THE EFFECT OF PHYSICO-CHEMICAL PARAMETERS AND NUTRIENTS ON FISH GROWTH IN NARTA LAGOON, ALBANIA

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Abstract

The lagoons are one of the most productive ecosystems in the world. They are very important economically in fishing, ecological tourism, and agriculture and for scientific researches. The quality of lagoon water affects the species composition, their abundance and productivity of water and the human health as well because of the food chain. Water quality is defined in terms of the chemical, physical and biological contents of the water. Important physical and chemical parameters influencing the aquatic environment are temperature, pH, salinity, dissolved oxygen and redox potential. Others are total suspended and dissolved solids, nutrients, heavy metal contaminants, etc. These parameters are the limiting factors for the survival of aquatic organisms (flora and fauna). In this context, a study was conducted to evaluate how the physico-chemical parameters (pH, temperature T, dissolved oxygen DO, redox potential E, total suspended solids TSS, total dissolved solids TDS, salinity etc) of water and nutrients (N-NO2-, N-NO3- N-NH4+ and P-PO43-) affects the growth of fish in Narta Lagoon. This Lagoon, situated in the southern part of Albania, is one of the most important aquatic ecosystems due to its ecological values and fish farms.

Water samples were collected in five sampling points as follows: four samples within the lagoon and the fifth one in the channel that connect the lagoon with the sea. The physical-chemical parameters of water were determined immediately after the samples were taken to the laboratory. Conductivity, salinity and TDS were determined with a conduct meter (Model DDSJ 308A). pH and temperature, were measured with a pH meter (Model pHS-3BW). TSS (total suspended mater) was determined by pouring one liter volume of water through a pre-weighed filter of 0.42 μm pore size, then weighing the filter again after drying it at 105°C for 2 hours to remove all water. The concentration of dissolved oxygen (DO) was determined using Winkler method. Nutrients (nitrites, nitrates, ammonium and phosphates) contents were determined by spectrophotometric methods.

In general, physico-chemical parameters including dissolved oxygen (DO), resulted in normal levels. High concentration of TSS compared to European Directives for ciprinide waters, might have negative effects in photosynthetic processes and the production of dissolved oxygen in water.

Based on the results of inorganic nutrients content in water, it is shown that Narta Lagoon is characterized by generally oligotrophic conditions and is suitable for fish growth.

***Key words**: Narta lagoon, Physico-chemical parameters, Nutrients, Fish growth, Food chain.*