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Józef BANASZAK

Chironomidae (Diptera) from bottom sediments in various types of water bodies in agricultural areas

Acta Hydrobiol., 21, 167-176.

Abstract - In 1976-1977 Chironomidae fauna in bottom sediments of lake Zbęchy, seven neighbouring peat-ponds, and two drainage canals (the Wyskoć and Jerka Ditches) in the Leszno Lake District was investigated. The occurrence of 61 taxa was noted, 4 of them being rare or new in Poland: *Ablabesmyia longistyla* Fittk., *Conchapelopia melanops* Wied., *Zavrelia* gr. *pentatoma* Kieff. and *Thienemanniola* sp. (*ploensis* Kieff. ?). The determination of the predominance structure of Chironomidae in the investigated types of water bodies was founded on the numbers of collected specimens. Author's address: Zakład Biologii Rolnej, Polska Akademia Nauk, ul. Świerczewskiego 19, 60-809 Poznań, Poland .

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Teresa BEDNARZ and Jan CIERNIAK

Extracellular excretions of algae as a factor regulating the growth of algae cultures .

Acta Hydrobiol., 21, 219-230.

Abstract - Investigations were carried out on the influence of filtrates from green algae: *Chlorella pyrenoidosa*, *Scenedesmus acutus*, *S. quadricauda*, *Dictyosphaerium pulchellum*, and the blue green alga *Anabaena variabilis* on the growth of the mentioned algae and on *Selenastrum capricornutum*. Heteroinhibition, heterostimulation and, in every case, growth autoinhibition were observed. The filtrate from *Scenedesmus acutus* exerted only an inhibiting influence and the filtrate from *Dictyosphaerium pulchellum* acted only in a stimulating way. The growth of mixed cultures was poorer than of monocultures. Intraspecific effects of algae in two- or tri-specific cultures showed a greater intensity than the effects of the filtrates only, even though the growth tendencies remained unaltered. Authors' address: Polish Academy of Sciences, Laboratory of Water Biology, ul. Sławkowska 17, 31-016 Kraków, Poland .

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Elżbieta BRZUSKA

The *in vivo* method of estimating the stages of oocytes maturation in carp (*Cyprinus carpio* L.) .

Acta Hydrobiol., 21, 423-433.

Abstract - It was found that the mature carp females did not respond with ovulation to the injection of carp pituitary extract unless in about 60% of oocytes with complete vitellogenesis the nucleus was shifted past the half of its radius length. A dependence was found to occur between the degree of oocyte maturation with completed vitellogenesis and the following features: distribution of nucleoles in the nucleus, occurrence of an increased number of nucleoles, of small nucleoles, of large yolk elements, and of PAS-positive substance round the nucleus, and the staining of the nucleus and nucleoles with 2-, 4-dinitrophenylhydrazin with Schiff's reagent. Such a dependence was not found between the degree of oocytes maturity and the occurrence of lampbrush chromosomes, PAS-positive substance among the small

yolk elements, localization of glycogen, or the nucleus structure. Author's address: Polish Academy of Sciences, Laboratory of Water Biology, ul. Sławkowska 17, 31-016 Kraków, Poland .

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Henryk CHUDYBA

Special composition and number of the phytoplankton of the lakes of the Mazurian Landscape Park .

Acta Hydrobiol., 21, 105-116.

Abstract - The paper is one of the elements of the limnological characteristics of the lakes of the Mazurian Landscape Park. On the basis of algological materials collected from June 1972 to July 1974 at the stations in the littoral and pelagial part of the lakes, the present taxonomic state of the phytoplankton organism association was determined. The paper contains also a short description of the investigated territory and gives general characteristics of the environment in which investigations were carried out. Author's address: Instytut Biologii Roślin, Akademia Rolniczo-Techniczna, 10-957 Olsztyn, Poland .

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Bazyli CZECZUGA

Carotenoids in fish. 21. Percidae from Polish waters.

Acta Hydrobiol., 21, 1-7.

Abstract - Using column and thin-layer chromatography the content and percent relations of carotenoids in gills, skin, muscles, liver, intestines, and eggs of perch, pike-perch, and ruffe were investigated. Author's address: Zakład Biologii Ogólnej, Akademia Medyczna, ul. Kilińskiego 1, 15-230 Białystok, Poland .

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S.M. DAS and J.C. UPADHYAY

Studies on qualitative and quantitative fluctuations of plankton in two Kumaon lakes, Nainital and Bhimtal (India) .

Acta Hydrobiol., 21, 9-17.

Abstract - The present paper reports on the results of an original investigation on the qualitative and quantitative fluctuation of plankton in two Kumaon lakes Nainital and Bhimtal, undertaken to determine the cause of failure of Mahseer (*Tor tor* and *Tor putitora*) fisheries in Kumaon lakes. It has been shown that there is scarcity of plankton in lake Nainital, where the Mahseer is almost extinct; while Bhimtal with a higher plankton content still has a sizeable Mahseer population. A detailed structure of plankton is given in the two lists (zooplankton and phytoplankton) as also in the annual fluctuation graph of total plankton in Nainital and Bhimtal Lakes, arranged according to their abundance. Authors' address: Zoology Department, D.S.B. College, Kumaon University, Naini Tal - 263-002, India .

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Wojciech FIAŁKOWSKI

Ecology of leeches (Hirudinea) in the organically polluted part of Drwinka stream .

Acta Hydrobiol., 21, 475-488.

Abstract - From July 1976 till August 1977 the leeches were investigated in the organically polluted section of the River Drwinka. For the most abundant species, i.e. *Erpobdella octoculata* (L.), *Helobdella stagnalis* (L.), *Glossiphonia heteroclita* (L.), and *G. complanata* (L.) the annual dynamics of the population and the life cycle were determined. The obtained data were compared with the data of other authors. The problem of the leeches availability in the bioindication was discussed. Author's address: Instytut Biologii Środowiskowej, Zakład Hydrobiologii, Uniwersytet Jagielloński, ul. Oleandry 2a, 30-063 Kraków, Poland .

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Krzysztof Z. KAMIŃSKI

New localities of species *Scapholeberis microcephala* G.O. Sars (Cladocera, Daphniidae) of rare occurrence in Poland and Europe .

Acta Hydrobiol., 21, 205-210.

Abstract - In plankton materials collected in the ponds at Głowno, Maciszewice, Wójcice, Kotliny, and Sławno the author observed rare species of Cladocera *Scapholeberis microcephala* G.O. Sars. This is a new locality in Poland for this species. Author's address: ul. Przejazd 12/8, 99-200 Poddębice, Poland .

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Kazimierz KARCZMARZ¹ and Werner KRAUSE²

A new locality of *Lychnothamnus barbatus* (Meyen) Leonh. in Poland .

Acta Hydrobiol., 21, 213-217.

Abstract - A new locality of a very rare member of stoneworts (Charophyta) is given from eutrophic Lake Zagłębcze in the lake area situated between Łęczna and Włodawa towns, in the middle course of the rivers Bug and Wieprz. Authors' addresses: ¹Zakład Systematyki i Geografii Roślin, Instytut Biologii, Uniwersytet Marii Curie-Skłodowskiej, ul. Akademicka 19, 20-033 Lublin, Poland ²Staatliche Versuchsanstalt für Grünlandwirtschaft und Futterbau, D 796 Aulendorf/Württ., Bundesrepublik Deutschlands .

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Henryk KASZA

Rainfall waters as a source of biogenous components for the reservoir at Goczałkowice .

Acta Hydrobiol., 21, 279-289.

Abstract - The results of 198 analyses of rainfall waters in a 3 year cycle of investigations (1973-1975) were presented. The investigations showed that a high annual amount of rainfalls (812 mm) brings with them into reservoir at Goczałkowice considerable amounts of nutrient compounds (13.2 kg N ha⁻¹ year⁻¹ and 0.23 kg P-PO₄ ha⁻¹ year⁻¹). This makes 9% N and 11.2% P-PO₄ of the total inflow of these components into the reservoir. Apart from it, the rainfall waters from Goczałkowice contain other compounds necessary for the development of plankton algae. Author's address: Polish Academy of Sciences, Laboratory of Water Biology, Stacja Hydrobiologiczna w Goczałkowicach, 43-230 Pszczyna-Goczałkowice, Poland .

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Henryk KLIMOWICZ

Estimation of water usability of the dam reservoir Zegrzyński on the Rivers Bug and Narew for waterworks based on plankton investigations .

Acta Hydrobiol., 21, 37-52.

Abstract - Investigations on the plankton in the end sector of dam reservoir were carried out over one year period. With regard to the number of taxa, Bacillariophyceae and Rotatoria, 49 and 47 taxa respectively, predominated. Next came Chlorophyta - 19 taxa, Ciliata - 13, Cladocera - 9, Euglenophyta - 5, Cyanophyta - 3, Chrysophyta - 2, Rhizopoda - 2, and Pyrrophyta - 1 taxon. Bacillariophyceae, Chlorophyta, Rotatoria, and Cyanophyta were represented by the greatest number of individuals. Other organisms were found only in small numbers of species and individuals. Omitting the 26 taxa which were not reported in Kolkwitz-Marsson's saprobic system and 50 eurysaprobic occurring at various stages of water pollution, 23 of the remaining 85 taxa were oligosaprobic, 48 - beta-mesosaprobic, 12 - alpha-mesosaprobic, and 2 - polysaprobic. The water in the investigated sector of the reservoir Zegrzyński is of the first class of purity, and presents a valuable raw material for waterworks. Author's address: Zakład Użytkowania i Ochrony Wód, Instytut Kształtowania Środowiska, ul. Kolektorska 4, 01-692 Warszawa, Poland .

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Henryk KLIMOWICZ

Plankton from the canal of the River Odra and its reduction during the water treatment for waterworks .

Acta Hydrobiol., 21, 177-184.

Abstract - Investigations on plankton reduction in the process of water treatment by use of ozone were carried out. Samples were collected at successive water treatment devices in the whole technological line. The average decrease in the number of individuals of some species chosen by way of example was as follows: *Synedra acus* at the stations: 1) in the canal of the River Odra was represented on the average by 1380 ind. L⁻¹, 2) in the water flowing in the waterpipes and through the pump there remained 893 ind. L⁻¹, 3) in the coagulated water after passing the settling tank 785 ind. L⁻¹, 4) after passing the rapid filters 173 ind. L⁻¹, 5) in the ozonated water 3 ind. L⁻¹; *Scenedesmus acuminatus* at the stations: 1) 2410 ind. L⁻¹, 2) 2350 ind. L⁻¹, 3) 297 ind. L⁻¹, 4) 22 ind. L⁻¹, 5) 0 ind. L⁻¹; *Keratella cochlearis* at the stations: 1) 260 ind. L⁻¹, 2) 235 ind. L⁻¹, 3) 82 ind. L⁻¹, 4) 60 ind. L⁻¹, 5) 22 ind. L⁻¹. Passing through the pump the water flowing in the waterpipes loses on the average 13.9% of individuals occurring in the canal of the River Odra; after coagulation the decrease in their number reaches 75.2%, passing through the rapid filters 93.6%, and the filters and ozonation the decrease in their number in fully purified water is as much as 98.6%; the rest, i.e. 1.4% of the overall number of individuals reach the consumer. Author's address: Zakład Użytkowania i Ochrony Wód, Instytut Kształtowania Środowiska, ul. Kolektorska 4, 01-692 Warszawa, Poland .

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Jerzy KOLASA

Ecological and faunistical characteristics of Turbellaria in the eutrophic Lake Zbęchy .

Acta Hydrobiol., 21, 435-459.

Abstract - The turbellarian fauna of a shallow polytrophic Lake Zbęchy in Great Poland was investigated. 57 Turbellaria species occurring in the lake were ecologically characterized, and their connection with different environments was determined. Moreover, the genetic characteristics, i.e. the determination of the environment or area from which a given species probably originated, was introduced. Species of similar features were classified in synecological and syngenetical groups. An analysis of these groups and a comparison of Lake Zbęchy fauna with that of other lakes made it possible to reconstruct the chief directions of fauna changes in the lake succession. Author's address: ul. Norwida 19/104, 60-867 Poznań, Poland .

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Janusz KORNATOWSKI

Turions and offsets of *Stratiotes aloides* L.

Acta Hydrobiol., 21, 185-204.

Abstract - Investigations were carried out on turions and offsets of *Stratiotes aloides*. Marked differences were found in the morphology and behaviour of these forms of vegetative reproduction. Moreover essential differences were shown between plants which developed from turions or from offsets. In the first case the developed plants were called by the author "a weak form" of *S. aloides*, and in the second "a shapely form" of *S. aloides*. The shapely form of *S. aloides* was characterized, above all, by the presence of aerial leaves and flowers. The author tried to find an explanation for the seasonal variations in the vertical stratification of plants of *A. aloides* in the changes in their specific gravity. Author's address: Pracownia Środowisk Podmokłych, Instytut Ekologii, Polska Akademia Nauk, ul. Leśna 13, 11-730 Mikołajki, Poland .

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Wojciech KRZANOWSKI

Zooplankton of heated water of the Rybnik dam reservoir in 1975-1976 .

Acta Hydrobiol., 21, 261-278.

Abstract - The qualitative composition of zooplankton and the dynamics of its settlement and biomass were investigated in the Rybnik dam reservoir in the years 1975-1976. The noxious effect of the cooling system on animals flowing through it and the influence of warm water discharge on their vertical distribution were observed. Author's address: Polish Academy of Sciences, Laboratory of Water Biology, Stacja Hydrobiologiczna w Goczałkowicach, 43-230 Pszczyna, Poland .

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Łucja KRZECZKOWSKA-WOŁOSZYN

Phytoplankton in fish ponds treated with an organophosphorus insecticide (Neguvon) .

Acta Hydrobiol., 21, 139-147

Abstract - Phytoplankton of first rearing ponds treated with Neguvon, an organophosphorus insecticide, was investigated. Changes occurring in the qualitative composition and in the dynamics of algae numbers are discussed. The dependence on zooplankton whose composition can be adapted to the demands of fish culture by appropriate insecticide treatments, is shown. Author's address: Polish Academy of Sciences, Laboratory of Water Biology, ul. Sławkowska 17, 31-016 Kraków, Poland .

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Łucja KRZECZKOWSKA-WOŁOSZYN¹ and Krystyna KYSELOWA²

Plankton and benthic algae in the experimental ponds.

Acta Hydrobiol., 21, 461-473.

Abstract - In the water of the investigated ponds plankton species, mainly of the order Chlorococcales, were found most numerous. In the mud of fertilized ponds the participation of green and blue-green algae was high, while in the mud of the control ponds diatoms dominated. The encountered species were mostly benthic and epiphytic species. A great number of species occurring commonly in the plankton and in the benthic mud points to their displacement due to fish grazing, sedimentation, or water movement. The applied nitrogen-phosphorous fertilization stimulated the development of some of the algae, mainly of the group Chlorococcales. Densification of the fish stocking resulted in a decrease in the amount of algae in the bottom as a result of a more intensive grazing of fish. The correlation between the oxygen content in the water and algae development was discussed. Authors' addresses: ¹Polish Academy of Sciences, Laboratory of Water Biology, ul. Sławkowska 17, 31-016 Kraków, Poland ²ul. Raławicka 54/145, 30-017 Kraków, Poland.

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Edward KRZYŻANEK

Bottom macrofauna of the dam reservoir at Rybnik remaining under the influence of hot discharged waters from the hot power station .

Acta Hydrobiol., 21, 243-259.

Abstract - The paper contains the results of the investigation on the bottom macrofauna of the reservoir at Rybnik which remains under the influence of hot discharged waters from the power station. The investigations covered the years 1974 to 1977. The bottom macrofauna of that reservoir is exceptionally poor, its number ranging from 909 ind. m⁻² (1975) to 1448 ind. m⁻² (1977). Larvae of Chironomidae, mainly of the genus *Procladius* prevailed in that reservoir. A limiting influence of hot discharged waters on particular groups of the bottom macrofauna was found in the reservoir, mainly in its upper part. Least tolerant to this influence were Oligochaeta which, in certain periods, disappeared from the benthos completely. Chironomidae larvae proved to be more resistant to high temperatures. The mollusc *Physa acuta* occurred in the region of hot water discharge. Author's address: Polish Academy of Sciences, Laboratory of Water Biology, Stacja Hydrobiologiczna w Goczałkowicach, 43-230 Pszczyna, Poland .

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Maria LEWKOWICZ, Stanisław LEWKOWICZ and Lech SZAROWSKI

Biotic and abiotic conditions of the formation of zooplankton communities in ponds treated with the organophosphorus insecticide Neguvon. .

Acta Hydrobiol., 21, 117-138.

Abstract - The effect of Neguvon, an organophosphorus insecticide on the development of zooplankton in first rearing ponds was investigated. It was found that in ponds treated with the insecticide planktonic

crustaceans were eliminated and, by the same, the development of Rotatoria was stimulated. Nevertheless, the mass development of rotifers chiefly depended on water temperature and appeared in the period when *Cyprinus carpio* larvae preferred crustaceans of greater size in their diet. Authors' address: Zakład Doświadczalny Polskiej Akademii Nauk, Gołysz-Zaborze, 43-422 Chybie, Poland .

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Antoni MIERNIK

Amino acid composition of proteins in *Stichococcus bacillaris* Naeg. .

Acta Hydrobiol., 21, 231-236.

Abstract - This paper presents the amino acid composition of proteins in *Stichococcus bacillaris* Naeg. (Chlorophyta), isolated from a wastewater retention tank of nitrogen fertilizer industry. The author compares the amino acid composition of the investigated alga with chosen algae and other sources rich in proteins. This strain appeared to be rich in alanine, glycine, glutamic acid and proline. It is also rich in exogenous amino acids and, among them, in leucine, lysine, phenylalanine, valine and isoleucine. Author's address: Zakład Mikrobiologii Środowisk, Instytut Mikrobiologii, Uniwersytet Warszawski, ul. Karowa 18, 00-324 Warszawa, Poland.

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Marek MOCZARSKI and Małgorzata KOŁDRAS

Characteristics of the eel sperm.

Acta Hydrobiol., 21, 291-300.

Abstract - In cooperation with the Experimental Fishery Station of the Agriculture Academy at Mydlniki a preliminary evaluation of the sperm properties of the European eel *Anguilla anguilla* has been carried out. Statistically significant differences were found in the volume and in the total number of spermatozoans between certain dates of sperm sampling. It has been calculated that the maximum time in which the spermatozoans of the eel make their way was 5.50 min.

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Kazimierz PASTERNAK and Aleksandra STARZECKA

Chemism of the River Nida water and some relations between its bacteriological and chemical features .

Acta Hydrobiol., 21, 361-395.

Abstract - The paper presents the chemical composition of the water of the River Nida and its largest tributaries as well as its variance with the course of the river in dependence on the character of the catchment area and quantity and quality of pollution. Moreover, the relation between biological (bacteria, BOD₅) and chemical features of the investigated waters was determined by mathematical methods. It was shown, among other findings, that in the majority of cases the relation between the changes of the number of bacteria and the concentration of various chemical factors, expressed graphically recalls an asymptotic curve. It shows that the content of organic matter, phosphates, ammonia nitrogen, and potassium obeys the rule of the limiting factor. The saturation point of the number of bacteria, occurred, as a rule, in heavily polluted waters. The data referring to the changes in the number of bacteria and BOD₅ show that there is only a general correlation between these two features. It was also found that there is a linear relation between the content of chlorides and nitrites and the number of bacteria. A negative correlation between the

number of the investigated groups of bacteria and the content of dissolved oxygen and nitrites in the water was confirmed. Authors' address: Polish Academy of Sciences, Laboratory of Water Biology, ul. Sławkowska 17, 31-016 Kraków, Poland .

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Kazimierz PASTERNAK and Marta RECZYŃSKA-DUTKA

The occurrence of mercury in surface waters at different regions of Southern Poland .

Acta Hydrobiol., 21, 315-340.

Abstract - The occurrence of inorganic and global mercury in flowing waters and other water bodies (dam reservoirs and ponds) in the areas of various configuration and utilization, affected by industrial or agricultural pollution, was investigated. The mercury content in water was determined with the aid of an atomic absorption spectrophotometer. It was found that in the investigated geographical region the mercury load in water was still relatively small, rarely exceeding the maximum level of 1 ug Hg L^{-1} , regarded as permissible for drinking water supply. The content of inorganic mercury ranged within $0.01\text{-}0.76 \text{ ug Hg L}^{-1}$, and of global mercury within $0.03\text{-}1.28 \text{ ug Hg L}^{-1}$ respectively. In waters from industrial regions an increased mercury content was usually noted. The data on the seasonal variation in mercury content in the water of rivers and streams draining agricultural areas show that this content distinctly increased in autumn, in the sowing time of cereal crops. The percentage of inorganic forms in the global mercury content in pure and polluted waters was variable. Authors' address: Polish Academy of Sciences, Laboratory of Water Biology, Sławkowska 17, 31-016 Kraków, Poland .

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Janina PUDO

Seasonal changes in the periphyton of the River Raba lower course .

Acta Hydrobiol., 21, 91-101.

Abstract - The qualitative and quantitative composition of periphyton in the River Raba lower course was investigated, particular attention being paid to its seasonal changes. The work was carried out in a one-year cycle. The material was collected on artificial media whose exposure time was 2 weeks. The following 5 species, predominating in different periods, were identified: *Diatoma elongatum* var. *tenue*, *Achnanthes minutissima* var. *cryptocephala*, *Cymbella ventricosa*, *C. affinis* and *Gomphenoma olivaceum*. Moreover, a great stability of occurrence of the respective species within the particular seasons was noted. The physico-chemical characteristics of the investigated river sector indicate that its water is pure. Author's address: Instytut Meteorologii i Gospodarki Wodnej, Zakład Odnowy Wód, ul. Manifestu Lipcowego 22, 31-109 Kraków, Poland .

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Małgorzata SCHMAGER

The effect of chlorine on heterogeneous cultures of algae.

Acta Hydrobiol., 21, 61-72.

Abstract - Results of investigations on the influence of chlorine rates (within the concentration range of $0.5\text{-}5.0 \text{ mg Cl}_2 \text{ dm}^{-3}$) on heterogeneous algae cultures are presented. The investigated cultures were

obtained on thermoluminostat incubation of samples of natural water from an eutrophic reservoir in the River Ruda. Diatoms and green algae of the order Chlorococcales were dominant groups of algae in the culture. The toxic influence of chlorine was determined on the basis of the dry weight reduction of algae and their qualitative and quantitative composition in the cultures. Under the influence of chlorine, diatoms of the genus *Nitzschia* were first eliminated from heterogeneous cultures, then the colony species of the genera *Melosira* and *Fragilaria* disappeared. Green algae of the order Chlorococcales were found to be most resistant to the toxic action of chlorine, while their numbers distinctly increased at low rates of chlorine (0.5 and 1.0 mg Cl₂ dm⁻³). An inhibition in the development of these algae (LD₅₀) was found at 1.5-3.3 mg Cl₂ dm⁻³. Author's address: Instytut Kształtowania Środowiska, Oddział w Krakowie, Plac na Stawach 1, 30-951 Kraków, Poland .

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B.K. SHARMA

Further contributions to the lecanid fauna (Rotifera: Lecanidae) of West Bengal .

Acta Hydrobiol., 21, 53-59.

Abstract - Further collections made from some localities in 24-Parganas and Howrah districts of Lower Bengal revealed 21 lecanid rotifers. Out of these, 10 taxa represent new records from this region of the country while seven of them are new records from the Indian subcontinent. Author's address: Central Institute of Fisheries Education, Post Box No. 7392, Kakori Camp. J. P. Road Versova, Bombay 400058, India .

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Janusz STARMACH

Electrophoretic separation of blood serum lactate dehydrogenase, transferin, and esterases on polyacrylamide gel in seven carp breed lines (*Cyprinus carpio* L.) .

Acta Hydrobiol., 21, 237-242.

Abstract - Electrophoretic separation of lactate dehydrogenase, transferin, and esterases of seven carp breed lines on polyacrylamide gel was carried out. It was found that out of the investigated proteins, only esterases could be used to characterize the breeding materials, since in various lines they have different electrophoretic patterns. Author's address: Polish Academy of Sciences, Laboratory of Water Biology, ul. Sławkowska 17, 31-016 Kraków, Poland .

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Aleksandra STARZECKA¹, Kazimierz PASTERNAK¹ and Marek OSTROWSKI²

Essay in water purity classification on the basis of chosen biological and chemical properties .

Acta Hydrobiol., 21, 397-421.

Abstract - The classification of water purity was carried out at 12 stations located on the River Nida and its tributaries. Several methods taking into regard chosen bacteriological and chemical properties of the water were used. It has been shown that, in comparison with chemical properties, bacteria are a better index of

water pollution. The taxonomic value of pollution in numbers (LWTZ) calculated on the basis of 10 water features (5 biological and 5 chemical), included in the suggested 4-stage classification, not only made possible to have a more precise determination of water purity but also permitted a mutual comparison and arrayal of the investigated stations with respect to their pollution degree. Still more detailed results were obtained in the classification of the investigated waters by use of numerical computation method (derived from the Wrocław taxonomy method) based on a dendrite structure at a suitably defined distance between the investigated stations based upon 24 water features (7 biological and 17 chemical). Congruence between the results of water classification by use of the 4-stage classification results obtained by application of the methods given in the paper with the results obtained on the basis of the standard binding in Poland according to which the water pollution at the investigated stations is, as a rule, by one class lower. Authors' addresses: ¹Polish Academy of Sciences, Laboratory of Water Biology, ul. Sławkowska 17, 31-016 Kraków, Poland ²Instytut Mikrobiologii, Uniwersytet Warszawski, Nowy Swiat 67, 00-046 Warszawa, Poland .

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Aleksandra STARZECKA

Bacteriological characteristics of water in the River Nida and its tributaries .

Acta Hydrobiol., 21, 341-360.

Abstract - The bacteriological characteristics of the River Nida and its tributaries was carried out on the basis of a change taking place in the total number of heterotrophic bacteria and some physiological groups - proteolytic, ammonifying, producing hydrogen sulphide, 1st phase nitrifying, and denitrifying bacteria. Taking into consideration the mean numbers of bacteria for the whole investigation period (1973 to 1975) and the seasonal variations, 3 zones were distinguished in the River Nida: 1) the zone of clean waters, 2) the zone of heavily polluted waters, 3) the self-purification zone. Author's address: Polish Academy of Sciences, Laboratory of Water Biology, ul. Sławkowska 17, 31-016 Kraków, Poland .

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Zbigniew WAJDOWICZ

Development of the ichthyofauna in the cascade of the River San .

Acta Hydrobiol., 21, 73-90.

[in Polish with English summary]

Abstract - On the basis of an analysis of catches carried out in various ways and by means of various fishing tools for obtaining fish of big and small size the development of the ichthyofauna in the water reservoirs in the damming area of the River San at Solina and Myczkowce was presented. These two mountain reservoirs are characterized by relatively high, long-term and daily variations in the water level. These variations were an important factor in creating the new ichthyofauna in the reservoir. Eight years after the completion of the reservoir at Solina the predominant species became the bream, this being also the case in the reservoir at Goczałkowice. Next came cyprinids, whereas in the other lowland reservoir the rheophilic species disappeared. For some time, a rather elevated share in the catches at Solina was represented by the stocking lake trout. Author's address: Polish Academy of Sciences, Laboratory of Water Biology, ul. Sławkowska 17, 31-016 Kraków, Poland .

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Sławomir WIELGOSZ

The effect of wastes from the town of Olsztyn on invertebrate communities in the bottom of the River Łyna .

Acta Hydrobiol., 21, 149-165.

Abstract - The effect of organic sewage on the taxonomic and quantitative structure of benthofauna communities in a 35-kilometer sector of the River Łyna was discussed in the work. 165 zoobenthos taxa were identified. Of the taxonomic groups Chironomidae were examined in the greatest detail. The variability tendencies of invertebrate communities in the longitudinal profile of the river were demonstrated. According to the analysis of Chironomidae community structure the variation in the number and percentage share of specimens of the individual Chironomidae sub-families was interpreted. With reference to the leading taxa bioindicativity the river water was classified to pollution zones. Author's address: Instytut Hydrobiologii i Ochrony Wód, Akademia Rolniczo-Techniczna, 10-957 Olsztyn-Kortowo, Poland .

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Sławomir WIELGOSZ

The structure of zoobenthos communities of a fine-grained substrate of the River Łyna .

Acta Hydrobiol., 21, 19-35.

Abstract - A description of the structure of benthofauna communities of a fine-grained substrate, along the longitudinal profile of the River Łyna, is given. Of the 130 taxa recorded, Oligochaeta and Chironomidae were found to predominate. Changes in the taxonomic-quantitative structure of the zoobenthos were observed; among other places, they were noted at a station affected by wastes. A correlation between the benthofauna numbers and some physico-chemical factors was determined. On the basis of 71 species and groups of Chironomidae forms, changes in the domination of the main species and similarities between the neighbouring stations were determined, coenological criteria of the natural division of the set having been taken into consideration. Author's address: Instytut Hydrobiologii i Ochrony Wód, Akademia Rolniczo-Techniczna, 10-957 Olsztyn 5, Poland .

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Andrzej WITKOWSKI¹ and Mieczysław KOWALEWSKI²

Biometrics of the grayling *Thymallus thymallus* (L.) (Osteichthyes: Thymallidae) from the River Dunajec basin .

Acta Hydrobiol., 21, 301-312.

Abstract - On the basis of 120 specimens of the European grayling from the River Dunajec and its tributaries a morphological and systematic analysis was carried out, 5 meristic and 30 plastic traits having been taken into consideration. The geographical variability of these traits in different populations from Poland and from other regions of occurrence of this species was traced. Moreover, the features of sexual dimorphism were studied. The biometrical analysis show that graylings from the River Dunajec basin do not differ significantly from other populations described to date and that they belong to the nominative subspecies *Thymallus thymallus thymallus* (L.). Authors' addresses: ¹Museum Przyrodnicze, Uniwersytet im. B. Bieruta, ul. Sienkiewicza 21, 50-335 Wrocław, Poland ²Ośrodek Zarybieniowy, Polski Związek Wędkarski, 34-432 Łopuszna, Poland .

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