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INFLUENCE OF CHANNEL TRAFFIC AND KOYCEGİZ LAKE ON THE WATER QUALITY OF DALYAN CHANNEL NETWORK

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Abstract

Köyceğiz-Dalyan Lagoon is situated in the southwestern region of Turkey. The area between the Köyceğiz Lake and the sea is covered with four small lakes and numerous canals. The Dalyan Channel network connects lake to the Mediterranean Sea is one of the most important reproduction areas for Mediterranean Sea turtles. The objectives of the present study are to evaluate the influence of channel traffic and Köyceğiz Lake on the water quality of Dalyan Channel by evaluating historical water quality data from 2007 to 2011 at three monitoring sites; two located at Dalyan Channel and one in Köyceğiz Lake. Specific objectives are to perform trend analysis for; (i) concentration trends; (ii) load estimation (mass of pollutants delivered); (iii) TN:TP Ratio (trophic status trends); (iv) TSI (eutrophication trends); and (v) the WQI (environmental quality trends) for Köyceğiz Lake. Results showed that TSI (trophic state index) values of both SD (secchi depth) and TP (total phosphate) remained within the range of eutrophic category for the lake from 2007 to 2011. The calculated TN/TP ratios suggest that Köyceğiz Lake can be considered to be P limited with a few exceptions. The lake has poor water quality index (POOR WQI) between 2007 and 2011. This is mainly due to land-based fish farm located on Yuvarlakçay Creek which born within the Köyceğiz-Dalyan SEPA and drains directly into Köyceğiz Lake. In addition to change in water quality class of the creek before and after fish farming, TP concentration incidence also increased after fish farming from 2008 to 2011. This study also revealed that activities like touristic boat trips performed in Dalyan Channel didn't significantly affect the water quality class of channel in terms of NO_2–N, TP concentrations and the number of total coliforms.

Key words: eutrophication, trophic state index, TN:TP ratio, water quality index, water quality