta Hydrobiol., 34, 177-186.

Abstract - The content of heavy metals in the upper and lower layers of the bottom sediment in the period 1986-1989 ranged from 0.034-18.0 $\mu\text{g Cd g}^{-1}$ to 3382.2-35 750.0 $\mu\text{g Fe g}^{-1}$. The concomitance of heavy metals at particular points of the reservoir was determined. The magnitude of pollution of the reservoir was estimated in relation to the preindustrial level showing the highest increase of Pb, Cd, Zn contents.

Key words: reservoirs, bottom sediment, heavy metals, concomitance.

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Jerzy KWAPULIŃSKI, Danuta WIECHUŁA and Małgorzata BAZGIER

The occurrence of selected heavy metals in interstitial water in the Goczałkowice dam reservoir (southern Poland).

Acta Hydrobiol., 34, 3-16.

Abstract - The content of heavy metals in interstitial water of the Goczałkowice dam reservoir varied in a wide range both in the annual cycle and in the course of the investigated 4-year period (1986-1989). No separate areas of the bottom can be differentiated in the reservoir. The concentrations of metals differed greatly at the particular stations. It was found that at a given station the chemical composition of interstitial water in the upper and lower layers was very similar.

Key words: reservoirs, interstitial water, heavy metals, accumulation.

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Maria LEWKOWICZ and Stanisław LEWKOWICZ

Effect of bighead carp (*Aristichthys nobilis* Rich.) stocking on zooplankton and some parameters of organic carbon cycling in carp ponds.

Acta Hydrobiol., 34, 115-133.

Abstract - Stocking ponds with bighead carp brought about a decrease in zooplankton biomass and production as compared with ponds of carp monoculture. Primary production of phytoplankton and total respiration of plankton did not differ to any greater degree in ponds with fish mono- and polyculture. The strong elimination of zooplankton by bighead carp increased the share of bacteria in the total respiration of plankton. The share of filtrator fish in the accumulation of organic matter was slight and did not significantly affect the balance of organic matter and oxygen in the ponds.

Key words: ponds, carp, bighead carp, phytoplankton production, zooplankton, respiration, organic carbon.

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Stanisław LEWKOWICZ¹ and Roman ŻUREK²

The effect of fish on resuspension of bottom sediments and relationships between zooplankton and

suspended materials.

Acta Hydrobiol., 34, 307-317.

Abstract - The percentage of organic carbon in sedimenting suspension was considerably higher before stocking the pond with fish and decreased in proportion to the increase in the amount of suspension after stocking the pond with carp. For some zooplankton species equations of multiple regression containing the amount of suspension, expressed as ash were calculated. For *Chaoborus crystallinus* a negative and significant dependence was obtained with $P < 0.1$, and for the remaining species a negative and significant one with $P < 0.05$. Various ways of the action of mineral suspensions on the zooplankton of ponds and dam reservoirs are discussed.

Key words: ponds, bioturbation, fish, zooplankton.

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Antoni MIERNIK

Effect of intermittent illumination on protein quality of *Stichococcus bacillaris* grown on model nitrogen fertilizer plant wastewater.

Acta Hydrobiol., 34, 187-194.

Abstract - Two sources of nitrogen were used - $N-NH_4^+$ and urea. When applying intermittent light, a greater increase in dry weight was observed than under constant illumination, which nevertheless did not bring about a simultaneous increase in protein quantity. In intermittent light, $N-NH_4^+$ appeared to be a better source of nitrogen than urea for obtaining protein rich in exogenous amino acids. The proteins were richer in threonine and phenylalanine with tyrosine than under constant illumination.

Key words: protein quality, intermittent light, nitrogen fertilizer plant wastewater.

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Teresa NESTERUK

Vertical distribution of *Gastrotricha* in organic bottom sediment of inland water bodies.

Acta Hydrobiol., 34, 253-264.

Abstract - The material was collected from alpha-mesotrophic, polytrophic and dystrophic lakes and from a shallow pond and two peat hags located in eastern Poland. In littoral lake silts and in other water bodies *Gastrotricha* have been found in their upper layer to 15-17 cm in depth. In the profundal of an alpha-mesotrophic lake the inhabited layer was no more than 9 cm. Species of *Dasydytidae* were found in the 7.5-10 cm layer. The upper 5 cm littoral layer contained 46.6-68.6% of all the collected species, but below 10 cm only 7.6-10.7%.

Key words: freshwater *Gastrotricha*, microbenthos, vertical distribution.

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Osadebe ODUM and Chiweyite EJIKE

Aspects of amino acid utilization in the cichlid *Oreochromis niloticus* (L.).

Acta Hydrobiol., 34, 345-352.

Abstract - Studies on the utilization of free essential amino acids by *Oreochromis niloticus* showed that food consumption, specific growth rate and feed and protein utilization improved significantly with arginine and lysine supplementation. Maximum improvement occurred when the diet contained 1.48% arginine and 1.76% lysine. It is proposed that saving dietary protein can be achieved in *O. niloticus* by the judicious use of these two essential amino acids.

Key words: *Oreochromis niloticus*, amino acid utilization, dietary protein, nutrition.

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Effects of heating substratum on the yolk sac absorption rate, fry mortality, and first stage growth rate of brown trout (*Salmo trutta* L.) from the River Louros (north-western Greece).

Acta Hydrobiol., 34, 99-103.

Abstract - The effect of the substratum was investigated using two tanks with different hatching substrata. A rough plastic substratum resulted in a higher yolk sac absorption rate, higher fry growth rate, higher larva body weight, and a reduced fry mortality than when a smooth one was used. The consequences of these findings in intensive culturing and stocking programmes are briefly discussed.

Key words: brown trout, hatching substrata, mortality, growth rate.

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The structure of fish communities in streams of the northern part of the catchment area of Lake Balaton (Hungary).

Acta Hydrobiol., 34, 135-148.

Abstract - Fishes were collected along the stream gradients by electrofishing and seine netting, alternatively, depending on the habitat characteristics. Four groups of species were distinguished: those from estuarine, middle course, and head water sections. The increase in fish density and biomass and the decrease in fish body size observed above the estuary and also below and above the fish pond, was explained as resulting from the ecotone effect.

Key words: fish community, nursery area, ecotone effect.

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The content of uranium in carp (*Cyprinus carpio* L.) in Upper and Lower Silesia (southern Poland).

Acta Hydrobiol., 34, 105-113.

Abstract - The content of the investigated uranium radioisotopes in the carp in Upper and Lower Silesia ranged from 2.0 to 11.8 ng g⁻¹ ash while that of ²³⁸U was from 2.0 to 7.5 ng g⁻¹ ash. The greatest quantities of uranium were found in carp near the power station - 7.5 ng ²³⁸U g⁻¹ and 7.8 ng ²³⁴U g⁻¹ and 4.8 ng ²³⁴U g⁻¹. The ²³⁴U/²³⁸U ratio calculated in relation to the fresh weight was 1.31.

Key words: carp, uranium radioisotopes, bioindication, power station.

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Leon STANNY

Selected problems concerning the improvement of production technology and recipes for full-value feed for carp (*Cyprinus carpio* L.).

Acta Hydrobiol., 34, 367-377.

Abstract - The effect of each group of feed components used in the semi-wet method of pellet production for carp, on the qualitative index of feed, i.e. water stability, was investigated. The effects of the quantity and coarseness of wheat flour, addition of water, dry and hydrated components, and at the same time changes in the addition of these components were tested. The obtained results should facilitate production of better quality pellets.

Key words: carp, pellets, production technology of semi-wet pelleting, water stability of pellets.

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Janusz STARMACH, Tadeusz FLEITUCH, Antoni AMIROWICZ, Grażyna MAZURKIEWICZ and Marek JELONEK

Longitudinal patterns in fish communities in a Polish mountain river: their relations to abiotic and biotic factors.

Acta Hydrobiol., 34, 353-366.

Abstract - In the River Stradomka the number of fish species and their diversity are highly correlated with the physical parameters of the catchment. The density and biomass of fish are significantly associated with chlorophyll *a* in the periphyton. High concentrations of calcium did not affect the fish community. The number and biomass of the brown trout decreased in relation to the stream order. The author's hypothesis is that the abiotic factors dominate the regulation of upstream fish communities while fishes further downstream seem to be dominated by biotic factors.

Key words: mountain river, fish communities, river continuum concept, abiotic/biotic factors.

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Jukka VUORINEN¹ and Mirosław LUCZYŃSKI²

Electrophoretic variation in four Polish populations of vendace (*Coregonus albula* (L.)).

Acta Hydrobiol., 34, 77-86.

Abstract - Enzyme gene variability was studied by starch gel electrophoresis in vendace (*Coregonus albula*) from four lakes in the Mazurian Lake District. Of the 31 enzyme loci studied, nearly 42% (13 loci) were variable. Nei's standard genetic distances between studied populations were small (range 0.0004-0.0020), indicating their close genetic relatedness.

Key words: biochemical genetics, Coregoninae, ecological adaptations, management, stocking programmes.

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Jukka VUORINEN¹, Mirosław LUCZYŃSKI², Tomasz HEESE³ and Richard A. BODALY⁴

Morphological and genetic description of the whitefish (*Coregonus lavaretus* L.) population inhabiting Pomeranian Bay (Poland).

Acta Hydrobiol., 34, 65-75.

Abstract - Morphometric and meristic characteristics as well as enzyme gene variation were studied in forms of whitefish. Of the 37 enzyme loci studied nearly 41% were variable. The average heterozygosities were 6.5% for the typical and 7.4% for the humpback form. Nei's genetic distance between them was negligible and there were no significant allele frequency differences between the two forms. Genetic data do not support the concept of the existence of two forms (or sympatric species) within the whitefish population.

Key words: biochemical genetics, Coregoninae, meristic characters, morphometric characters, plastic forms.

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Jerzy ZIĘBA

Occurrence of dominating groups of macrobenthos in experimental ponds at various intensification levels in the rearing of second year carp (*Cyprinus carpio* L.).

Acta Hydrobiol., 34, 47-63.

Abstract - The macrobenthos was mainly characterized by quantitative differences with similar taxonomic composition. In the case of the Chironomidae larvae the differences refer to the total density and biomass, and that of Oligochaeta mainly density. The differences between ponds at various intensification levels were much smaller than between stations accessible to the fish and separated from them in the same pond. At stations outside the fenced areas a few Chironomidae and Oligochaeta species occurred periodically in great numbers or in masses.

Key words: ponds, macrobenthos, Chironomidae, Oligochaeta, second year carp, investigation.

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The relationships between zooplankton and biotic/abiotic factors.
Acta Hydrobiol., 34, 209-228.

Abstract - Changes in the composition and numbers of phyto- and zooplankton were analyzed against the background of environmental conditions in three ponds. In the control pond primary production proceeded in the total profile to 1.2 m, in the fertile pond in a layer of about 60 cm, and in the very fertile one in a layer of 20 cm. The succession of zooplankton species was rapid but the law of crop constancy was fulfilled. The abundance of populations of numerous species of zooplankton significantly decreased with increasing concentration of oxygen and chlorophyll.

Key words: zooplankton, population dynamics, biotic/abiotic factors, statistical relationships.

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