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PREFACE

The set of 10 papers in this volume – on rivers and reservoirs – presents the preliminary and chosen results from the first years of lasting 5 years (1981–1985) research within the problem "Ecological basis for the management of rivers and reservoirs". It is well known that water for the communal and industrial use is taken mostly from rivers and reservoirs, whilst the hydrobiological research has been done mostly on lakes. The necessity for more work on rivers and reservoirs has been recently strongly stressed, among others at the International Limnological Congresses. Quite recently the interest in river-reservoir research seems to have increased as proved, among other things, by the presented volume.

The papers in the volume deal with various aspects of river-reservoir ecosystem functioning.

As far as rivers are concerned, three papers (by K o w a l c z e w s k i and co-authors) analyse detailed, based on frequent (weekly) data – dynamics of most important environmental factors as well as biotic components of seston. Positive correlation of phytoplankton (the biomass of which reached several scores $mg \cdot l^{-1}$) and chlorophyll concentration with temperature and light only has been found.

Many fluctuations of phytoplankton biomass as well as gross primary production and assimilation numbers could not be explained by the multiple factors examined. Day-to-day and also every few hours differences of phytoplankton and chlorophyll concentrations were great and not explainable with factors examined.

Phytoplankton species have been determined in details (paper by S i m m). *Stephanodiscus hantzschii* being dominant in spring and autumn and *Cyclotella meneghiniana* in summer; green algae (mostly 16 species of *Scenedesmus*) were more numerous in summer than in other seasons, but far from being dominant in biomass – reaching only about 5 $mg \cdot l^{-1}$ wet weight.

Phytoplankton collected in the daytime was more abundant and more productive (under laboratory conditions) than that collected at night.

Phytoplankton reached at times up to 93% of seston dry weight but on the average in summer 1982 – 22%, in 1983 – 14% (whilst zooplankton only 0.1–2%) and organic matter on the average – 30%.

Amounts of seston, particulate and dissolved organic carbon, chlorophyll and phosphate phosphorus transported by the Vistula river have been estimated (K o w a l c z e w s k i and co-authors).

In all rivers examined – both big ones like Vistula, and more than 70 stations on small ones (paper by G l i w i c z and co-authors and W i ś n i e w s k i and co-authors) nannoplankton was strongly dominant. This can be, to some extent, the result of negligible pressure of zooplankton on phytoplankton due to small biomass of the former.

In dammed-up parts of streams (paper by W i ś n i e w s k i and co-authors) with the increasing water retention time (which ranged between 2 and 50 hours), the concentration of chlorophyll in summer was growing (up to about 50 $mg \cdot l^{-1}$) whilst mineral seston, P tot. and $PO_4 - P$ was dropping. In zooplankton Infusoria were quite abundant (up to 8000 $ind. \cdot l^{-1}$) whilst Rotatoria (up to 60 $ind. \cdot l^{-1}$) and Crustacea (up to 8 $ind. \cdot l^{-1}$) were scarce. The benthos biomass was increasing towards the dam (maximal depth did not exceed 4 m).

Three papers (by D u s o g e, P r e j s, and O l s z e w s k i with co-authors) deal with relatively big (about 30 km^2) lowland reservoir – Lake Zegrzyńskie – a reservoir of drinking water for Warsaw and also an important recreational area. The reservoir is fed by two rivers, one of them strongly polluted. Only few papers had been published on this important reservoir up to now. Actually collective and complex research has been carried out for several years, and the papers mentioned above present just preliminary data from this research. Phytoplankton was abundant up to several scores $mg \cdot l^{-1}$ in the more polluted river Bug and also in the reservoir. Zooplankton was moderately abundant – up to 1.7 $mg \cdot l^{-1}$ in parts with practically standing water. The reservoir is very differentiated, having broad and shallow, only 3–4 m deep, middle basin and narrow, about 8 km long (deepening to about 9 m at the dam) lower part. Both phytoplankton and all components (Ciliata, Rotatoria and Copepoda) of zooplankton are accordingly differentiated, especially in the middle basin. Baccilariophyta (mainly *Cyclotella meneghiniana*) are dominant within phytoplankton, and Rotatioria (mainly *Keratella cochlearis* and *Trichocerca pusilla*) – within zooplankton. Benthos biomass is unusually high – in middle and lower, muddy parts of the reservoir – up to more than 200 $g \cdot m^{-1}$ wet weight (without Mollusca), *Chironomus plumosus, Glyptotendipes gripekoveni, Limnodrillus hoffmeisteri* and *Potamothrix moldavensis* being dominant. Loads of nutrients (and their seasonal changes) from non-point sources in mostly agricultural drainage basin to small lowland river near Warsaw, representative for this part of the country, have also been measured. High concentration – up to 2.4 $mg \cdot l^{-1}$ P tot. and almost 20 $mg \cdot l^{-1}$ N tot. have been found (paper by J a k u b o w s k a and S u c h e c k a).

Apart from this preliminary data, studies on most of the mentioned, and other objects, like reservoirs on lower and upper Vistula, and also its tributaries – Dunajec and Pilica as well as on adjacent to reservoirs parts of these rivers are being carried out and should be ready for printing at the beginning of 1986.

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