The impact of urbanization on medicinal plant use in Idiofa, Democratic Republic of Congo

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Background

Medicinal plants have always been used by societies and cultures worldwide to treat various diseases and illnesses. For many communities, esp. in the Global South, medicinal plants are still an inevitable (less expensive) alternative for allopathic medicine. In DR Congo, deforestation causes loss of traditional knowledge linked to the various forest resources. Biotic homogenization, the gradual replacement of native biotas with locally expanding non-natives, leads to increasing similarity in species compositions between urban ecologies worldwide, and may cause a shift in ethnobotanical practices.

Goals

- document medicinal plant use in Idiofa, DR Congo;
- determine whether people tend to use plants derived from natural habitats or rather from anthropogenic environments; and
- assess whether medicinal plant use in Idiofa is subject to biotic homogenization.

Methodology

- Idiofa (4.9626° S, 19.5895° E) is an urbanizing municipality 469 km west of Kinshasa, DR Congo. Annual precipitation: 1600 mm. Vegetation: tropical savanna.
- We conducted 30 in-depth, semi-structured interviews with inhabitants of Idiofa, collected data on medicinal plant knowledge, uses and administrations and calculated Medicinal Use Values.
- We collected plant material and determined locations (habitats) where plants are usually collected.
- All plants sold at the central market were inventoried.
- We recorded plant species geographical distributions consulting PROTA4U and ICRAF databases.
- To assess biotic homogenization, we investigated whether locations where plant species were collected and their species geographical distributions are statistically linked.. We tested the significance of differences in Use Values between plant species per species distribution (pantropical or indigenous), different locations (human-influenced or natural), and different habitats (homegarden, roadside, field, forest or savannah).

Results & Discussion

- We recorded 99 plant species from 46 plant families used in 330 preparations to treat 112 medical conditions. Most represented plant family was Fabaceae.
- There was no significant difference in average Use Values between anthropogenic and natural habitats. This indicates that plants are used based on their availability.
- Plants sold at the market came almost exclusively from natural areas.
- Plant species with a pantropical distribution were strongly linked to anthropized areas, whereas plant species with distributions restricted to Sub-Sahara Africa were mostly found in natural areas (see table 1). This is a strong indication for biotic homogenization in anthropogenic areas.

	natural area	anthropized area
pantropical	4 species	48 species
sub–Saharan Africa	44 species	6 species

Table 1: Species distributions of plant species per plant location

- Biotic homogenization linked to urbanization was strongly reflected in medicinal plant use, as plants with a pantropical distribution growing in the urbanizing environment, were intensively used.

Conclusion

- Medicinal plant use is changing as a result of urbanization.
- Urban areas are a hub for the exchange of ethnobotanical knowledge, practices and medicinal plants. However, biotic homogenization in urban settings, degradation of natural elements and loss of ecosystems, cause homogenization of ethnobotanical knowledge and may eventually lead to traditional and indigenous medicinal plant use/knowledge erosion.
- Understanding how processes related to urbanization affect traditional and indigenous (plant) knowledge can provide insight into socio-ecological issues, which can contribute to the development of strategies for biodiversity conservation and socio-economic development.

Fig. 1: *Morinda morindoides* in the homegarden of a traditional healer

Fig. 2: Bark harvesting with machete in forest.

Fig. 3: Medicinal plants sold on the central market of Idiofa.

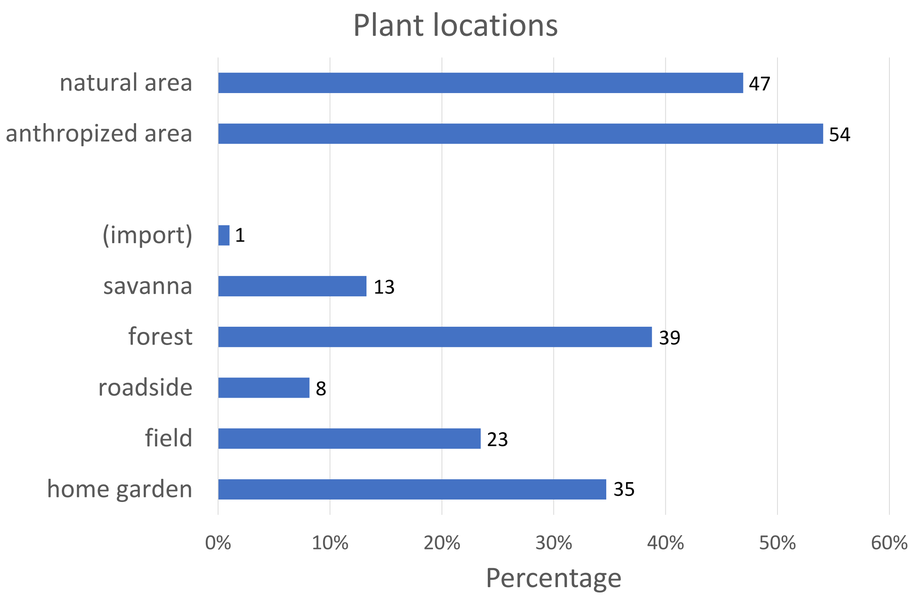

Fig 4. *Plant locations*: percentage of plants collected in natural and anthropized areas, and percentage of plants collected per habitat type.

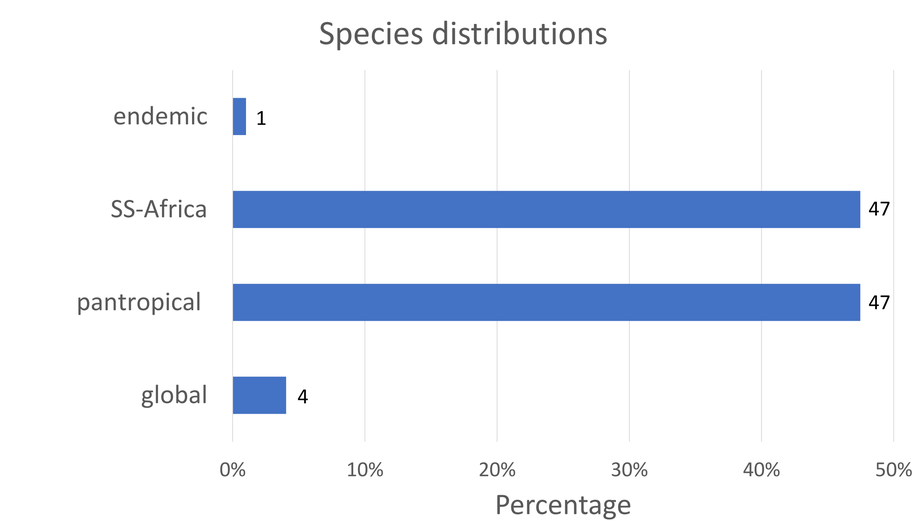

Fig 5: *Species distributions: p*ercentage of plants with an endemic, Sub-Saharan African, pantropical, and global distribution.