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Acta Hydrobiologica

Contents of Volume 18 (1976)

Maria BOMBÓWNA

The River Skawa - water chemism and eutrophication.

Acta Hydrobiol., 18, 407-420.

[in Polish with English summary]

Abstract - The work describes changes in the chemism of the River Skawa at various water levels throughout four seasons of the year, special attention being paid to the fertility of the river on the basis of chlorophyll content. The water in the river basin of the Skawa, a right side tributary of the River Vistula, is of carbonate-calcareous type with the characteristic hardness decreasing along its course, this distinguishing it from the neighbouring River Raba. A corresponding decrease in the chlorophyll, shows a negative correlation with the water level in the river. The ratio of the chlorophyll content in the attached algae to that in the seston is a good index of productivity zones along the river course. The constant intensification of agriculture, with the present pollution of the river, brings about the eutrophication which has been advancing throughout the years and is manifested in the ever growing concentration of mineral nutrient compounds.

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Bazyli CZECZUGA and Romuald CZERPAK

Carotenoids in fish. 7. The kind of food and the content of carotenoids and vitamin A in *Carassius carassius* (L.) and *Leucaspis delineatus* (Heck.).

Acta Hydrobiol., 18, 1-21.

Abstract - Conversions of carotenoids in the trophic systems: algae (*Chlorella vulgaris* and *Scenedesmus quadricauda*), yeast (*Saccharomyces cerevisiae*) - crustaceans (*Daphnia magna*) - fish (*Carassius carassius* and *Leucaspis delineatus*) in aquarium cultures were investigated. The analysis carried out using column and thin layer chromatography showed that in the case of fish the content of carotenoids and also of vitamin A chiefly depended on the content of carotenoids in the producers used as food for the crustaceans and on the selective assimilation of carotenoids and their conversion into vitamin A by the fish. Moreover, it was found that the total content of carotenoids and of vitamin A is much greater in *Leucaspis delineatus*, regarded as a "weed" fish than in *Carassius carassius*.

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Elżbieta DUMNICKA

***Enchytraeus dominicae* sp. n. - a new species of Enchytraeidae (Oligochaeta) from Poland.**

Acta Hydrobiol., 18, 421-424.

Abstract - A new species of the genus *Enchytraeus* Henle, closely related to *E. minutus* Niel. et Christ. and *E. norvegicus* Abrahamsen was described from Poland.

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Elżbieta DUMNICKA

Oligochaetes (Oligochaeta) of some streams of the High Tatra Mts and of the River Bia*ka Tatrza+/-ska.

Acta Hydrobiol., 18, 305-315.

Abstract - In the investigated material 25 species of Oligochaeta belonging to 4 families were identified, among them 12 species new for the Tatra Mts. The fauna of oligochaetes from various streams was compared and significant changes were found in the fauna of the Rybi Potok, these being caused by water pollution from the shelter at Morskie Oko.

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H.S. GILL and H.S. TOOR

Bioassay studies on the toxicity to fish of distillery effluents.

Acta Hydrobiol., 18, 229-234.

Abstract - Bioassay experiments were conducted to evaluate the toxicity of distillery factory effluents, using exotic carp, *Cyprinus carpio*, as the test fish. The TLM values for 24 and 48 h periods were estimated to be 23.92 and 17.66% respectively. A 2.91% concentration of these effluents was found to be harmless to fish. If effluents are diluted to less than this harmless concentration prior to their discharge, immediate harmful effects of these wastes can be eliminated. The physical reactions of the test fish in the various waste dilutions were also studied. The fish exhibited wild swimming, excitation, and loss of equilibrium.

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H.S. GILL and H.S. TOOR

Evaluation by bioassays of the toxicity to fish of sugar factory effluents.

Acta Hydrobiol., 18, 323-329.

Abstract - To evaluate the toxicity of sugar factory effluents, bioassay experiments were conducted using carp, *Cyprinus carpio*, as the test fish. The TLM values for 24 and 48 h periods were estimated to be 56.23 and 40.45% respectively. Harmless concentration of the effluents to fish was found to be 11.58%. Hence, the sugar factory effluents should be diluted below this harmless concentration prior to discharge into rivers and streams to eliminate the directly harmful effects of the wastes. The physical reactions of the fish in the various waste dilutions were also studied. The fish exhibited wild swimming, excitation, and loss of equilibrium.

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Krzysztof Z. KAMIŃSKI

***Alona rustica* Scott 1895 - a new species for Poland (Cladocera, Chydoridae).**

Acta Hydrobiol., 18, 317-321.

Abstract - The author reports the finding of *Alona rustica* Scott, a new species for Poland, from Suchar Wądołek near Lake Krzywe.

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Kazimierz KARCZMARZ¹, Anna ŁUCZYCKA¹ and Ryszard OCHYRA²
A contribution to the flora of Charophyta of Central and Southern Poland, 2.
Acta Hydrobiol., 18, 193-200.

Abstract - New localities of 9 species and information on the 4 associations of Charophyta are given. The distribution of rare species and ecological data on the main physico-chemical properties of waters in karst lakes are discussed.

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Krzysztof KASPRZAK

Materials to the fauna of Oligochaeta of the Ojców National Park and its vicinity - the Prądnik-Białucha stream.

Acta Hydrobiol., 18, 277-289.

Abstract - The work presents the results of elaboration of the materials of Oligochaeta collected in the course of an investigation of the benthos in the Prądnik-Białucha stream. The material was collected by Dr. E. Dratnal in 1968 and 1969. In the investigated stream 32 species of Oligochaeta were noted, of which 14 were new for the fauna of the Kraków-Częstochowa Upland. The occurrence of Oligochaeta at 8 stations distributed along the course of the stream in 3 habitats is reported, the communities of species characteristic for the given habitats being discussed.

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Krzysztof KASPRZAK¹ and Bronisław SZCZĘSNY²
Oligochaetes (Oligochaeta) of the River Raba.

Acta Hydrobiol., 18, 75-87.

Abstract - Oligochaeta of the River Raba, a fairly small river in the West Carpathian Mts (185 to 1240 m above sea level), were elaborated within the framework of collective hydrobiological investigations carried out in the years 1969-1970. The material was collected at 11 stations. A list of species of Oligochaeta and their distribution along the course of the river are given. Dominance of particular species or genera at successive stations was calculated separately for the lotic and lentic habitats and upon the basis of the obtained results the problem of zonation of oligochaetes along the river was considered.

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Barbara KAWECKA

***Eunotia flexuosa* (Br1b.) K6tz. var. *rilensis* n. var. (Bacillariophyceae) in the Maljovica stream (Rila - Bulgaria).**

Acta Hydrobiol., 18, 425-427.

Abstract - The described variety of *Eunotia flexuosa* was found in the Maljovica stream in the Rila Mountains in Bulgaria (at an altitude of 2400-1750 m). *Eunotia flexuosa* (Bréb.) Kütz. var. *rilensis* n. var. differs from the species and varieties described so far in a wider spacing of striae and greater breadth of the cell.

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Andrzej KOWNACKI¹, Janusz WOJTUSIAK² and Roman ŻUREK²

New and rare species of Rotatoria, Cladocera, and Chironomidae (Diptera) for the aquatic fauna of Afghanistan.

Acta Hydrobiol., 18, 291-304.

Abstract - In the samples collected on 28 August 1973, in the overflow-arm of the River Warduj in the neighbourhood of the village of Zebak (Badakhshan province) in Central Hindu-Kush the following species were found to occur: two species of Rotatoria, *Keratella cochlearis cochlearis* Gosse and *K. quadrata reticulata* Carlin; six species of Cladocera, *Simocephalus* cf. *elizabethae* King, *Macrothrix dadayi* Behning, *Acroperus angustatus* Sars, *Alona costata* Sars, *A. rectangula coronata* Kurz, and *Bosmina longirostris* (O.F. M6ll.); and nine taxonomic units of Chironomidae (Diptera); *Macropelopia* sp. Afganistan, *Cricotopus (Isocladius) sylvestris* (Fabr.), *Psectrocladius (Allopsectrocladius)* sp., *P. (Psectrocladius)* cf. *oligsetosus* W6lk., *P. (Psectrocladius)* ex gr. *psilopterus*, (?) *Psectrocladius* sp., *Rheocricotopus* sp., *Coryneura* cf. *scutellata* Winn., and *Thienemanniella* sp. All these species were new or rare for the aquatic fauna of Afghanistan.

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Edward KRZYŻANEK

Preliminary investigations on bivalves Bivalvia of the dam reservoir at Goczałkowice.

Acta Hydrobiol., 18, 61-73.

Abstract - The paper contains preliminary observations on bivalves of the family Unionidae in the dam reservoir at Gocza*kowice. Taking advantage of the lowered water level and emergence of about 800 ha of the bottom of the reservoir in 1972, investigations on bivalves (Bivalvia) were carried out there as well as in the inundated part of the reservoir. The qualitative composition, number, and biomass were determined and biometric measurements aiming at determination of the age structure of these organisms were performed. It was estimated that there were 106 million bivalves of 5038 tons biomass in the reservoir. At present the dominating species is *Unio pictorum*, found mainly in the northern part of the reservoir. The second as to number is *Anodonta cygnea*, occurring in the southern zone and in deeper parts of the central zone.

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Jerzy KWAPULIŃSKI¹, Andrzej BUSZMAN¹ and Gertruda KWAPULIŃSKA²

A model of the cumulation of ¹³⁷Cs in the carp *Cyprinus carpio* L..

Acta Hydrobiol., 18, 183-192.

Abstract - In the work a model of ¹³⁷Cs cumulation in the stages of development of the carp is presented. The model includes the influence of body weight and weight increase on the concentration of ¹³⁷Cs in them. Moreover, an equation is given illustrating the influence of the activity of bottom sediments and global fall-out. The model was checked using the results of ¹³⁷Cs determinations in the years 1965-1970.

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Maria LEWKOWICZ and Stanisław LEWKOWICZ

Organic and inorganic nutrient enrichment and the living conditions of carp fry in first rearing ponds. Physico-chemical factors and the zooplankton..

Acta Hydrobiol., 18, 235-257.

Abstract - The effect of organic and inorganic nutrient enrichment on the increase in carp fry in first rearing ponds were compared. Doses of liquid farmyard manure released into the ponds every 5 to 6 days influenced the number and biomass of the plankton Crustacea. After inorganic manuring greater fluctuations in oxygen content were observed than after organic manuring. The weight increase of fish in organically manured ponds was similar to that when high inorganic enrichment was applied.

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B.K. MANDAL

Studies on the primary productivity and physico-chemical factors of two fish-ponds at Burdwan, West Bengal (India).

Acta Hydrobiol., 18, 175-182.

Abstract - The present study deals with the seasonal variations of the primary productivity and physico-chemical factors in two freshwater fish ponds at Burdwan, West Bengal. Total plankton volume varied from 0.62 to 1.35 cm³ L⁻¹. The percentage of zooplankton varied from 40.0 to 78.6% and that of phytoplankton from 22.0 to 60.0% of the total plankton. In Laldighi the maximum productivity was recorded in May (6.2 g C m⁻² day⁻¹) while in Chandandighi it occurred in June (4.4 g C m⁻² day⁻¹). In both ponds the maximum value of productivity was nearly three times greater than the minimum value. In the present studies no strict correlation could be established between the phytoplankton population and the primary productivity value.

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J#zef MATLAK and Olga MATLAK

The natural food of carp fry (*Cyprinus carpio* L.).

Acta Hydrobiol., 18, 203-228.

Abstract - The composition of the natural food of the larvae and fry of carp in the spawning-grounds and nursery ponds of three pond complexes was investigated. The nursery ponds were treated with superphosphate and farmyard manure and sown with a mixture of cereal-papilionaceous plants. It was

found that Crustacea prevailed in the food, among them Cladocera followed by Copepoda and Chironomidae. On the third day after hatching the first food components of the fry were Crustacea and Rotatoria in one of the spawning-grounds, small Chironomidae larvae in the second, and Rotatoria, Crustacea, and Protozoa in the third. An increase in the intensity of feeding of the fry was noted during the day, a decrease being observed during the night hours. The presence or absence of food components in the guts as compared with their appearance in the environment suggested a positive or negative food selectivity of the fry. The food components which constituted the main content of the alimentary canals were well utilized by the fry.

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Kazimierz MATYSIAK

Structure of leech groups (Hirudinea) in polluted parts of the catchment area of the Rivers Bzura and Ner. 1. Field investigations.

Acta Hydrobiol., 18, 259-276.

Abstract - The distribution of leech fauna was investigated in the longitudinal profile of the polluted Rivers Bzura and Ner as well as of selected tributaries and the old riverbeds of these rivers. The leech material, consisting of 3269 specimens caught at 37 stations, was systematized using coenological methods. On the basis of the dominating and accompanying species similar stations were distinguished. The concomitant and separate occurrence of species was determined and an attempt was made to show the relation between the degree of water pollution and the occurrence of particular leech species.

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Mieczysław NOWAK and Teresa BEDNARZ

Influence of low temperatures on the survivability of selected species of algae.

Acta Hydrobiol., 18, 331-343.

Abstract - The reaction to freezing at temperatures of -6 to -196 °C of 6 Polish freshwater algae - *Chlorella pyrenoidosa*, *Scenedesmus acutus*, *S. quadricauda*, *Hormidium flaccidum*, *Stichococcus* sp., and *Anabaena variabilis* - and of two halophilous blue-green algae of foreign origin - *Oscillatoria* sp. and *Spirulina platensis* - was investigated. The greatest resistance to these processes was shown by *Scenedesmus acutus*, *Anabaena variabilis*, and *Scenedesmus quadricauda*. For freshwater algae the best results of survivability were obtained during freezing at temperatures from -6 to -8 °C using a 1% aqueous glucose solution as a preservative. Halophilous algae did not survive freezing at such temperatures. This method permits the storage of freshwater algae for 33 months. A longer preservation of samples caused a decrease in their survivability. The freezing of algae at a temperature of -196 °C and the application of a 5-10% aqueous glycerol solution gave positive results for the algae *Scenedesmus acutus*, *Anabaena variabilis*, and *Scenedesmus quadricauda*. In other species only a small percentage survived the deep freeze processes.

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Krystyna OPOROWSKA

Investigations on the content of copper in the ponds of some regions of Poland.

Acta Hydrobiol., 18, 139-152.

Abstract - Investigations carried out in 1972-1973 in 11 pond complexes in Poland showed the content of total copper in their waters to be 1-490 $\mu\text{g Cu L}^{-1}$ (ASA methods). The frequency curve applied showed that in about 60% of samples the level of 10 $\mu\text{g L}^{-1}$ was not exceeded, 30% of samples were in the range of 10-25 $\mu\text{g L}^{-1}$, and about 10% of samples exceeded a content of 25 $\mu\text{g L}^{-1}$. The average for the whole material (24 $\mu\text{g L}^{-1}$) exceeded about twice the mean level of total copper in the waters of Southern Poland. The materials obtained were used for the elaboration of a preliminary scheme of classification of pond waters depending on the state of their pollution with this constituent. The amount of copper in the pond bottom (107 samples) varied from 8 to 535 ppm Cu (mg kg^{-1} DW), reaching values over 100 ppm in about 15% of the ponds. The average (about 60 ppm) also about twice exceeded the copper level characteristic for the soils of Southern Poland (30 ppm). In a strongly polluted environment strong accumulation occurs not only of copper but of other heavy metals present in the water as well. Copper is also accumulated in fish tissues (particularly in the gills), its content approaching the threshold values permitted by the norms.

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Kazimierz PASTERNAK

The character of the substratum of the River Skawa basin and the chemism of its water and fine-grained bottom sediments.

Acta Hydrobiol., 18, 383-405.

Abstract - The work contains data on the management, morphology, and geological-soil structure of the catchment area of the River Skawa. Also discussed are the results of investigations on the properties of the river water and of fine-grained bottom sediments. Considerable space is devoted to a characterization of the dependence of the chemical composition of the water and bottom sediments on the properties of the various rocks, the morphology of the catchment area and its management, and the inflow of the pollution.

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Marcin PLIŃSKI¹ and Barbara WITEK²

Diatoms of Atlantic type heaths in the region of Białogóra and Bielawskie Błoto (Puck district).

Acta Hydrobiol., 18, 153-166.

Abstract - Investigations were carried out from May 1971 till November 1972. Samples were taken from water, bottom slime and from water pressed out from the thalli of *Sphagnum* moss. 43 species were identified from the heath near Bia*og#ra and 23 species from Bielawskie B*oto. Seasonal changes in the number of characteristic species were presented in graphic form.

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Jerzy PUNZET

Hydrological characteristic of the River Skawa and its more important tributaries.

Acta Hydrobiol., 18, 353-381.

[in Polish with English summary]

Abstract - A general characteristic of the River Skawa and its drainage area is given and the variability of the water levels and of the bottom of the riverbed analysed. Data are assembled and characteristic discharges (minimum, average, and maximum) of the River Skawa and its tributaries determined. Data concerning the water balance of the drainage area are given. The thermal conditions of the water and the course of freezing phenomena as well as movement of the riverbed rubble are also briefly discussed.

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Zdzisław SIKORA

The effect of anaerobiosis on heterotrophic cultures of the alga *Chlorella pyrenoidosa*.

Acta Hydrobiol., 18, 345-352.

Abstract - An investigation was carried out on the effect of anaerobiosis on the growth of cultures and on the ultrastructure of cells of the alga *Chlorella* grown on glucose in darkness and in poor light (the phase of photoassimilation of glucose). In the presence of light the lack of oxygen does not limit the growth of the cultures and the picture of the structure of cell organelles is almost identical with that of cells grown under aerobic conditions. In darkness the lack of oxygen inhibits the growth of cultures and results in the destruction of cell organelles, above all of mitochondria, this being brought about by the inhibition of the respiration processes of cells.

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Krzysztof SMAGOWICZ

On the zooplankton of Lake Zeribar, Western Iran.

Acta Hydrobiol., 18, 89-100.

Abstract - The description is given of 7 zooplankton samples from the littoral from July 1970. 13 species (Protozoa 2, Rotatoria 5, among them *Streptognatha wasylikii* sp. n., Cladocera 4, among them *Simocephalus mixtus* Sars, Copepoda 2, among them *Sinodiaptomus sarsi* (Rylov)) were found. This is a warm-water, montane, oligotrophic lake, the zooplankton density amounting to 9 ind. L⁻¹, biomass to 0.19 mg L⁻¹. 26 figures, 2 Tables.

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Janusz STARMACH

Electrophoretic separation of proteins of blood serum and esterases in gudgeon (*Gobio gobio* L.) living in various rivers.

Acta Hydrobiol., 18, 167-173.

Abstract - The electrophoretic separation of esterases on starch gel was carried out in four local populations of gudgeon (*Gobio gobio* L.) living in rivers greatly differing and lying in various geographical regions. It was found that the esterases of the liver and kidney of the investigated fish showed different electrophoretic patterns. They suggest variability in the structure of proteins and thus the occurrence of a system which has an influence on the physiological adaptation of individual populations to the conditions of the environment

in which they live.

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Zbigniew WAJDOWICZ

The biological characteristics of lake trout (*Salmo trutta m. lacustris* L.) from Wdzydze, released into dam reservoirs.

Acta Hydrobiol., 18, 101-125.

Abstract - In connection with the attempt at stocking several dam reservoirs with lake trout from Wdzydze in the montane reservoir at Solina at the River San dam, following increasing fishing of angling-sport character, commercial fishing of spawners was carried out in 1971-1973 with the aim of obtaining spawn for breeding purposes. From the catches, which suggested acclimatization processes in the reservoir, about 100 fish were used for biometric measurements, investigation of growth rate, age, and reproduction; moreover the conditions of natural spawning and the pressure of other fish on lake trout were studied. More rapid growth and a greater size of spawn were found as compared with the lake trout from the Wdzydze lakes. For comparison, the growth rate of lake trout released into the Przeczyce reservoir and of individuals caught in other reservoirs is given.

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Władysława WOJCIECHOWSKA

The share of algae with different dimensions in the plankton of two lakes of different trophic character in the annual cycle.

Acta Hydrobiol., 18, 127-138.

Abstract - The changes in the numbers and biomass of phytoplankton were studied during the annual cycle in two lakes - a eutrophic, pond type and a deep alpha-mesotrophic one. The phytoplankton was divided according to linear size into three fractions <20 μ m, 20-60 μ m, and >60 μ m. It was found that the lakes vary as to the share of fractions. In both lakes the algal fractions <20 μ m has a large share in the numbers of phytoplankton but the remaining two fractions have a large share in the biomass.

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Iwo WOJCIECHOWSKI

Influence of the drainage basin on the eutrophication of the a-mesotrophic Lake Piaseczno and diseutrophication of the pond Lake Bikecze .

Acta Hydrobiol., 18, 23-52.

Abstract - Sources of fertilization of two close-lying lakes were investigated. It was found that eutrophication of these two lakes can proceed through surface or ground waters flowing into the lakes from the drainage area, this inflow depending on the balance of precipitation and water evaporation. Eutrophication of Lake Piaseczno and a rapidly proceeding diseutrophication of the eutrophic Lake Bikecze was observed. Inhibition of eutrophication of this lake took place in consequence of its being surrounded by a ditch, deeper than the level of ground water, at a small distance from its shore line. This ditch catches the water with dissolved nutrients running off from the drainage basin towards the lake and, owing to the bottom gradient, carries away the waters beyond the drainage basin of the lake. The blanket peat bogs left within the circumference of ditches gradually transform into raised peat bogs as a result of the inflow of

fertilizing waters from the drainage basin being cut off. In this way the lake is supplied with yearly increasing amounts of humic acids whose particles absorb cations of mineral salts dissolved in the water, hence causing diseutrophication of the lake. The paper also presents possibilities of solutions applied in practice, aiming at preventing eutrophication and initiating diseutrophication of the lakes.

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Roman ŻUREK

The utilization of the green alga *Dictyosphaerium pulchellum* as food for certain crustaceans of fresh water plankton.

Acta Hydrobiol., 18, 53-59.

Abstract - An investigation was carried out on the suitability of the green alga *Dictyosphaerium pulchellum* as food for seven species of aquatic crustaceans: *Daphnia longispina*, *D. magna*, *Simocephalus vetulus*, *Scapholeberis mucronata* (Cladocera, Phyllozoa), *Notodroma monacha* (Ostracoda), *Macrocyclus fuscus* (Cyclopoida, Copepoda), *Diaptomus* sp. (Calanoida, Copepoda). It was found that the largest daily food ration of *D. magna* was almost 16% of its body weight. The nutritive value of this green alga evaluated on the basis of the assimilation index (C_a/W) is very low, this index having values lower than 1%.

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