

SCIENCE POLICY BRIEF

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Balancing Conservation and Use: Sustainability Assessment of *Hyphaene petersiana* (Umuko) in Rusizi National Park and Its Southern Buffer Zone, Burundi

Overview

The Rusizi National Park (RNP), located in western Burundi, is one of the country's most ecologically significant protected areas, encompassing a distinctive mosaic of wetland and savanna ecosystems that support exceptional biodiversity. Among its dominant and ecologically valuable species is the *Hyphaene petersiana*, known locally as 'Umuko', a palm species of considerable ecological and socio-economic importance. Despite its value, unsustainable harvesting practices, compounded by mounting land-use pressures, have resulted in measurable declines in both regeneration rates and stand density; trends that point to a deepening ecological imbalance.

Background

This policy brief examines the ecological and socioeconomic drivers of *H. petersiana* (Umuko) decline in Rusizi National Park and its southern buffer zone, Burundi. The study combined field data from 60 sample plots with 150 household interviews across the 6,647 ha park in the Imbo region, using a mixed-methods approach to assess both biophysical conditions and local community perceptions of Umukoko sustainability.

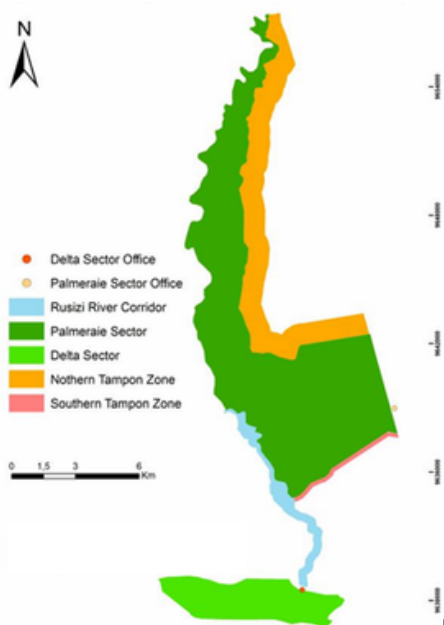


Fig. 1. The Rusizi National Park showing its physical configuration

Key recommendations

- **Reintroduce large carnivorous wildlife**, that is, apex predators, such as lions or tigers into the park as a natural deterrent. Apex predators may serve as an effective natural barrier against unauthorized human encroachment. Park wardens indicate that their presence would significantly reduce the willingness of local populations to enter protected areas, thereby alleviating pressure on the park's ecosystems.
- **Restore seed-dispersing fauna to accelerate ecological regeneration.** The reintroduction of historically native seed-dispersing species, most notably elephants, would restore critical ecological functions that support natural forest regeneration.
- **Strengthen law enforcement and ensure equal accountability for all stakeholders.** A robust and impartial rule of law is essential to the park's protection.
- **Address youth unemployment to reduce dependence on park resources.** Consultations with local youth reveal that economic necessity is a primary driver of illegal park entry, with many individuals harvesting and selling park resources as a means of survival.
- **Develop sustainable management models for timber and non-timber forest products (NTFPs).** Given the park's significant biodiversity value, a structured framework must be established to balance species conservation with the sustainable use of NTFPs. Such a model would recognize the legitimate subsistence needs of bordering communities while ensuring that harvesting practices remain within ecologically viable limits.

Key findings

Demographic analysis of *H. petersiana* populations reveals a deeply concerning trend across both ecosystems: the species is ageing, with mature individuals dominating the population structure, accounting for 86.1% within the park and 90.1% in its southern buffer zone. The scarcity of younger cohorts signals a significant failure in natural regeneration. These findings are compounded by intense and sustained anthropogenic pressure. Riparian communities bordering the park view it as a primary source of income and subsistence, driving persistent resource extraction.

H. petersiana (Umuko) is deeply embedded in the daily lives and livelihoods of local communities, commanding widespread recognition for its versatile utility. The species serves as a critical resource across multiple sectors, most notably in construction, fishing, and traditional craftsmanship. It underpins the livelihoods of a significant portion of the local population in multiple ways: its fruits are widely used as a biofuel for cooking, while its leaves serve as raw material for the production of income-generating crafts and a range of other subsistence goods (Fig 2). On their perception of trend, 93% of respondents opined that it is decreasing (Fig 3).

Weak biodiversity governance has been identified as a fundamental threat to the ecological sustainability of *H. petersiana* in the region. Existing conservation laws are routinely disregarded, and critically, this non-compliance is observed among authorities, sets a damaging precedent that erodes the rule of law and emboldens broader non-compliance within local communities.

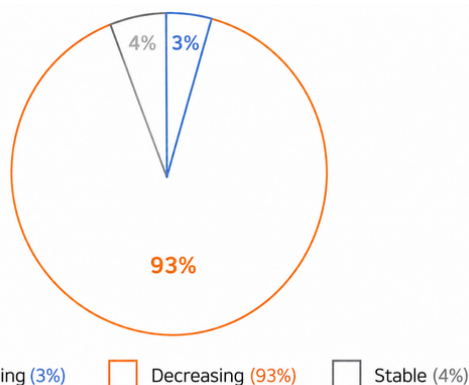


Fig. 3. Perceptions of locals on growth trend of Umukoko

Respondents proposed diverse solutions for its management, as highlighted under the key recommendations section. However, the sustainability of current utilization patterns remains poorly understood, with insufficient quantitative data on the species' population dynamics, its regenerative potential under prevailing pressure levels, and the broader socio-economic forces driving its exploitation.

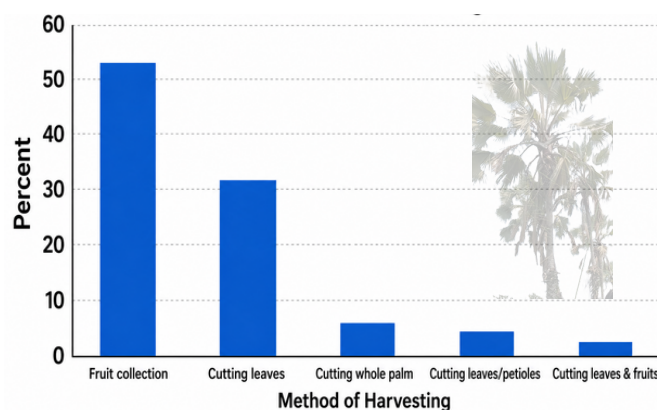


Fig. 2. Identified harvesting practises of Umukoko

CONCLUSION

The Rusizi National Park is a cornerstone of biodiversity conservation, supporting a rich diversity of species closely linked to the well-being of surrounding communities. Yet its ecological integrity remains under significant pressure; pressures deeply rooted in poverty, population growth, and weak governance.

The cumulative impacts are evident: The southern buffer zone exhibits severely constrained regeneration, while the park itself shows moderate but concerning signs of stress, with both ecosystems dominated by mature *H. petersiana* individuals and a notable absence of younger cohorts. These results underscore the urgent need for an integrated policy response that balances the livelihood needs of local communities with a commitment to long-term biodiversity conservation. Sustainable coexistence between people and nature must be placed at the heart of all future management strategies.

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