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Teresa BEDNARZ

The effect of 2,4-D acid on green and blue-green algae in unialgal and mixed cultures.

Acta Hydrobiol., 23, 173-182.

Abstract - Low concentrations of 2,4-D usually stimulated the growth of algae. Higher concentrations inhibited or stopped the growth. Chlorococcal green algae were more sensitive than filamentous green and blue-green algae. Two or four sensitive and tolerant species were grown together in mixed cultures treated with 2,4-D. Tolerant species decreased the toxicity of the herbicide to sensitive algae. The protective effect did not appear when *Scenedesmus acutus* was used as the tolerant species.

Key words: green algae, blue-green algae, sensibility to 2,4-D.

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The effect of pesticides on the growth of green and blue-green algae cultures.

Acta Hydrobiol., 23, 155-172.

Abstract - The sensibility of 9 green algae: *Chlorella pyrenoidosa*, *C. mucosa*, *Ankistrodesmus minutissimus*, *Chlorococcum* sp., *Dictyosphaerium pulchellum*, *Scenedesmus acutus*, *S. quadricauda*, *Hormidium flaccidum*, and *Stichococcus* sp., and 3 blue-green algae: *Anabaena variabilis*, *Spirulina platensis*, and *Oscillatoria* sp. to 9 pesticides: TCA, 2,4-D acid, monuron, diuron, simazine, atrazine, p-naphtoquinone, DDT, and methoxychlor was determined on the basis of growth kinetics and the criterion of LC₅₀ (50% growth inhibition). The LC₅₀ values of 0.15-24 $\mu\text{g dm}^{-3}$ denote the species sensitive to 2,4-D and urea- and triazine-derivative herbicides; the values of 40-50 $\mu\text{g dm}^{-3}$ characterize the species sensitive to p-naphtoquinone while those within 0.3-0.9 mg dm^{-3} determine the species sensitive to TCA, DDT and methoxychlor.

Key words: green algae, blue-green algae, sensibility to pesticides.

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Teresa BEDNARZ

The evaluation of the adaptation ability of some green algae to 2,4-D acid, monuron, and diuron admixtures, under laboratory conditions.

Acta Hydrobiol., 23, 251-257.

Abstract - The toxic action of monuron, diuron, simazine, atrazine and 2,4-D upon *Ankistrodesmus minutissimus*, *Chlorella pyrenoidosa*, *Dictyosphaerium pulchellum*, *Scenedesmus acutus*, *S. quadricauda*, and *Hormidium flaccidum* was irreversible even if the algae were transferred to media free of these substances. Increased tolerance of monuron and 2,4-D was obtained in *Dictyosphaerium pulchellum* while in case of *Chlorella pyrenoidosa* the tolerance of these two compounds was not increased. Both species of

algae did not develop an increased tolerance of diuron.

Key words: green-algae, adaptation to pesticides: monuron, diuron, 2,4-D acid.

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Bazyli CZECZUGA

Carotenoids in fish. 31. Occurrence of alpha-doradexanthin in fish in Poland.

Acta Hydrobiol., 23, 77-84.

Abstract - By means of adsorption column and thin layer chromatography the author investigated the occurrence of alpha-doradexanthin in individuals of 45 fish species living in Polish salt and fresh waters.

Key words: alpha-doradexanthin in fish, biosynthesis of astaxanthin in fish.

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Anna GÓLCZ

Phyto- and zooplankton of the lower sector of the River Odra in the years 1974 to 1977.

Acta Hydrobiol., 23, 227-241.

Abstract - Investigations carried out in the years 1974 to 1975 on net plankton from four stations on the River Odra were based on the method of determination of exact quantitative relations between particular components; they permitted to find permanent dominance of phytoplankton over zooplankton, diatoms over other algae, dominance of rotifers in the zooplankton, season variability in quantitative development of organisms, quantitative competition of species *Asterionella formosa* Hass., and *Melosira granulata* (Ehr.), Ralfs, and very similar values of the saprobic index.

Key words: river ecology, phytoplankton, zooplankton, net plankton.

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Eugenia GRYGIEREK and Blandyna E. WASILEWSKA

Development of zooplankton and bottom fauna in carp ponds filled at different dates before stocking, or treated with foschlor.

Acta Hydrobiol., 23, 269-280.

Abstract - Invertebrate communities in ponds filled at 20-day intervals and in ponds treated with foschlor were compared. In all ponds the developmental trends in invertebrate communities were very similar. Since at the period of stocking the investigated groups of ponds, the invertebrate communities were at different stages of development, different results of fish production were obtained. In ponds filled 30 days before stocking the fish production was significantly lower. Invertebrate communities and fish production in ponds filled 10 days before stocking and in those treated with foschlor at that date, did not differ significantly. The utmost care in using this poison is recommended.

Key words: water management in ponds, food of cyprinid fish (zooplankton, bottom fauna), poisoning of ponds biocoenosis, organophosphate pesticides.

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Krzysztof JOP

Ecology of the forest stream Lane Błoto in the Niepołomice Forest. 1. Chemism of water and bottom sediments and its changes under the influence of industrial pollution.

Acta Hydrobiol., 23, 107-123.

Abstract - The chemical composition of water and bottom sediments from five stations located on the stream Lane Błoto was investigated in the year 1977-1978 at monthly intervals. A marked accumulation of all elements supplied into the stream with rainfalls was found in the stream environment. Physico-chemical processes favour to precipitation of basic macroelements and heavy metals into the bottom sediment.

Key words: chemistry of forest stream, pollution, heavy metals, balance of elements.

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Krzysztof JOP

Ecology of the forest stream Lane Błoto in the Niepołomice Forest. 2. Community structure, life cycles, and production of Ephemeroptera.

Acta Hydrobiol., 23, 125-141.

Abstract - The Ephemeroptera fauna in the stream Lane Błoto in the Niepołomice Forest has been studied by means of twice a month samplings at 5 stations from March 1978 to March 1979. In all, about 50,000 larvae have been collected comprising 19 species. The data concerning structure and dynamics of mayfly community, life cycles, and production of the dominant species have been analysed. Mayfly community at all stations has a low diversity index value, reflecting the dominance of two species: *Beatis vernus* and *Leptophlebia vespertina*. The life history of 7 most abundant species was investigated. All of the species were univoltine. Annual production of 5 of those species was $7.465 \text{ g m}^{-2} \text{ year}^{-1}$.

Key words: Ephemeroptera, forest stream, species diversity, life cycles, biomass, production.

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Krystyna KAHL and Alicja KONOPACKA

Oligochaeta inhabiting the colonies of the sponge *Spongilla lacustris* (L.) in the River Gać.

Acta Hydrobiol., 23, 243-249.

Abstract - Investigations on the specific composition and quantity of oligochaetes inhabiting the colonies of the sponge *Spongilla lacustris* (L.) were carried out in 1979. The material was collected at the mouth of the River Gać, left tributary of the Pilica river, from February to November in monthly intervals. The colonies of *S. lacustris* were inhabited mainly by species from family Naididae. Twice a year a distinct increase of the occurrence of Oligochaeta in sponges was observed: in spring (June) and autumn (November).

Key words: Oligochaeta, Porifera, *Spongilla lacustris*, oligochaetes in sponges.

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K. KAPUR

The utilization of some organic wastes for fish culture.

Acta Hydrobiol., 23, 95-101.

Abstract - Studies presented here clearly indicate the usefulness of organic wastes such as cow, poultry, piggery, duckery, goat and sheep excreta in fish culture, by enhancement of the production of fish food organisms as well as cutting down the expenditure on costly feed and fertilizers. The relative efficiencies of various wastes and some of their biochemical constituents have been calculated with regard to their effects on the plankton population, gross primary productivity, and chlorophyll contents of treated waters.

Key words: organic pollution, utilization of wastes, fish culture.

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Barbara KAWECKA

Biology and ecology of snow algae. 2. Formation of aplanospores in *Chlamydomonas nivalis* (Bauer) Wille (Chlorophyta, Volvocales).

Acta Hydrobiol., 23, 211-215.

Abstract - In *Chlamydomonas nivalis* aplanospores are formed by cells with protoplasts elongated in a conical papilla at the apical pole, and the cell walls are detached from the protoplasts. In the initial phase, papilla, and with it the basic part of flagellar apparatus are formed from the protoplast, and the cell loses its motility. Later a time, the detached cell wall is ruptured and aplanospore is released. Aplanospores are resistant to long periods without light and to freezing.

Key words: snow algae, vegetative reproduction of *Chlamydomonas nivalis*, aplanospores.

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Barbara KAWECKA

Sessile algae in European mountain streams. 2. Taxonomy and autecology.

Acta Hydrobiol., 23, 17-46.

Abstract - In the streams of the Kebnekaise Mts (Swedish Lapland), the Tatra Mts (Poland), the Alps (Austria), the Fagaras (Romania), and the Rila Mts (Bulgaria), 380 taxa of algae were found. Among them, diatoms formed the dominant group, 77.2-94.3% of total flora. In the group of diatoms great morphological variations were observed. In the populations of a number of species, apart from typical cells, cells whose dimensions differ from the known diagnosis were found. Upon examining the autecological characteristics of 48 species and varieties of algae it has been concluded that most of them possess a wide ability of adaptation to various life conditions.

Key words: phytogeography, algae autecology, diatoms taxonomy.

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Henryk KLIMOWICZ

The plankton of the River Vistula in the region of Warsaw in the years 1977-1979..

Abstract - During two annual cycles the plankton of the River Vistula was studied in a 59 km sector in the Warsaw region. Most species occurred both in warm and cold seasons of the year. Of the 280 taxa encountered in the river, 246 occur in the Sládeček saprobic system (1973). The mean saprobity indicators were 1.9 for the phytoplankton and 2.1 for the zooplankton. According to the predominated species the water of the investigated sector of the River Vistula can be classified into the 2nd purity class according to Polish norms. Municipal wastes of Warsaw do not significantly affect the plankton of the examined river sector.

Key words: potamology, river plankton, saprobiological indication.

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Witold KOWALIK¹ and Eugeniusz BIESIADKA²

Occurrence of water mites (Hydracarina) in the River Wieprz polluted with domestic-industry sewage.

Acta Hydrobiol., 23, 331-348.

Abstract - The occurrence of Hydracarina was investigated in the River Wieprz polluted with domestic-industry sewage. An essay to determine the importance of some physico-chemical components of the water for the fauna of Hydracarina was undertaken. It was found that there was an evident, negative correlation between the abundance of water mites and the number of their species and the degree of water pollution. The possibility of using water mites as indicators of the level of water pollution was estimated.

Key words: river pollution, Hydracarina, abundance, limiting factors, indicators of saprobity.

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Andrzej KOWNACKI

Genus *Syndiamesa* Kieffer 1918 (Diamesinae, Chironomidae, Diptera) and description of two species: *Syndiamesa serratosioi* sp. n. and *Syndiamesa vaillanti* sp. n..

Acta Hydrobiol., 23, 381-398.

Abstract - Taxonomic revision of genera *Syndiamesa* Kieffer in the sense of Edwards (1929) are presented. *Parapothastia* Serra-Tosio is shown to be a junior synonym. Males of two new species *Syndiamesa serratosioi* and *Syndiamesa vaillanti* are described. Key to males of the *Syndiamesa* Kieffer is given.

Key words: taxonomy, Chironomidae.

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Maria LEWKOWICZ and Stanisław LEWKOWICZ

Efficiency of zooplankton consumption and production in ponds with large loads of allochthonous organic matter.

Acta Hydrobiol., 23, 297-317.

Abstract - Increased amount of pellets introduced into the ponds with an increasing level of intensive carp culture stimulated the phytoplankton production mostly owing to the greater number of nutrient contained in pellets. On the other hand, greater water turbidity brought about by increased numbers of fish limited the phytoplankton production. Both larger amounts of pellets and larger number of fish brought about an increase in biomass and zooplankton production, and also in the percentage share of zooplankton in the planktonic respiration. In the pond with the largest amount of the applied pellets the consumption of organic matter by the zooplankton was twice as large as the phytoplankton production.

Key words: intensive carp culture, primary production, zooplankton biomass, production, ecological efficiencies, plankton respiration.

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Stanisław ŁAKOTA, Anna RASZKA and Irena KUPCZAK

Toxic effect of cartap, carbaryl, and propoxur on some aquatic organisms.

Acta Hydrobiol., 23, 183-190.

Abstract - The toxic effect of three carbamate insecticides: cartap, propoxur, and carbaryl was investigated in relation to the following aquatic organisms: *Salmo trutta* m. *fario* L., *Cyprinus carpio* L., *Lebistes reticulatus* Peters, *Aedes aegypti* L., and *Daphnia magna* Straus. Concentration causing 50 per cent mortality of the investigated population after 96 hours of exposure was the adopted measure of toxic influence, and was expressed as LC₅₀ in mg S.a. dm⁻³. It was found that among the investigated compounds cartap was the most dangerous insecticide for the aquatic environment, whereas propoxur was the least dangerous.

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Paolo MADONI and Pier F. GHETTI

Ciliated Protozoa and water quality in the Torrente Stirone (Northern Italy).

Acta Hydrobiol., 23, 143-154.

Abstract - In this work it is intended to establish a biological categorization of the Torrente Stirone (Northern Italy) by using samples of ciliated Protozoa collected at 14 locations over the course of one year (1978). Furthermore, an examination is made of the suitability of protozoans in the saprobiological analysis as a means of obtaining an evaluation of the biological quality of the water course comparable with the results obtained from chemical data.

Key words: ciliated Protozoa, stream, saprobiological evaluation.

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Stefan MIELEWCZYK

Evaluation of occurrence, density, and biomass of Ephemeroptera in the drainage channel near the village of Turew (Region of Poznań).

Acta Hydrobiol., 23, 363-373.

Abstract - Five species of mayflies, among which *Baetis vernus* markedly dominated, were found in the

channel flowing across agricultural territories. Variations in larvae density and biomass of these insects were presented in the investigation period (May to October) for two sectors of the channel: the meadow and the wooded one, with reference to their value for macrophyte communities, and also for the whole channel. The mean density in the whole sector was 502 ind. m⁻², and the mean biomass 658 mg m⁻². Values obtained for macrophyte communities were many times higher. Remarks on the development of *Baetis vernus* were also made.

Key words: drainage channel.

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Maria OLECHOWSKA

Life cycle of *Rhithrogena loyolaea* (Navás) (Ephemeroptera, Heptageniidae) in the Stream Strżyski in the Tatra Mts.

Acta Hydrobiol., 23, 69-76.

Abstract - Investigations of the life cycle of *Rhithrogena loyolaea* (Navás) were carried out in the Stream Strżyski in the years 1975-1976 and 1978-1979. This species has a semivoltine life cycle. At least a part of the eggs undergoes a many months long period of quiescence. In favourable conditions a small part of the population probably carries out a univoltine life cycle.

Key words: entomology, mayflies, life cycle.

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Izabela SKOCZEŃ

Influence of urban run-off on the water pollution of the Vistula in the region of Cracow agglomeration.

Acta Hydrobiol., 23, 195-210.

Abstract - Influence of urban run-off on the water pollution of the Vistula in the region of Cracow agglomeration (in 69.1 km of the river course) was investigated on the example of pollution expressed in terms of BOD₅ index. The quality of run-off pollution was determined against the background of total pollution of the Vistula in annual scale, covering the period 1971 to 1976. The participation of run-off pollution was found to range from 30 to 50 per cent of the total pollution of the Vistula in the investigated years. Lowest pollutant loads, equaling about 7 thousand tons year⁻¹ were found in 1973, a year poor in precipitations. Highest pollutant loads of about 19 thousand tons year⁻¹ were found in 1974 and 1975 respectively, years rich in precipitations.

Key words: surface water protection, urban run-off, pollution.

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Ryszard SOWA

Taxonomy and ecology of *Ecdyonurus ujhelyii* sp. n. (Ephemeroptera, Heptageniidae) from the tributaries of Lake Balaton.

Acta Hydrobiol., 23, 375-380.

Abstract - The paper describes the winged stages (except for female subimago), nymphs, and eggs of a new species *Ecdyonurus ujhelyii* sp. n., commonly occurring in the tributaries of Lake Balaton in Hungary. The new species belongs to the *lateralis* (Curt.) group and differs from the species known so far by body coloration, shape of penis (winged forms), shape of gills and mouthparts (nymphs), and shape of attachment structures (eggs). Probably the species develops one generation in the year, with adults appearing in late spring and in summer.

Key words: mayflies, taxonomy, life cycles, heptageniids.

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Anil K. SRIVASTAVA and A.B. GUPTA

The effect of sodium salt of 2,4-D on carbohydrate metabolism in the Indian catfish *Heteropneustes fossilis* (Bloch.).

Acta Hydrobiol., 23, 259-268.

Abstract - Median lethal concentration of sodium salt 2,4-D for *Heteropneustes fossilis* were estimated at 24, 48, 72, and 96 h. The estimated presumably harmless (safe) concentration was 520 mg dm⁻³. The fish elicited muscle glycogenolysis and hepatic glycogenesis, hyperglycemia, hyperlactacidemia and enhanced levels of pyruvate at 3, 6, 12, 48, and 96 h post exposure to a high-lethal concentration (1560 mg dm⁻³; 0.8 of the 96 h LC₅₀ value) of the herbicide.

Key words: herbicide, Indian catfish, carbohydrate metabolism.

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Ryszard S. VOLSKIS

Method of complex research on species throughout the distribution area: Prospects of its application in the study of freshwater fish.

Acta Hydrobiol., 23, 3-16.

Abstract - The author discusses the programming of complex researches of species in their whole areas occurrence. Three sub-programs are discussed: "Species monitoring", "Population (structure and abundance dynamics of species populations)", and "Dominating species in the ecological systems". The realization of these programs for the whole areas of freshwater fish distribution in Europe will make it possible to present directions for the preservation and rational utilization of the - swiftly diminishing in numbers - freshwater fresh species.

Key words: methodology, freshwater fishes, complex researches of species.

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Krzysztof WILCKOWSKI

Analysis of Ciliata from polluted sector of the River Drwinka on the basis of binary data.

Acta Hydrobiol., 23, 319-329.

Abstract - In the course of two seasons (1978 and 1979) 68 samples were collected in the polluted sector of the river Drwinka. The fauna of Ciliata was found to be distinctly differentiated in a linear way, in agreement with the pollution gradient. On the basis of the differentiation three zones of river purity were distinguished. An attempt has been made to determine quantitatively the pollution degree basing on the indicator values of Ciliata.

Key words: ciliates, indicator organisms, river pollution, saprobiology, self-purification.

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Krzysztof WIECKOWSKI

Small-scale distribution of psammophilic ciliates.

Acta Hydrobiol., 23, 217-226.

Abstract - Twenty-seven samples were collected along the homogeneous sandy shore of a brackish-water lake. Values of dissimilarity between all samples were calculated on the basis of qualitative and quantitative occurrences of psammophilic ciliates. Several different dissimilarity measures were used. The results presented by means of cluster analysis (UPGMA) show that psammophilic ciliates are very contagiously distributed in a small scale.

Key words: ciliates, cluster analysis, small-scale distribution, heterogeneity, psammon.

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Sławomir WIELGOSZ

The structure of benthofauna aggregations in the lotic environment of the River Wel, Mazurian Lake District.

Acta Hydrobiol., 23, 349-361.

Abstract - The structure of zoobenthos aggregations in the longitudinal profile of the river was investigated, and 63 taxa were identified. The quantitative domination of Chironomidae and Oligochaeta was noticeable. The system of indicatory taxa made it possible to classify the stations in the epipotammon zone. On the basis of variability indices (D and d) the degree of water degradation was evaluated. Fluctuations in numbers and biomass of the benthofauna were described. Young cohorts of *Glyptotendipes* spp. drifting from the lake had a marked influence on the density of zoobenthos in the river.

Key words: river ecology, zoobenthos, aggregation structure, index of variability.

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The embryonal and post-embryonal development of the Danube salmon *Hucho hucho* (L.) (Pisces: Salmonidae).

Acta Hydrobiol., 23, 85-94.

Abstract - The development of the Danube salmon *Hucho hucho* (L.) from the River Dunajec catchment area from egg impregnation to the stage of the 2-year-old fish was studied. The embryonal stage lasted 232

D⁰, and the larval stage from hatching to the complete resorption of the vitelline sac about 309 D⁰. The development of the investigated species is similar to that of other species of the family Salmonidae, with some insignificant differences appearing in more advanced stages of the development process.

Key words: fishes, salmonids, Danube salmon development.

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Jadwiga ZYGMUNTOWA

Free amino acids in cultures of various algae species.

Acta Hydrobiol., 23, 2833-196.

Abstract - In cultures of unialgal species and of algae with bacterium the concentration and composition of free amino acids dissolved in the medium were investigated. The accumulation of these compounds in the phase of the logarithmic growth of cell number, a decreased content of amino acids in the stationary phase, and a repeated accumulation in the death phase were observed. The amount of amino acids released to the medium in different growth stages were characteristic of the given alga species. The addition of bacterium *Escherichia coli* changed the proportion of amino acids in the media of *Dictyosphaerium pulchellum* and *Diatoma elongatum*, but the concentration of the compounds was markedly increased in the diatom culture only.

Key words: culture of algae, amino acids, extracellular compounds.

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