

Abstract:

The woody species richness patterns in three 2–4 km long transects, approximately 1–3 km apart in a lowland (600–700 m) dryland around Lokapel in Turkana northern Kenya was analyzed in 2003 at 200–500 m intervals using the Point-Centred Quarter (PCQ) method involving 51 observation points. Transect 1 and 2 were set along ephemeral runoff channels locally known as lagga with wet season flow westwards from the Lokapel Hills to the Turkwell River. Transect 3 was a cross-cutting profile dissecting the area initially downhill from the Lokapel Hills and later gently uphill eastwards towards Lokichar. The altitude at each of the 51 observation sites was recorded using a GPS and the woody species identified through local knowledge and taxonomic aids. The results showed that the overall integrated altitudinal gradient for the three transects was approximately 100 m. A total of 43 species of trees and shrubs were identified. The Shannon index showed that Transect 2 had the highest diversity of woody species followed by Transect 1 and Transect 3 while the Sorensen's index indicated qualitative dissimilarity between all the transects. The results of regression analysis indicated that woody species richness increased linearly with elevation in only one transect but regression analysis of height of woody plants and altitude indicated that only about 20% of the variation in the height of woody plants was accountable by altitude. The spatial analysis of woody species-richness and altitudinal gradient showed a dual peak pattern with the main richness peak in low lying areas below 700 m which was mainly within or close to the riparian floodplain environment of the Turkwell River. A minor richness peak was also identified in higher lying areas around the Lokapel hills. The species richness pattern was similar to the hump-shaped altitudinal species-richness pattern which has been recorded widely around the world but mainly in large-scale studies.