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KEYSTONE SPECIES AND POSSIBLE IMPACT OF ARTISANAL FISHING IN EKPERIAMA (EKPERIKIRI) FISHING AREA IN NIGER DELTA

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ABSTRACT

A mass-balance model was constructed using EwE version 6.4 aimed at identifying the keystone species and possible impact of artisanal fishing in Ekperiamama in the Niger Delta. Data collected between January 2014 and December 2014 from landings of artisanal fishers operating around the area were then analyzed. The model was constructed with a detritus group, a primary producer, a secondary producer, five invertebrates and sixteen fish groups. Pedigree index estimated was 0.51. Total biomass (excluding detritus) of the modeled ecosystem for the whole area was 4,581 tonkm⁻². Mean trophic level for the total catch estimated was 2.56. Keystoneness index were highest for catfish (KS = 0.80) and ray (KS = 0.64) and had the highest relative total impact high lighting their importance in the ecosystem structure. Phytoplankton and zooplankton showed high keystone (KS = 0.81 and KS = 0.61) indicating their importance as prey diet in the food web. Gross efficiency (GE) was 0.004 as compared to the global average 0.0002 suggest an ecosystem impacted by fishing activities. Gill net had more negative effect on the fisheries than other gears. Mixed trophic impact routine showed that species that play important role in the ecosystem had the highest negative impact from artisanal fishing. Hence should be considered a priority in management programmes.

Keywords: biomass, feeding, fishing, gear, groups, keystone species