

## Can *Austroeupatorium inulifolium* Invasion Favour Tree Species Establishment on Highly-Degraded Man-made Grasslands?

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### Abstract

It is well known that invasive species alter vegetation structure and composition, but most of the evidence to support this claim come from natural ecosystems. In many instances, these studies reported negative consequences on these natural habitats. Within last few years, the highly degraded grasslands at the Knuckles Conservation Area (KCA) have rapidly invaded by *Austroeupatorium inulifolium*, a notorious invasive species. The present study was aimed at investigating the impacts of *Austroeupatorium* on grassland communities, and also to see any positive role in forest expansion process towards these invasive grasslands by bordering forest remnants.

A complete vegetation sampling was carried out in 3 grassland communities having different levels of invasion; grasslands densely-invaded with *Austroeupatorium* (HIG), and less-densely invaded (LIG) and the forest-grassland edge (FGE). For each grassland community, nine randomly placed 4 m<sup>2</sup> quadrates were used to enumerate the vegetation. Another sampling was carried out using two forest-grassland edge (FGE) communities; forest remnant bordered by LIG (FGE- LIG) and forest remnant bordered by HIG (FGE- HIG). At each site, 5 linear quadrates (3 m x 12 m) were placed parallel to the FGE at different distances; 0 (edge), 5 and 10 m away from the edge towards the grassland and towards the forest interior. Six such transects were sampled for each FGE category.

A total of 30 species have been identified belonging to 20 families in HIG while 21 species (belonged to 14 families) and 14 species (belonged to 9 families) were identified from LIG and FGE respectively. Tree saplings (4 species) were recorded only in HIG. The two edge habitats showed somewhat different vegetation composition. Of the 182 and 430 individuals of tree saplings encountered at FGE-LIG and FGE-HIG respectively, majority of them were found in quadrates laid inside the forest (76 and 88% respectively). Abundance and richness of tree saplings were significantly higher at 10 m towards the forest interior bordered by HIG than that of LIG.

Present results suggested that *Austroeupatorium* invasion has a facilitative effect on tree seedling establishment probably through enhanced shading effect and improved edaphic conditions. The results also suggest that *Austroeupatorium* invasion has the potential to change the community structure in forest-grassland edges which eventually influence the vegetation community in the forest interior, at least up to 10 m. The facilitative effect of *Austroeupatorium* invasion on the forest tree establishment needs further studies to verify its long-term effect on these grasslands.

**Keywords:** *Austroeupatorium inulifolium*, Knuckles Conservation Area (KCA), Forest-grassland edge