ASSESSMENT OF MARINE WATER QUALITY: EFFECT OF AQUACULTURE AND DOMESTIC SEWAGE DISCHARGE

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PROCENA KVALITETA MORSKE VODE: EFEKTI AKVAKULTURE I OTPADNIH VODA IZ DOMAĆINSTVA

Apstrakt

Cilj ovog istraživanja je bio procena uticaja morskih ribnjaka i otpadnih voda iz domaćinstva na kvalitet vode na obali Rize lociranoj na jugoistoku Crnog Mora. U tu svrhu je voda uzorkovana mesečno sa 5 tačaka oko kaveza sa ribama, 2 tačke sa mesta izliva otpadnih voda i jedne referentne tačke bez efekta kaveza i otpadnih voda, od juna 2007 do aprila 2009. Merenja su izvođena standardnim metodama. Podaci su prikazani kao minimum i maksimum sledećim redom: obalske tačke, kavezi sa ribama i referentna tačka. Dobijeni su sledeći rezultati: za temperaturu vode 7.83-27.51, 7.79-27.41, 7.72-27.00 °C; za rastvoreni kiseonik 7.60-11.00, 7.00-11.2, 7.80-11.60 mg/L; za pH 8.04-8.43, 7.93-8.38, 7.62-8.33; za salinitet 61-18.60, 16.77-19.03, 16.78-18.97 ppt; za silikate 0.29-14.64, 0.25-16.43, 0.25-11.70µM; za ortofosfate 0.10-1.71, 0.09-1.50, 0.10-1.95 µM; za ukupni fosfor 0.24-3.73, 0.12-3.30, 0.10-3.52 µM; za ukupne suspendovane materije 1.70-26.40, 1.00-20.40, 1.00-11,80mg/L; za hlorofil-a 0.46-3.26, ND-3.25, 0.10-4.99 µg/L, gore navedenim redom. Na osnovu dobijenih rezultata nisu konstatovani značajni efekti kaveznih sistema na kvalitet vode. Na osnovu vrednosti pomenutih parametara u ovom istraživanju manje je negativnih efekata na kvalitet vode koji potiču od delatnosti uzgoja riba u odnosu na otpadne vode iz domaćinstva.

Ključne reči: marinska akvakultura, uticaj na životnu sredinu, Jugoistočno Crno more, Rize

Abstract

The aim of this study was to determine influence of marine fish farm and sewage on water quality in Rize coast located at southeastern Black Sea. For this purpose, water samples were taken monthly from 5 points around fish cages, 2 points effected sewage

areas, a reference point without effects of fish farm and sewage,from June 2007 to April 2009. Measurements were performed according to standard methods. Data was given as min-max for coastal, fish cage and reference points, respectively. Results were for water temperature7.83-27.51, 7.79-27.41, 7.72-27.00 °C; for dissolved oxygen7.60-11.00, 7.00-11.2, 7.80-11.60 mg/L; for pH 8.04-8.43, 7.93-8.38, 7.62-8.33; for salinity16.61-18.60, 16.77-19.03, 16.78-18.97 ppt; for silicate 0.29-14.64, 0.25-16.43, 0.25-11.70µM; for orthophosphate 0.10-1.71, 0.09-1.50, 0.10-1.95 µM; for total phosphorus 0.24-3.73, 0.12-3.30, 0.10-3.52 µM; for total suspended solids 1.70-26.40, 1.00-20.40, 1.00-11-,80mg/L; for chlorophyll-a 0.46-3.26, ND-3.25, 0.10-4.99 µg/L, respectively. According to the results, no significant effects of fish farm on water quality were observed in field study. Based on levels of these parameters observed in the study, it was defined that the fish farming was less effect to water quality than domestic sewage discharge.

Keywords: marine aquaculture, environmental impact, Southeastern Black Sea, Rize Coast