Acta Hydrobiologica

Contents of Volume 20 (1978)

Abstract - Seasonal and spatial differentiation in rainfalls was considered within the territory of the complex of ponds situated in the southern part of the Owięcimska Valley. Great variations in rainfalls from year to year induced the authors to carry out an analysis of rainfall relations from the point of view of their variability, irregularity, as well as the probability of annual and seasonal sums. Preliminary calculations of the water balance in the ponds were also carried out.

Author's address: Zakład Dowiadczalny Polskiej Akademii Nauk Gołysz, 43-422 Chybie, Poland.

Abstract - The occurrence of Hydracarina was investigated in various types of sources: helocrens, rheocrens, little limnocrens, and big limnocrens. It has been found that the number of crenobionts, rheophilous crenophiles, limnophilous crenophiles, and crenoxenes in different types of sources varies greatly. A statistical analysis of similarities among the sources and of the co-occurrence of species was carried out. Phenological analysis of water mites id also given in the paper.

Authors' addresses:
[1] Instytut Ekologii, Zakład Biologii Rolnej, Polska Akademia Nauk, ul. wierczewskiego 19, 60-809 Poznań, Poland
[2] Zakład Zoologii i Hydrobiologii, Akademia Rolnicza, ul. Akademicka 13, 20-950 Lublin, Poland.

Abstract - The investigation with the application of the test method has shown that of the six towns examined, sewage from Rabka, Tarnów and Dębica threatened the rivers in a greater measure than that from the remaining localities. At low water level the content of hosphates in the N:P ratio of 4:1 was 20 times greater below Rabka, which points to the danger of sewage impact on the upper sectors of the Carpathian rivers and their small tributaries. The effect of sewage was visible in the distinct quantitative and qualitative changes of algae communities, while their final biomass was not correlated with the maximum content of nutrients. Diatoms of the genus *Nitzschia*, very sensitive to pollution in the initial phase, went through a prolonged development cycle contrary to chlorococcous green algae *Dictyosphaerium pulchellum*, *Selenastrum capricornutum*), which were readily adapted to the pollution.

Authors' addresses:

[1] Polish Academy of Sciences, Laboratory of Water Biology, ul. Sławkowska 17, 31-016 Kraków, Poland
[2] Zakład Chorób Ryb, Wojewódzki Zakład Weterynarii, ul. Karmelicka 14, 31-128 Kraków, Poland.

Danuta CHUDYBOWA and Jan WIDUTO
***Synedra cyclopum* Brut. var. *robustum* Schulz (Bacillariophyceae) as an ectocommensal on the fresh water plankton Copepoda in the Lakes Bartšg and Kortowo (The Mazurian Lake District).**
Acta Hydrobiol., 20, 157-161.

Abstract - *Synedra cyclopum* Brut. var. *robustum* Schultz occurred in the Lake Bartšg and Kortowo (The Mazurian Lake District) on the following species of Crustacea: *Mesocyclops leuckarti* (Claus), *Cyclops vicinus* Ulj., *C. bohater* Kozm., *Thermocyclops oithonoides* (Sars). No marked differences in body length of the species diatom-grown and without diatoms were observed.

Authors' address: Instytut Hydrobiologii i Ochrony Wód, Akademia Rolniczo-Techniczna, 10-957 Olsztyn-Kortowo, Poland.

Krzysztof CZERNA
The use of selected algal tests in determining the influence of potassium and sodium on the eutrophication of waters.
Acta Hydrobiol., 20, 323-344.

Abstract - In connection with the increasing salinity of surface waters in our climatic zone, due to the growing amounts of different cations (especially of K^+ and Na^+), their influence on some physiological functions of the species of algae selected from three most common systematic groups: Chlorophycae (*Selenastrum capricornutum*), Bacillariophycae (*Nitzschia gracilis*), and Cyanophyceae (*Microcystis aeruginosa*) was investigated. In laboratory experiments the K and Na concentrations were determined on the basis of average and extreme contents in the surface waters of Poland. The results made it partly possible to explain the role of K and Na in the process of waters eutrophication. The absence of K limited the numbers, chlorophyll content, and photosynthetical intensity with the three species tested, though this phenomenon was not noted at sodium deficit. The investigated species varied in their reactions to high K and Na concentrations, this suggesting that in surface waters the increasing amounts of these cations may strongly affect the qualitative composition of algae.

Author's address: Instytut Przyrodniczych Podstaw Produkcji Rolinnej, Akademia Rolnicza, ul. Akademicka 15, 20-934 Lublin, Poland.

Romuald CZERPAK[1] and Bazyli CZECZUGA[2]
Influence of CCC and diethylamine hydrochloride on the development of some species of blue-green algae, green algae and diatoms.
Acta Hydrobiol., 20, 233-243.

Abstract - Investigations were carried out on the influence of CCC and its chemical analogue: diethylamine hydrochloride on the concentration of cells, their sizes, general chlorophyll content and dynamics of growth of the following species of algae: *Merismopedia glauca* and *Anabaena cylindrica* (blue-green algae), *Chlamydomonas nivalis*, *Scenedesmus quadricauda*, *S. acuminatus*, *S. basiliensis*, and *S. bijugatus* (green algae), and *Gomphonema parvulum*, and *Nitzschia palea* (diatoms). Diethylamine hydrochloride behaves like a typical growth retardant and in comparison with CCC acts in the same concentration range but more intensively. CCC and diethylamine hydrochloride exert an inhibiting effect on cell concentration, their growth dynamics and total chlorophyll content in the green algae in the concentration range 10^{-2} to 10^{-4} *M*, in diatoms in the concentration range from 10^{-2} to 10^{-8} *M*, and in blue-green algae from 10^{-3} to 10^{-6} *M*.

Diatoms and blue-green algae - especially *Anabaena cylindrica* proved to be most sensitive to the investigated growth regulators. Moreover, a slight stimulating effect of the above mentioned growth regulators was found in the green algae in the oncentration range of these substances from 10^{-5} to 10^{-7} *M*.

Authors' addresses:
[1] Zakład Biologii, Filia Uniwersytetu Warszawskiego w Białymstoku, ul. Zamenhoffa 29, 15-435 Białystok, Poland
[2] Zakład Biologii Ogólnej, Akademia Medyczna w Białymstoku, ul. Kilińskiego 1, 15-230 Białystok, Poland.

Elżbieta DUMNICKA
Communities of oligochaetes (Oligochaeta) of the River Nida and its tributaries.
Acta Hydrobiol., 20, 117-141.

Abstract - The Oligochaeta fauna of the lowland River Nida was investigated and 57 species of this group were identified. Four types of communities of oligochaetes were determined, their occurrence depending on the degree of water pollution and the character of the river bottom. The composition and structure of communities in sandy, muddy-sandy, and muddy habitats were also determined for pure stations and for various levels of water pollution.

Author's address: Polish Academy of Sciences, Laboratory of Water Biology, ul. Sławkowska 17, 31-016 Kraków, Poland.

Elżbieta DUMNICKA and Kazimierz PASTERNAK
The influence of physico-chemical properties of water and bottom sediments in the River Nida on the distribution and numbers of Oligochaeta.
Acta Hydrobiol., 20, 215-232.

Abstract - Investigation was carried out on the distribution and numbers of 13 species of Oligochaeta as depending on the character of the bottom and some physico-chemical properties of water in the River Nida and its affluents. The limits of variability of these factors, at which separate species occurred are quoted. The numbers are compared with results obtained in different rivers of Poland.

Authors' address: Polish Academy of Sciences, Laboratory of Water Biology, ul. Sławkowska 17, 31-016 Kraków, Poland.

Liliana KALISZ
Biological investigations on the influence of postcoagulation sludge on the activated sludge rocess.
Acta Hydrobiol., 20, 365-377.

Abstract - The paper presents the results of biological investigations on the determination of the influence of the postcoagulation sludge formed in the processes of water coagulation (sediments from the pulsators) on the process of the biological sewage purification by means of the activated sludge method. Detailed investigations were carried out on the activated sludge: microscopic observations on the enzymatic activity and bacteriological-sanitary research on the sewage purification effects. Their results, added to those obtained by physico-chemical investigations corroborated the view that purification of sewage and postcoagulation sludge jointly can be one of the ways of inactivation of the postcoagulation sludge.

Author's address: Instytut Kształtowania rodowiska, ul. Kolektorska 4, 01-692 Warszawa, Poland.

Barbara KAWECKA[1] and Bert G. DRAKE[2]

Biology and ecology of snow algae. 1. The sexual reproduction of *Chlamydomonas nivalis* (Bauer) Wille (Chlorophyta, Volvocales).

Acta Hydrobiol., 20, 111-116.

Abstract - Sexual reproduction of the snow algae *Chlamydomonas nivalis* kept in the meltwater of the snow was observed. Gametes were the motile cells. They had walls, two flagella, and varied distinctly in size and shape ranging from sphaerical to oblong. Fusion was observed between morphologically similar as well as dissimilar gametes. Three phases of fusion were distinguished: 1) contact and adhesion of gametes, 2) formation of a bridge, 3) fusion of protoplasts to form a zygote in two ways: a) contents of one of the gametes migrated to the other, b) gametes merged into one cell which consisted of the combined cell walls of both gametes. Zygotes were nonmotile and there were no observable changes in the cell wall sculpture.

Authors' addresses:

[1] Polish Academy of Sciences, Laboratory of Water Biology, ul. Sławkowska 17, 31-016 Kraków, Poland

[2] Radiation Biology Laboratory, Smithonian Institution, 12441 Parklawn Drive, Rockwille, Maryland 20852, USA.

Maria KLIMCZYK-JANIKOWSKA

Influence of warmed water on the growth and feeding of the roach (*Rutilus rutilus* L.).

Acta Hydrobiol., 20, 175-185.

Abstract - The food of the roach from the reservoirs at Rybnik and at Goczałkowice was investigated. The water in the reservoir at Rybnik was warmed and that in the reservoir at Goczałkowice was of normal temperature. The material for investigations was collected every month in 1975 and from the reservoir at Rybnik additionally in 1976. The growth rate and the condition coefficient of the investigated roach were determined. The roach from the reservoir at Rybnik was found to have bigger annual increments and a higher condition coefficient in comparison with the roach from Goczałkowice. This fact might be explained by the influence of the increased water temperature in the reservoir on the intensity of feeding at simultaneously extended feeding period. In 1975 the phytoplankton, zooplankton, detritus, and macrofauna were the basic food of the roach in these two reservoirs. In 1976 the roach from the reservoir at Rybnik fed almost exclusively on detritus and plankton which as a result of the increased water temperature developed in that reservoir very intensively.

Author's address: Polish Academy of Sciences, Laboratory of Water Biology, ul. Sławkowska 17, 31-016 Kraków, Poland.

Stanisław ŁAKOTA[1], Anna RASZKA[1], Irena KUPCZAK[1], Stefan HŁOND[2], Jerzy STEFAN[2] and ROSZKOWSKI[3]

The effect of methoxychlor and propoxur on the health of carp fry (*Cyprinus carpio* L.).

Acta Hydrobiol., 20, 197-205.

Abstract - The action of methoxychlor and propoxur on the health and anatomopathological changes of some internal organs of carp fry (*Cyprinus carpio* L.) was investigated. The concentrations used were 0.025 mg L^{-1} of methoxychlor and 1.0 mg L^{-1} of propoxur. These concentrations did not bring about any symptoms of the toxic action in fish. A 30-day chronic test, both without the exchange of solutions and with the exchange at 48 h intervals, showed that at the concentrations used the two compounds brought about distinct pathologic changes in the internal organs of fish. It was also found that these preparations were accumulated by the carp fry. Methoxychlor was accumulated in the amount of 0.06-0.15 ppm at one treatment and of 1.8-11.14 ppm at the exchange of solutions, while propoxur was accumulated by the carp fry in the amount of 0.02-0.82 ppm independently of the method of dosing.

Authors' addresses:
[1] Instytut Przemysłu Organicznego, ul. Dowiadczalna 27, 43-200 Pszczyna, Poland
[2] Samodzielna Pracownia Biologii Ryb i rodowiska Wodnego, Instytut Zootechniki, ul. Rynek 15, 32-640 Zator, Poland
[3] Instytut Weterynarii, ul. Partyzantów 55, 24-100 Puławy, Poland.

Andrzej ŁYSAK
Radioiodine uptake in young carp (*Cyprinus carpio* L.) retarded in growth.
Acta Hydrobiol., 20, 297-303.

Abstract - In the light of results obtained in recent years, radioiodine disposition in young carp (*Cyprinus carpio* L.), retarded in growth is described. The pharynx centre accumulates most of the administered radioiodine. Activation of renal centre takes place already after 10 days of intensive feeding.

Author's address: Instytut Zoologii Stosowanej, Akademia Rolnicza, Al. Mickiewicza 24/28, 30-059 Kraków, Poland.

Kazimierz MATYSIAK
Structure of leech groups (Hirudinea) in polluted parts of the catchment area of the Rivers Bzura and Ner. 2. Experimental-laboratory investigation.
Acta Hydrobiol., 20, 187-194.

Abstract - On the basis of components of natural sewage treated as indices of pollution of the Bzura and Ner waters, an artificial sewage was prepared where leeches were cultured at various concentrations of separate components of the sewage. During the culture, experiments were conducted on the influence of the separate components on these animals.

Author's address: Instytut Kształcenia Nauczycieli, Oddział w Łodzi, ul. Jaracza 11, 90-261 Łód, Poland.

Marek MOLIŃSKI, Tadeusz PENCZAK and Anna BUKOWSKA-MADEJ
Materials for the ecology of the dace, *Leuciscus leuciscus* (L.), from a polluted river in the region of the barbel (the River Pilica). 2. Dry weight, ash, and content of some metals.
Acta Hydrobiol., 20, 87-96.

Abstract - Occurrence of seasonal variability in the content of dry weight and ash was established in the dace caught in two differently polluted fragments of the middle course of the River Pilica. A high correlation between the fish body weight and dry weight and ash, as well as a tendency of dry weight level increase with the age were also shown. Neither sex nor water pollution increase by one class do not seem to have any influence. A statistically significant lower level of manganese was observed in the dace from a more polluted water.

Author's address: Zakład Anatomii Porównawczej i Ekologii Zwierzšt, Uniwersytet Łódzki, ul. Banacha 12/16, 90-237 Łód, Poland.

Kazimierz PASTERNAK[1] and Henryk KASZA[2]
Chemical relations and primary production of the phytoplankton in the warmed water of the reservoir Rybnik.

Acta Hydrobiol., 20, 305-322.

Abstract - The magnitude of primary production in the warmed water of the Rybnik reservoir has been shown in a two years' cycle (1976, 1977) against the background of the content of biogenic macro- and microcomponents and the influence of warm discharge waters on some other physico-chemical properties of its water has been presented. The total annual production of the phytoplankton was 140 to 473 g C m^{-2} $year^{-1}$, whereas, the maximum daily production reached the value of 5.456 g C m^{-2} 24 h^{-1}. The factors stimulating such a high primary production in the investigated reservoir are, apart from the increased temperature: a high content of mineral phosphorus and nitrogen in the water, and an increased (not toxic yet) concentration of some of the microelements (Mn, Zn, Ni, and Cu). The increase assimilation rate causes a quick uptake of biogenic substances from the water in the reservoir. A decrease in their amount begins already in the early spring and does not end before the coming of autumn in spite of constant inflow of great amounts of trophic substances with the water of the River Ruda.

Authors' addresses:
[1] Polish Academy of Sciences, Laboratory of Water Biology, ul. Sławkowska 17, 31-016 Kraków, Poland
[2] Polish Academy of Sciences, Laboratory of Water Biology, Stacja Hydrobiologiczna w Goczałkowicach, 43-230 Pszczyna-Goczałkowice, Poland.

Maria PAWLACZYK-SZPILOWA, Danuta LESZCZYŃSKA and Helena SZTAJER
Heterotrophic microflora of the dam reservoir at Lubachów. 1. The effect of chemical culture medium on the results of the bacteriological analyses of water.
Acta Hydrobiol., 20, 1-10.

Abstract - The effect of various culture media on the number of colonies of bacteria obtained from 1 mL water was investigated, four synthetic media containing various sources of phosphorus (sodium beta-glycerophosphate, lecithin, sodium nucleate and tricalcium phosphate) being used paralley with nutrient agar. It was found that not all bacteria were able to develop on the investigated media. The majority of bacteria settling the reservoir grew on the substrate with sodium beta-glycerophosphate while a considerably less number of colonies was noted on nutrient agar. The least number of bacteria grew on the media with lecithin, sodium nucleate and tricalcium phosphate.

Author's address: Instytut Inżynierii Ochrony rodowiska, Politechnika Wrocławska, pl. Grunwaldzki 9, 50-377 Wrocław, Poland.

Tadeusz PENCZAK, Maciej ZALEWSKI and Krystyna PFEIFER
Materials for the ecology of the dace, *Leuciscus leuciscus* (L.), from a polluted river in the region of the barbel (the River Pilica). 1. Production and food consumption.
Acta Hydrobiol., 20, 63-85.

Abstract - The growth, condition, fertility, production, and food consumption of the dace, *Leuciscus leuciscus* (L.), at two stations of a river in the barbel region were estimated: as a rule, higher values of these parameters were found at the station where water pollution was higher by one class (class 3). Reproduction of that species takes place only at the station with cleaner water (class 2). High parameters of production and consumption elements are at the station with 3rd-class water purity, may be obtained only when there is greater abundance of more accessible food and a permanent inflow of fish to that place from other parts of the river.

Author's address: Zakład Anatomii Porównawczej i Ekologii Zwierzšt, Uniwersytet Łódzki, ul. Banacha 12/16, 90-237 Łód, Poland.

Tadeusz PENCZAK, Marek MOLIŃSKI and Maria OKA
Materials for the ecology of the dace, *Leuciscus leuciscus* (L.), from a polluted river in the region of the barbel (the River Pilica). 3. Lipids, protein, total nitrogen, and caloric value.
Acta Hydrobiol., 20, 97-108.

Abstract - The investigated factors (sex, age, sewage concentration, seasons) influence the lipid level in a dace in the following order: the seasons, an increase in the sewage concentration, and to a small extent the sex. The caloric value of the body changes with age, though not always synchronically and its decrease may be also influenced by the sewage concentration in some months. Total nitrogen and protein are constituted in the dace on the level found in other cyprinid fish, whereas the fraction of non-protein nitrogen deviates from the standard. The following statistically significant relations were found: body weight - lipid weight, body hydration - lipid percentage (in dry weight).

Author's address: Zakład Anatomii Porównanwczej i Ekologii Zwierzšt, Uniwersytet Łódzki, ul. Banacha 12/16, 90-237 Łód, Poland.

Tadeusz PENCZAK
Natural hybrid from the roach (*Rutilus rutilus* L.) and the silver bream (*Blicca bjöerkna*) from the Sulejów Bay.
Acta Hydrobiol., 20, 273-277.

Abstract - A natural hybrid from the roach and the silver bream caught in the Sulejów Bay is described. The intermediacy of the hybrid, which is more akin to the roach, has shown itself distinctly in a small number of features only (the number of rays in the anal fin, *longitudo caude*, *longitudo basis A*).

Author's address: Zakład Anatomii Porównawczej i Ekologii Zwierzšt, Instytut Biologii rodowiskowej, Uniwersytet Łódzki, ul. Banacha 12/16, 90-237 Łód, Poland.

Per PETHON
Age, growth, and maturation of natural hybrids between roach (*Rutilus rutilus* (L.)) and bream (*Abramis brama* L.) in Lake Oyeren, SE Norway.
Acta Hydrobiol., 20, 282-295.

Abstract - Age, growth, and maturation of natural hybrids between roach and bream have been examined on a material collected in 1974 and 1975. Opercula are used for ageing and back-calculations, and proved valid. Age ranged from 2+ to 12+ years and with the 1969 year class dominating. Growth of this particular hybrid is shown to be intermediate between that of the parental species, seems largely independent both of the abiotic environment and interspecific competition, and is suggested by the author to express the genetically based growth ossibilities within its ecological niche. Age of first spawners is mainly 5-6 years, but although spawning takes place it is argued that the hybrids are sterile and population composed of F_1 generation only. Environmental conditioned co-spawning in proximity of the parental species is suggested by the author to be the cause of hybridization in Lake Oyeren.

Author's address: Zoological Museum, University of Oslo, Sars gt. 1, Oslo 5, Norway.

Elżbieta PODSIADŁO
Preliminary investigations on the occurrence of crayfish in the waters of Warsaw.
Acta Hydrobiol., 20, 379-392.

[in Polish with English summary]

Abstract - The work contains descriptions of fourteen water bodies situated within the border of the city of Warsaw, which are crayfish habitats. One of these water bodies revealed the presence of *Astacus astacus* (L.), in another - *A. leptodactylus* Esch., and in the remaining twelve - *Orconectes limosus* (Raf.). The obtained results point to an extended range of occurrence of *O. limosus* within the borders of Poland.

Author's address: Zakład Zoologii, Instytut Fizjologii Zwierzšt, Szkoła Główna Gospodarstwa Wiejskiego - Akademia Rolnicza, ul. Nowoursynowska 166, 02-766 Warszawa, Poland.

Józef SKRZYPCZYK[1] and Andrzej SUROWIEC[2]
Characteristics of the processes of sulphates assimilation by *Chlorella pyrenoidosa*.
Acta Hydrobiol., 20, 263-271.

Abstract - The results of the investigation on the assimilation of radioactive sulphates and on the reversible excretion of compounds containing sulphur ^{35}S by *Chlorella pyrenoidosa* are presented. A comparison of the two processes suggests that the process of the reversible excretion is slower by about three orders of magnitude than that of the assimilation. The transport of sulphates to the cells and the excretion of sulphur compounds to the medium were analysed by determining the rate and time constants of these processes. The obtained results support the correctness of the quantitative estimate of the processes of sulphur assimilation and excretion by the algae under investigation.

Authors' addresses:
[1] Zakład Chemii Ogólnej, Instytut Biologiczno-Fizjologiczny, Slšska Akademia Medyczna, 41-808 Zabrze-Rokitnica, Poland
[2] Zakład Chemii Bioorganicznej i Biofizycznej, Instytut Chemii i Fizyki Medycznej, Slšska Akademia Medyczna, 41-200 Sosnowiec, Poland.

Krystyna STACHOWICZ
Evaluation of the toxicity of wastes affecting the quality of waters of the Biały Dunajec stream.
Acta Hydrobiol., 20, 163-173.

Abstract - The paper contains data on the water sewage analysis of the Biały Dunajec stream in the sector from its springs to the locality of Szaflary, in view of the water intake at Szaflary for municipal water supply for the town of Nowy Targ. Acute tests were carried out on the rainbow trout with the aim of determining the toxicity of purified wastes from the region of Zakopane and from the dairy at Szaflary. A serious threat to the quality to tap water was found to occur. A biological monitor was suggested for the continual control of water quality with respect to the content of toxic substances.

Author's address: Instytut Kształtowania rodowiska, pl. Na Stawach 1, 30-951 Kraków, Poland.

Bronisław SZCZĘSNY
Larvae of the genus *Philopotamus* Stephens, 1829 (Insecta: Trichoptera) in Poland.
Acta Hydrobiol., 20, 55-61.

Abstract - A key to the separation of larvae of the genus *Philopotamus* Stephens occurring in Poland is presented. It includes 3 species: *P. ludificatus* McLach., *P. montanus* (Don.), and *P. variegatus* (Scop.). The *P. variegatus* larva has not been known as yet. A few remarks on the habitat of the above-mentioned larvae are given.

Author's address: Zakład Ochrony Przyrody, Polska Akademia Nauk, Lubicz 46, 31-512 Kraków, Poland.

Bronisław SZCZĘSNY
Larvae of the subfamily Drusinae (Insects: Trichoptera) from the Polish part of the Carpathian ts.
Acta Hydrobiol., 20, 35-53.

Abstract - A key for separation of Drusinae larvae occurring in the Polish part of the Carpathian Mts is presented. It includes the hitherto known larvae of the species, *Drusus annulatus* (Step.), *D. biguttatus* (Pict.), *D. discolor* (Ramb.), *D. trifidus* McLach., and *Ecclisopteryx madida* McLach. as well as the larvae of the species *Drusus brunneus* Klap., *D. carpathicus* Dz., *D. monticola* McLach., and *Ecclisopteryx guttulata dalecarlica* Kol. not known up to date. The most important diagnostic characters which can be used in their separation are figured. Some taxonomic, zoogeographical, and ecological remarks on the species living in the Polish part of the Carpathian Mts are given.

Author's address: Zakład Ochrony Przyrody, Polska Akademia Nauk, Lubicz 46, 31-512 Kraków, Poland.

Andrzej SZYJKOWSKI
Phytoplankton of the Lake Sławskie.
Acta Hydrobiol., 20, 345-365.

Abstract - The paper gives an estimation of the changes in the quantitative and qualitative composition of plankton development in the Lake Sławskie found after a lapse of 56 years. A general tendency to a decrease in the number of species in the particular systematic units with a simultaneous intensified development of the species with marked eutrophic requirements was stated. It was found that intensification of the eutrophication process is the result of an excessive inflow of biogenic substances from the catchment area, towards with the population of the territory of the catchment area mainly contributes.

Author's address: Instytut Meteorologii i Gospodarki Wodnej, Oddział we Wrocławiu, ul. Norwida 34, 50-375 Wrocław, Poland.

Ryszard VOLSKIS
Research on species and its productivity throughout the distribution area.
Acta Hydrobiol., 20, 207-214.

Abstract - The progress of research on selected animal species and their productivity throughout the range of their distribution is reviewed and the method of complex study of species applied in the investigations of two fish species is discussed referring to the prospects of its implementation in ichthyology. Owing to the development of a uniform programme of research, standard methods of research and the transmission of results to computing centre it is possible to collect, process and accomplish a comprehensive interpretation of data from different localities of the studied fish species within 6 months.

Author's address: Institute of Zoology and Parasitology, Academy of Sciences of Lithuanian SSR, K.P. Poelos 54, 232 000 Vilnius, USSR.

Franciszek WIĘCŁAWSKI
Preliminary investigations on boron content on the lake waters of the Mazurian Lake District.
Acta Hydrobiol., 20, 143-156.

Abstract - In connection with the recently rapid increase of boron concentration in the surface waters polluted mainly with municipal sewage, comparative investigations were carried out on the levels of occurrence of that microelement in pure and polluted lakes. The amounts of total boron found there proved

directly proportional to the eutrophication degree of the investigated lakes. In the most polluted and bradymictic Lake Długie the development of anthropogenic meromixing was confirmed.

Author's address: Instytut Hydrobiologii i Ochrony Wód, Akademia Rolniczo-Techniczna, 10-957 Olsztyn, Poland.

 **Back to Acta Hydrobiologica**