Climate Adaptation for Biodiversity Conservation: Assessing the Impacts of the Invasive Species Cuscuta spp. on Water Resources in the Lake Baringo Catchment, Kenya.

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SUMMARY

Biodiversity and ecosystems are increasingly threatened by invasive species, which exacerbate habitat loss and compromise ecological integrity, water resources, and human well-being. In Kenya's Lake Baringo catchment, the invasive parasitic plant Cuscuta spp. (Dodder) is rapidly spreading, parasitizing native vegetation, crops, and wetland plants. Its infestation alters vegetation structure, disrupts ecological processes, and threatens key hydrological functions such as infiltration, evapotranspiration, and groundwater recharge. These impacts pose significant risks to freshwater resources, biodiversity conservation, and community livelihoods in a region already vulnerable to climate change. This study assesses the impacts of Cuscuta spp. on water resources within the Lake Baringo catchment to inform climate adaptation and biodiversity conservation strategies. Using remote sensing techniques the research integrates ecological monitoring with socio-hydrological assessments from local communities. The findings will provide empirical evidence on the ecological and hydrological consequences of Cuscuta invasion, filling a critical knowledge gap in invasive species management in arid and semi-arid ecosystems.

The study contributes to national and global climate adaptation goals. The results will support integrated strategies for ecosystem-based adaptation, inform policy development, and enhance the capacity of communities in the Lake Baringo catchment to safeguard biodiversity and sustain water-dependent livelihoods under changing climatic conditions.
