

9th Conference of the International Bryozoological Association,
1992, Swansea.

THE ROLE OF BRYOZOAN AS BIOFILTER
IN COOLING RESERVOIR

T.V.Mikhaevich

Institute of Zoology Academy of Science Belarus
Minsk

Thermoelectric power stations give use to warm-water ecosystems. Higher temperatures and eutrophication in such ecosystems result in marked increases in the biomass of warm-water animals and to partial substitution of cold-water animals. In the Kanev, Chizhov, Uchin and Ivanovsk reservoirs, which act as cooling reservoirs for the Beriosa and Zmiyev thermoelectric power stations and the Chernobyl atomic power station, mass development of bryozoans has been reported. Bryozoan biomass has reached several Kg/m².

Eutrophication of water bodies results in bloom of blue-green algae, often toxic, and deterioration of water quality. Bryozoan are potentially important as consumers of suspended organic matter, and thus as natural biofilters in man-made ecosystems.

In the cooling reservoir of the Beriosa Power Station, the lack of natural biological winter allows a period of 10 months (March-December) for vegetative growth in Bryozoa. Growth analysis of a bryozoan at 15-35°C (typical for a cooling reservoir) with seston food at 8.8-70 mg/dwl, showed maximal growth rate at 30-33°C for food levels of 8.8-17.5 mg/l, while with food at 70 mg/l growth rate was maximal at 23-27°C.

Highest growth rate was observed at 30°C with 35 mg/l mean seston.

Trough high colonial growth rate the bryozoan PLUMATELLA FUNGOSA achieves significant biomass on fish rearing cages and iron pontons, feeding on the blue-green algae which dominate the reservoir's, phytoplankton and acting as a natural biological filter.

Faecal pellet production was equivalent to 92520 kcal/m² in spring, 140850 kcal/m² in summer, 48276 kcal/m² in autumn and 2016 kcal/m² in winter.

Assimilation rate was low at 6%. At high temperatures suspension passes through the bryozoans gut without complete digestion, and faecal pellets are produced at the rate of 1 zooid⁻¹ hr⁻¹, contributing material directly to detrital food chains.