ABSTRACT

The management measures used for sustainable utilization of Clarias gariepinus in Lake Baringo do not have a stock assessment reference, attributable mainly to a lack of information on biological limits and target reference points. Assessment of Clarias gariepinus stock in Lake Baringo was carried out between August 2013 and July 2014. A total of 2772 fish were sampled from 25 boats (40%) for 5 days each week for length and weight measurements. Fish Stock Assessment Tools and yield model were used to estimate population parameters, exploitation rate and optimal fishing scenarios. Annual C. gariepinus standing biomass was estimated at 21 383 kg, $L\infty = 114.30$, $K = 0.37$ year-1, $W = 0.0147L2.81$, $Z = 1.14$ year-1, $M = 0.61$ year-1, $F = 0.53$ year-1, and exploitation rate = 0.46 year-1. The relative yield-per-recruit (Y'/R) and biomass-per-recruit (B'/R) resulted in Emax = 0.44 and FMSY = 0.50 year-1. The yield-per-recruit ratio at maximum sustainable yield was 29.12%, and the SSBMSY per recruit ratio = 56.10%. The steady-state biomass, exploitation rate and optimal fishing scenario indicated a pristine fishery for the lake, suggesting the current fishing efforts should not be exceeded to enable sustainable economic utilization of C. gariepinus.