Tools for the conservation and sustainable use of African woodlands: edible fungi

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Objectives - The aim of this contribution is to show that the massive production of charcoal has become the biggest threat to the majority of the woodlands in the Sudanian and Zambezian part of tropical Africa. This activity is responsible for the loss of biodiversity and income, food security and indigenous knowledge. We want to illustrate that the 400 edible fungi, ever reported as food in tropical Africa, can serve as an economical and cultural incentive to sustainably use, protect and maintain forests.

A young girl selling *Cantharellus platyphyllus* (Katanga, RDC).

Methods (qualitative & quantitative approach)

- Twelve plots of 900m² in 4 types of miombo forest situated in Katanga (DR Congo)
- All edible fungi (82 sp) were inventoried and weighed
- Weekly yields were recorded over 3 years
- Meteorological data were recorded
- Market price of edible fungi & charcoal was checked

Amanita loosii: the most productive species in Katanga

Results & facts

- Ectomycorrhizal species dominate. None of these edible species can be cultivated. Their existence is annihilated by killing miombo trees.
- Species compositions, phenology and yields vary with the forest type and rainfall.
- Edible species occur 4 months/year, with an average market price ranging from 0,5-1,5 $/kg.
- The 40 most productive species (table 1) deliver 100-300kg/ha.year, with an average of 182kg/ha.year.
- If just 10% of these reach the market (at 1$/kg), the miombo fungi deliver 18.2$/ha.year
- Conversion of miombo forest into charcoal delivers about 400$/ha (common practise). Since miombo forest needs over 30 years to regenerate, charcoal delivers (400$/30years): 13.3$/ha.year

Species	Phenology (Dec Jan Feb Mar Apr)	max kg/ha.w	total kg/ha.y
Amanita loosii		10,2	**39,1**
Lactifluus velutissimus		3,4	**14,5**
Cantharellus densifolius		1,9	**12,9**
Lactifluus rubroviolascens		1,6	**12,5**
Afrobaletus luteolus		2,8	**12,3**
Clavulina albiramea		1,7	**10,2**
Cantharellus platyphyllus		1,2	**8,3**
Lactifluus laevigatus		2,7	**7,9**
Lactifluus gymnocarpoides		1,3	**7,2**
Termitomyces striatus		3,6	**5,2**
Pseudocraterellus sinuosus		0,8	**5,0**
Xerocomus subspinulosus		1,0	**3,8**
Russula congoana		2,0	**3,8**
Lactifluus densifolius		1,7	**3,7**
Lactifluus xerampelinus		1,2	**3,6**
Cantharellus miomboensis		0,7	**3,1**
Boletus loosii		1,0	**2,5**
Lactifluus heimii		0,8	**2,5**
Amanita pudica		0,5	**2,2**
Amanita rubescens		0,6	**2,1**
Cantharellus pseudomiomboensis		0,5	**1,9**
Cantharellus isabellinus		0,4	**1,8**
Cantharellus afrocibarius		0,4	**1,7**
Cantharellus ruber		0,3	**1,5**
Russula compressa		0,6	**1,4**
Tylopilus balloui		0,4	**1,4**
Lactifluus gymnocarpus		0,3	**1,3**
Russula ciliata		0,3	**1,1**
Lactifluus luteopus		0,2	**1,0**
Mycoamaranthus congolensis		0,3	**1,0**
Boletus spectabilissimus		0,3	**0,9**
Lactifluus edulis		0,2	**0,9**
Cantharellus mikemboensis		0,5	**0,8**
Lactarius kabansus		0,4	**0,7**
Russula hiemisilvae		0,3	**0,7**
Amanita mafingensis		0,3	**0,7**
Lactifluus volemoides		0,3	**0,6**
Total average production (3 years), in kg/ha.year			**181,9**

Table 1. Phenology of 40 edible fungi from Zambesian woodland (2013-2015, Katanga, RDC). With **max**: maximum average weight in kg/ha produced in 1 week; **total**: 3-year average total weight in kg/ha.y; **red line** = averaged pluviometry at the study site, highest value = 65mm/m².week

Conclusions

The cash generated from charcoal conversion does not outweigh the yearly income accumulated from harvesting and selling wild mushrooms.

Maintaining the ecosystems service of delivering edible fungi (or any NTFP) is financially and culturally more beneficial to local people than the production of charcoal.

Wild edible fungi are an unexploited non-timber forest product with underestimated nutritional and commercial value.

Sustainable use of Zambesian and Sudanian miombo forests can enhance food security and help safeguard traditional knowledge.

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