

Abstract

After decades of disturbance, the capacity of Mau ecosystem to regenerate and regain its pre-disturbance species composition is unclear. The focus of this paper is to determine whether tree species regeneration and successional pathways, are in the process of regaining ecosystem's pre-disturbance species composition. To achieve this, post-disturbance species regeneration and recruitment trends were evaluated and influences of forest disturbance on the distribution of colonizers, followers and climax species determined. Diameter at breast height (dbh) of mature trees was measured and disturbances recorded in plots, dbh of saplings measured in subplots and seedlings count in microplots. Densities and relative densities of seedlings, saplings and mature trees were examined across disturbance gradients, and regeneration and recruitment trends inferred. Frequencies, Duncan's Multiple Range Test (DMRT) and F-test were used to infer stability in the distribution of colonizers, followers and climax species across disturbance gradients. Regeneration in Kedowa was stable with a balanced recruitment into the sapling and mature stages while Mt Blakett had unstable regeneration and recruitment trends. Occurrence of colonizer, follower and climax species showed an unstable distribution in Mt Blakett and a stable and balanced distribution in Kedowa. This ensured inbuilt ecosystem resilience to disturbances and hence stable successional pathways in Kedowa. The unstable distribution in Mt Blakett is likely to result in changes in post-disturbance floristic composition, promoting an individualistic successional pathway. Generally, dominant colonizer species indicated loss of ecological resilience and therefore the sites may not regain their pre-disturbance stand composition in many years to come.