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Acta Hydrobiologica

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Stanisław BERNATOWICZ¹ and Joachim RADZIEJ²
Distribution of *Coregonus albula* (L.) in the lakes of Poland.
Acta Hydrobiol., 16, 209-219.

Abstract - A survey was made of all lakes in Poland in which *Coregonus albula* is encountered, both naturally and owing to introduction. The following characteristics of lakes are included: area, maximum and average depth, water transparency, and, at the climax of summer stagnation, the thickness of the water layer with oxygen content of more than 2 mg L⁻¹. Against this background, the levels of the annual catches of *Coregonus albula* in kg ha⁻¹ were discussed.

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Stanisław BERNATOWICZ
Phenological seasons of the year in Lake Mikołajskie.
Acta Hydrobiol., 16, 365-377.

Abstract - The temperature of water and air were taken into account in the observation of development stages of selected (indicatory) species of aquatic macrophytes in Lake Mikołajskie (Mazurian Lake District). Thus 8 phenological seasons of the lake year were distinguished (pre-spring, early-spring, spring, early summer, summer, early autumn, autumn, and winter).

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Eugeniusz BIESIADKA
Hydracarina of the River Raba and some of its tributaries.
Acta Hydrobiol., 16, 31-50.

Abstract - The paper contains the results of investigations carried out in the years 1969-1971 on Hydracarina of the River Raba and some of its tributaries. 92 species of Hydracarina were listed, among them 46 species new for the Polish fauna, 61 new for the Polish part of the Carpathians, and 10 new species for the whole territory of the Carpathians. The author indicated zones of Hydracarina populations of the River Raba, distinguishing the "zone of *Sperchon*" and the "zone of *Hygrobatas-Lebertia*". He also characterized the occurrence of Hydracarina in various environments.

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Maria BOMBÓWNA and Halina BUCKA
Some Carpathian reservoirs and their production relations.
Acta Hydrobiol., 16, 379-400.

Abstract - In two reservoirs of the Soła cascade and in lowland reservoir on the Vistula the nutrient resources were evaluated on the basis of chemical analysis of the water and of measurements of primary production and chlorophyll content, the communities of algae and the size of their surface being also considered. A medium degree of eutrophication was found in these reservoirs. In the first reservoir of the cascade, lying below Żywiec, eutrophication was more advanced. In the evaluation of the production dynamics Rhode's coefficient for lakes was found useful as well as the calculation of the number of hours necessary for the total renovation of phytoplankton. The investigated reservoirs showed a similarity in their qualitative composition, with the quantitative prevalence of diatoms, Cryptophyceae, and green algae, among which common dominants were also noted.

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Małgorzata HANAK-SCHMAGER

Seston and periphyton of the River Vistula on the sector from Nowy Bieruń to the water stage at Łączany and on the Łączany-Skawina Canal.

Acta Hydrobiol., 16, 345-365.

Abstract - The material for investigation was collected from the River Vistula on the sector from Nowy Bieruń to the water stage at Łączany, from the Łączany-Skawina Canal, and once from the River Przemsza before its confluence with the River Vistula. Samples were collected from July to October 1970. Three communities, 1 - phyto-seston, 2 - zooplankton, and 3 - epiphytic associations were elaborated. Altogether 374 taxa were distinguished, of which: 41 belonged to Cyanophyceae, 22 to Flagellata, 3 to Pyrrophyta, 6 to Heterokontae, 8 to Chrysophyceae, 162 to Bacillariophyceae, 80 to Chlorophyceae, 14 to Schizomycetes and Myxomycetes, 7 to Ciliata, 1 to Suctoria, 20 to Rotatoria, 8 to Cladocera, 2 to Copepoda; various not closely determined Testacea, Nematoda, and Tubificidae were also included. The examined sector of the river was characterized with respect to the pollution level, which was determined on the basis of the list of species and numerical data of the Pantle-Buck index. With the course of the river an increase in the self-purification process was found, this being influenced positively by a high water level (flood waters).

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Kazimierz KARZMARZ and Anna ŁUCZYCKA

A contribution to the flora of Chlorophyta of Central and Southern Poland.

Acta Hydrobiol., 16, 113-119.

Abstract - Charophyta of Central and Southern Poland are represented by many species of three genera: *Nitella* (5), *Chara* (7), and *Tolypella* (1). They occur in ponds, old river beds and small ditches in meadows and peat-bogs.

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Maria KLIMCZYK-JANIKOWSKA

Food and biometric characteristic of the silver bream (*Blicca björkna* L.) from the reservoir at Goczałkowice.

Acta Hydrobiol., 16, 241-254.

Abstract - The food and biometry of the silver bream (*Blicca björkna* L.) from the reservoir at Goczałkowice were examined. Fish from catches performed once a month from June 1969 to May 1970 constituted the investigation material. The basic food of the fish consisted of larvae and pupae of

Chironomidae, larvae of Trichoptera and periodically zooplankton, filamentous algae, and higher plants. This fish also feeds on small fry of Percidae and Cyprinidae. The *B. björkna* occurring in the reservoir at Goczałkowice is a typical form. Its annual increase was small, ranging from 1.13 to 1.37 cm. The coefficient of condition increased slightly with the age of the fish.

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Henryk KLIMOWICZ

Changes in the numbers of plankton in the course of treatment of tap water.

Acta Hydrobiol., 16, 121-137.

Abstract - Investigations were carried out on the development and reduction of plankton organisms in water treated by water-supply works. The water from a small submontane river flowed through a pond before it reached the technical installations. In the river intake weir numerous species represented by small numbers of individuals were found. A rapid increase, but only in the number of individuals, was observed in the initial sector of the pond. A gradual increase in their total number continued up to the final sector of the pond, while the number of specimens of smaller body sizes, after a rapid increase in the initial part of the pond, gradually, decreased parallel to the increase in the number of larger predators. The pond played a positive role as a settling tank for organic matter brought in by the river water. It also formed an environment for the developing organisms which utilized introduced substances in their food chain. The largest organisms, feeding on the smaller ones, were easily removed in the technical installations for water treatment.

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Władysław KOLDER, Stanisław SKÓRA and Jan M. WŁODEK

Ichthyofauna of the River Raba and of its tributaries.

Acta Hydrobiol., 16, 65-99.

Abstract - In the years 1966-1971 ichthyofauna investigations were carried out in the River Raba (southern Poland) and its tributaries at 52 catching stations. The catches were electric, using a direct current generator. The biomass and frequency of fish were estimated and the zones of occurrence delimited. The coefficients of correlations between the ichthyofauna in the catching stations were calculated. In the River Raba and its tributaries there are 32 species of fish. Special attention was paid to the frequency and biomass domination of fish species. The prospects of development of the ichthyofauna in the River Raba and its tributaries after the construction of a new reservoir on the River Raba are discussed.

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Tadeusz KUFLIKOWSKI

The phytophilous fauna of the dam reservoir at Goczałkowice.

Acta Hydrobiol., 16, 189-207.

Abstract - Investigations on the phytophilous fauna of the dam reservoir at Goczałkowice were carried out in the years 1964-1967. Their purpose was to make a quantitative and qualitative study of the vegetation fauna and to determine the degree of connection between individual species and groups of animals and plants as well as to compare this fauna with the bottom fauna of the reservoir. In the investigations the following species of plants were included: *Batrachium aquatile*, *Myriophyllum spicatum*, *Polygonum*

amphibium, *Potamogeton lucens*, *P. crispus*, *Elodea canadensis*, and *Glyceria aquatica*.

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Jerzy KWAPULIŃSKI

The content of ^{90}Sr in limnic and rheolimnic dam reservoirs.

Acta Hydrobiol., 16, 319-329.

Abstract - Systematic investigations on the ^{90}Sr concentration in limnic and rheolimnic reservoirs indicate that the ^{90}Sr concentration in the water is determined by certain parameters. Equations of the dependence of ^{90}Sr concentration in the water from the amounts of rainfall and dusts are given.

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Krystyna KYSELOWA and Łucja KRZECZKOWSKA-WOŁOSZYN

Algae of dam reservoirs in the Soła cascade and neighbouring sectors of the river.

Acta Hydrobiol., 16, 401-416.

Abstract - The influence of cascade damming of a river on seston and periphyton communities was investigated. The similarity of algae in separate reservoirs and their influence on the river were observed. The distribution of algae at various depth and the dependence of their qualitative and quantitative composition on the situation of the stations which were under the influence of differently polluted inflows were investigated.

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Wanda LECEWICZ

A new locality of *Gonatozygon aculeatum* Hastings var. *Groenbladii* Růžička var. n.

Acta Hydrobiol., 16, 431-434.

Abstract - In 1972 *Gonatozygon aculeatum* Hastings var. *Groenbladii* Růžička var. n. was found in Lake Czarne Gościńskie in the territory of the Pojezierze Łęczyńsko-Włodawskie in the province of Lublin. This is most probably the fourth locality of this species in the world and certainly the second one in Poland. The lake is considered to be dystrophic with an inclination to slight eutrophy.

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Maria LEWKOWICZ

The communities of zooplankton in fish ponds.

Acta Hydrobiol., 16, 139-172.

Abstract - An analysis was carried out of the communities of zooplankton (Rotatoria, Cladocera, Copepoda) in the open water and in the vegetation zone of 22 fish ponds under various forms of management. The comparison of the specific composition of zooplankton of the investigated ponds, carried out by the dendrite method, indicated that the fertilised ponds are similar to each other and differ from the

unfertilised ones. The ponds where large amounts of fertilisers brought about the formation of untypical plankton communities were distinguished. The rather small group of species common for all ponds indicates great differentiation of the zooplankton in a small territory. The communities were characterized using the domination coefficients, dominance of crustaceans over rotifers being found in the vegetation zone to the open water. The evaluation of numbers and biomass indicates considerable differentiation of the investigated ponds with regard to their eutrophication. In the work the development cycles of dominant species, the periods of bisexual reproduction of cladocerans, and the seasonal variability of some species were determined.

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Stanisław NIEWOLAK

Production of bacterial biomass in the water of the Hawa Lakes.

Acta Hydrobiol., 16, 101-112.

Abstract - The paper reports the results of investigations on the intensity of reproduction and production of bacterial biomass (bacterioplankton) in the sewage lake Jeziorak Mały and in the eutrophic lake Jeziorak in the Mazurian Lake District, in the annual cycle. The time of bacterioplankton generation ranges from 3.5 to 27.8 h in the Jeziorak Mały, and from 1.7 to 204.2 h in Lake Jeziorak, while the bacterioplankton biomass was 9.03-63.52 mg C m⁻³, and 1.42-83.31 mg C m⁻³, respectively, and depended on the sampling station and on the season of the year. Annually 21.2 tons of bacterial C were produced in Lake Jeziorak Mały and 16753 tons of bacterial C in Lake Jeziorak. The ratio of the 24-hour production of the bacterioplankton biomass was from 0.86-6.67 in Lake Jeziorak Mały and 0.45-1.87 in Lake Jeziorak.

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Stanisław NIEWOLAK

Vertical distribution of the bacterioplankton and the thermal-oxygen relations in the water of the Hawa Lakes.

Acta Hydrobiol., 16, 173-187.

Abstract - The work deals with the results of investigations on the vertical distribution of bacterioplankton in the water of Lake Jeziorak Mały and Lake Jeziorak (Mazurian Lake District) against the background of thermal-oxygen relations in the annual cycle. In summer in the shallow stations of the investigated lakes (stations 8 and 9) the bacterioplankton generally occur in greater numbers near the bottom and in winter nearer the surface; in deeper stations (stations 3, 6, and 11) the number of these micro-organisms often decreases with depth and increases at the bottom. In both investigated lakes the dominant form of bacterioplankton are the rod-bacteria, in spring cocci also appearing in greater numbers. Other morphological forms of the bacterioplankton occur in smaller numbers. The highest oxygen consumption for the respiration of bacterioplankton occurs in summer and reaches a level of about 0.3 mg O₂ L⁻¹ 24 h⁻¹, especially in the bottom water of these lakes.

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Kazimierz PASTERNAK

The accumulation of heavy metals in the bottom sediments of the River Biała Przemsza as an

indicator of their spreading by water courses from the centre of the zinc and lead mining and smelting industries.

Acta Hydrobiol., 16, 51-63.

Abstract - The level of concentration of 12 microelements in the bottom sediments of the River Biała Przemsza and its tributaries (the watershed of the Upper Vistula) was investigated for the evaluation of its usefulness as an indicator of the pollution of the environment of head waters. It was found that the total content of microelements in the sediments chiefly depends on the degree of pollution of the water and does not show any distinct connection with the amount of organic and silt substances in the sediments. The content of microelements in the sediments is a good indicator of the spreading of mineral pollution by water courses. The degree of its usefulness partly depends on the properties of the aquatic environment. Zinc shows the greatest migration with the waste waters from the mining and smelting centre of the zinc and lead industries.

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Kazimierz PASTERNAK

The influence of the pollution of a zinc plant at Miasteczko Śląskie on the content of microelements in the environment of surface waters.

Acta Hydrobiol., 16, 273-297.

Abstract - The level of the concentration of microelements and their accumulation and distribution were determined in the water and sediments of rivers, streams, and reservoirs in the region of zinc and lead smelting works. It was found that already in the first period of the activity of such industries the state of purity of neighbouring surface waters is affected not only by the release of wastes but also by the pollution of the air. The occurrence of heavy metals in the waters and sediments was considered against the background of their basic properties and of the general pollution situation of the region. The release of metallurgical waste waters brings about a very great increase in the amount of Zn, Cd, and Pb in the main river of the investigated territory. An exceptionally high content of cadmium occurs in the water of this river, which among other factors decreases the class of purity of this river. In the investigated water system the degree of distribution of metals, especially of Zn, is very high. The reservoirs of this river favour the self-purification of the water from the metals.

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Tadeusz SYWULA

The ostracods (Ostracoda) of the River Raba and of certain aquatic environments connected with it.

Acta Hydrobiol., 16, 255-271.

Abstract - A list of individuals collected in separate samples is given, including their classification as to species and to development stage. The share of individual genera and species in the whole ostracod fauna is determined. The settlement of the individual types of environment by the ostracods is discussed, the characteristic forms and the ecological succession of species as well as the main factors limiting this settlement being particularly considered.

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Bronisław SZCZĘSNY

The effect of sewage from the town of Krynica on the benthic invertebrates communities of the

Kryniczanka stream.

Acta Hydrobiol., 16, 1-29.

Abstract - The macrofauna of the polluted mountain stream Kryniczanka (the Carpathians) was investigated. The investigations were conducted for a period of one year, and took into account the natural, regulated, and the polluted sectors of the stream. The physico-chemical conditions of the water and sediments were examined and described. A detailed list of the species encountered was made and their distribution along the watercourse and their numbers on various types of substrate described. Potamological classification of the stream was made according to Illies and Botosaneanu (1963), the epirhitron zone being distinguished in it. In order to differentiate the zones in the stream several methods were applied and subsequently discussed. The effect of sewage on the macrofauna of the stream was described, changes in its numbers during the course of the year, and the pollution level of the stream which was determined as polysaprobic not only on the basis of the results of physico-chemical analysis but also on that of the macrofauna.

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Ivan TUŠA

Mayfly larvae (Ephemeroptera) in current habitats of three trout streams with stony bottom (North-Western Moravia, Czechoslovakia).

Acta Hydrobiol., 16, 417-429.

Abstract - The three tributaries of the River Morava (Branná, Desná, and Krupa Creeks) and other streams from quoted works were found to contain 8 to 25 taxa (mostly species) of mayflies. The total number of mayflies from all cited papers varies greatly for individual streams (14-1700 ind. m⁻²), from the Moravian streams only 284.6-1323.0 ind. m⁻². The situation in the biomass was analogous: 0.005-5.72 g m⁻² and 1.24-5.72 m⁻², respectively. Most frequently the number was 500-700 ind. m⁻² and biomass 2-3 g m⁻². One fifth to one fourth of all the taxa present were significant for production: *Baetis alpinus*, *B. rhodani*, *Rhithrogena semicolorata*, *Epeorus assimilis*, *Ecdyonururs* gr. *venosus* and Leptophlebiidae. The slight organic pollution (within xeno-oligosaprobity) increases the number and biomass of larvae. Seasonal distribution of mayflies in the streams with stony bottom shows two peaks: in early spring - spring and in late summer - autumn.

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Zbigniew WAJDOWICZ

Characteristic of the spawning population of the *Vimba vimba* n. *carinata* from the River Czarna Orawa.

Acta Hydrobiol., 16, 221-238.

Abstract - The River Czarna Orawa forms in the territory of Poland a part of the river basin of the Oravian dam reservoir (ČSSR), belonging to the catchment area of the Black Sea. On the basis of material collected mainly from a spawning run carrying out reproduction in the Czarna Orawa the following data were obtained: the biometric characteristics, growth rate, and data on the fertility of the geographical race *Vimba vimba* n. *carinata* which has recently formed a dynamically developing population in the reservoir. In connection with stocking the reservoir at Tresna in the catchment area of the Baltic Sea with this rheophilous and generatively lithophilous fish, a comparison was made of the utility features of the *Vimba vimba* of the Oravian reservoir and those of the typical form of *Vimba vimba* L. which at present reaches the spawning grounds in the Carpathian tributaries of the River Vistula in its migrations from the coast in constantly decreasing numbers.

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Jerzy ZIĘBA and Krzysztof SROKOSZ

Macrofauna of invertebrates in the fry ponds at Gołysz. 1. Littoral vegetation zone.

Acta Hydrobiol., 16, 331-343.

Abstract - The macrofauna of the littoral vegetation zone was examined in four summer fry ponds flooded for a short period (transfer ponds I and II) as well as in two ponds used also during the winter. Most differentiated with respect to taxonomy were Chironomidae and Coleoptera. Soon after flooding the individual categories of ponds, larvae of Culicinae and Chironomidae usually occurred very numerous but for a short time only. In the ponds flooded from August Ephemeroptera, Chaoborinae, and Corixidae were usually very numerous. Sometimes numerous predatory invertebrates (mainly Coleoptera) appeared among the littoral plants and in summer also frogs and tadpoles which, together with the fry, caused a decrease in nutritive animals. Nutrition reserves for the carp fry were in this zone of the ponds periodically considerable.

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Roman ŻUREK

The zooplankton biomass and production of some species of rotifers and cladocerans in three ponds with different second year carp fry stocking.

Acta Hydrobiol., 16, 299-317.

Abstract - In the present paper the biomass and production of three species of cladocerans and seven species of rotifers in three experimental ponds of the Experimental Station of the Polish Academy of Sciences, at Gołysz, were calculated. The surface of each pond was 1500 m², the stocking amounting to 45, 135, and 540 specimens of the second year carp fry (K₂) per pond. The influence of *Chaoborus crystallinus* larvae and *Asplanchna brightwelli* on the amount of the zooplankton biomass was discussed and the estimated counts of some parameters of the energy balance of *A. brightwelli*, *Moina micrura*, *Daphnia longispina*, and *Bosmina longirostris* in the investigated ponds were carried out.

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