

Implication of vegetation removal on coarse particulate organic matter (CPOM) in chepkoo river, Kenya

Abstract

Clearing forests at catchment levels is known to affect the rivers' ability to provide vital ecological functions such as coarse particulate organic matter (CPOM) input as well as maintenance of water quality. This study was carried between April and June 2018 at Chepkoo River, in Elgeyo-Marakwet County to establish the effect of vegetation clearance on coarse particulate organic matter and riparian vegetation composition and diversity at three sites differing in extent of canopy cover (upstream-70%; midstream-15% and downstream- 10%). The study involved vegetation identification along selected transects and CPOM collection on both banks of the river as well as in the stream channel using a quadrat of defined dimensions. The upstream site had 16 number of plant species, the midstream site had 13, while the downstream site had 9 plant species. Shrubs dominated the right banks in the upstream and downstream sites whilst forbs dominated the left bank in the upstream and midstream sites. Vegetation diversity observed was upstream (2.2), > downstream (1.9), > midstream (1.7). The quantity of CPOM (pooled data from the banks) collected among the sites differed significantly (One-Way ANOVA , $F_{(2, 24)} = 12.427$, $p < 0.001$) with the midstream site having the highest (Tukey HSD, $p < 0.05$). The mean difference of CPOM retention within the stream channel was statistically significant (One-Way ANOVA, $F_{(2, 24)} = 8.053$, $p < 0.001$) with the upstream site recording the highest amount. This study confirms that reduced canopy cover lead to reduced in-stream CPOM along Chepkoo River. Replanting of riparian vegetation at clear-cut sites along river corridors can serve as a management strategy for tropical rivers.

Key Words: Organic matter, clear-cut, river banks, stream channel, catchment