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RATIO OF INORGANIC NITROGEN TO PHOSPHORUS IN THE GULLUK LAGOON (MUGLA-TURKEY): NITROGEN MANAGEMENT STRATEGY

Lagoon systems have particular ecological, morphological and hydrodynamic characteristics and act like transitional zones between inland and open sea waters. Güllük Lagoon has an area of 2500 decares with a depth of 0.5–5.0 m and is connected to Güllük Bay by a channel. The various materials in the Güllük Lagoon are sources of pollution. These can be summarized as; loads originating from domestic waste water, pollution caused by tourism activities, loads brought by the Sari Stream, loads originating aquacultures activities, pollutant loads originating from Güllük Port activities and mining transferred from Güllük Port to the open sea.

Some physicochemical parameters of the water in 8 strategic points of the Güllük lagoon were monitored for 12 months (June 2011–May 2012). All water samples were collected with Niskin oceanographic bottles. Physical chemical parameters of water samples were measured by standard methods in Environmental Studies Laboratory of Mugla Sıtkı Koçman University. These methods were applied to the Turkish Accreditation Agency (TURKAK) for Environmental Studies Laboratory of Mugla Sıtkı Koçman University.

The results show that the water quality in Güllük lagoon has three different characters. They are channels region, lake region and sea region. This situation is more complex when freshwater and seawater have different limiting nutrients of the Güllük lagoon. The most common case involves the mixing of P-limited freshwater water with N-limited seawater. In estuaries that are influenced by P-limited riverine water, the low-salinity regions are normally P-limited, while the high-salinity regions, as well as the adjacent coasts, and are commonly N-limited. However, these parameters are more complex in Güllük Lagoon. Therefore, water quality monitoring and management of the lagoon is quite difficult.

There were important differences in the annual variability of the physicochemical parameters between the strategic points of lagoon, reflecting the importance of human-induced pressures and the heterogeneity of these environments. Land-sea integration was highlighted for managing land-based nonpoint source nutrient loads entering the Güllük lagoon.

Water quality variability was mainly driven by seasonal processes such as sea transport and aquaculture as well as by regional differences such as land use. Extreme events, such as tourism caused large and sustained increases in water quality variables. Given the variable climate in the Güllük Bay, long-term monitoring of marine water quality will be essential to detect future changes due to improved catchment management.

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СООТНОШЕНИЕ НЕОРГАНИЧЕСКОГО АЗОТА К ФОСФОРУ В ЛАГУНЕ ГУЛЛУК БЭЙ (МУГЛА, ТУРЦИЯ): СТРАТЕГИЯ УПРАВЛЕНИЯ СОДЕРЖАНИЕМ АЗОТА

Изучались физико-химические параметры воды в период с июня 2011 года по май 2012 года. Была отмечена значительная изменчивость параметров между озерным, морским регионами и каналами, отражающая антропогенное давление и неоднородность этих сред. В устьях рек, которые находятся под воздействием фосфор-лимитированной речной воды, отмечено, что прибрежные регионы также имеют нормальное содержание фосфора, в то время как регионы с высокой степенью засоления почв характеризуются лимитированным содержанием азота и в прибрежной части.