Richness, Cultural Importance and Conservation of the Wild Spices in the Sudano-guinean Zone of Benin

K.M. Kafoutchoni[1,2,3]*, R. Idohou[2,3], K.V. Salako[2,3], C. Agbangla[1], A.C. Adomou[2,4], A.E. Assogbadjo[2,3]

1 The Research questions (RQs)

- How great is the diversity of the Wild Spices (WS) in the Sudano-Guinean Zone (SGZ)?
- How are WS distributed and what are the species-rich areas?
- Which ecological factors drive the most their distribution and richness patterns, and how?
- How does traditional knowledge (TK) on the WS vary
- Which species are priority for conservation?

Aim: assess the diversity of WS and document the associated traditional knowledge for their valorization, sustainable management and conservation.

Aframomum alboviolaceum

Lippia multiflora

Zanthoxylum zanthoxyloides

Thonningia sanguinea

Monodora tenuifolia

Aframomum angustifolium

Securidaca longipedunculata

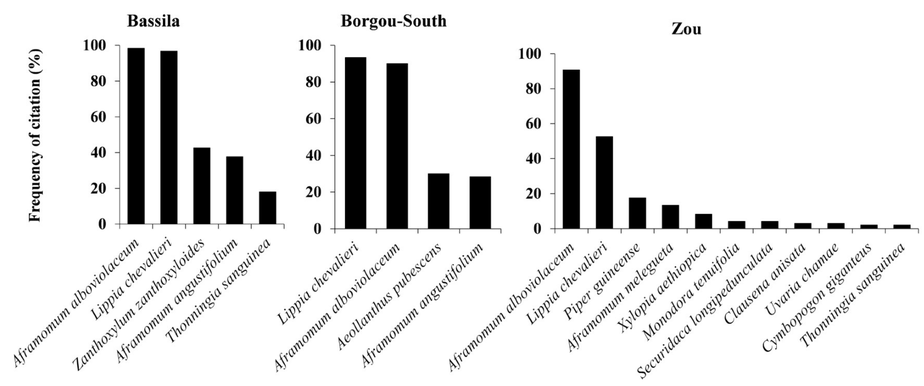
2 How we addressed the RQs

Data collection: Survey of 8 sociolinguistic groups in 10 villages across 3 phytodistricts (PDs). Occurrences of species recorded in the field and from www.GBIF.org. Climatic data retrieved from www.worldclim.org and www.isric.org).

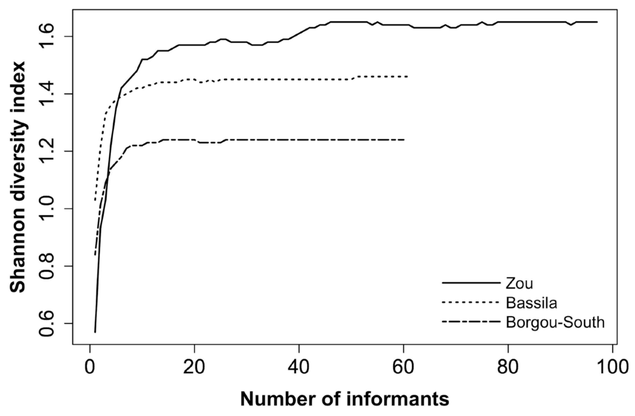
Data analysis: Floristic diversity was assessed by PDs. Distribution and richness were mapped, and their driving forces identified using conditional inference tree. Use-report, Cultural importance, and Informant consensus factor indices were used to analyse ethnobotanical data. Priority WS were identified using an approach combining 8 criteria in 4 prioritization methods.

3 What we found

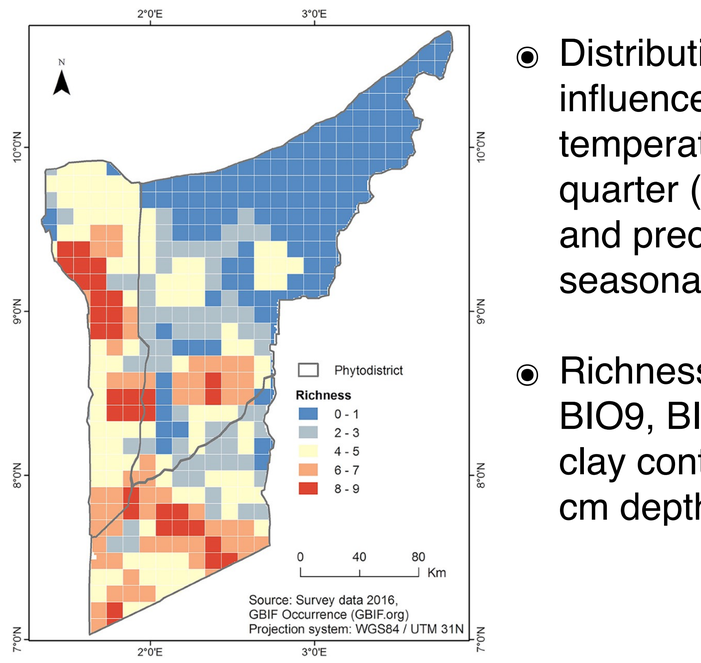
- 14 species belonging to 9 families and 12 genera were inventoried which diversity was higher in Zou PD
- Sudano-Guinean species were less represented
- WS were unevenly distributed across PDs and several spice-rich areas were identified in Bassila and Zou PDs



Wild spices inventoried in the SGZ of Benin as listed by respondents from each phytodistrict

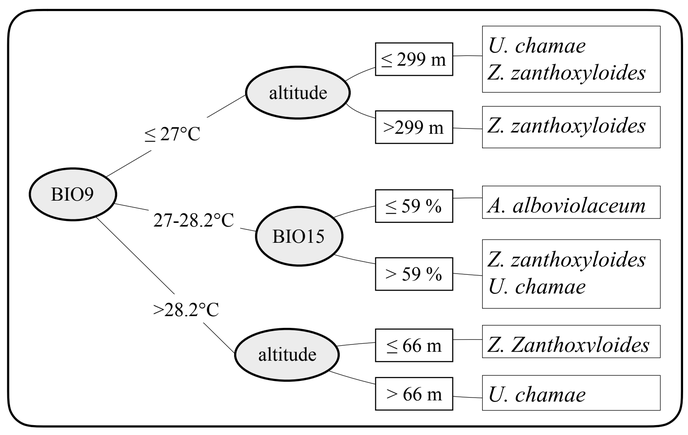


Estimated Shannon's diversity index by PD

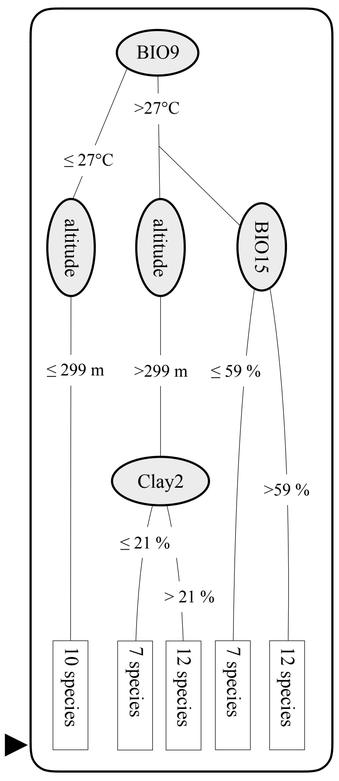


Richness map based on WS incidence data

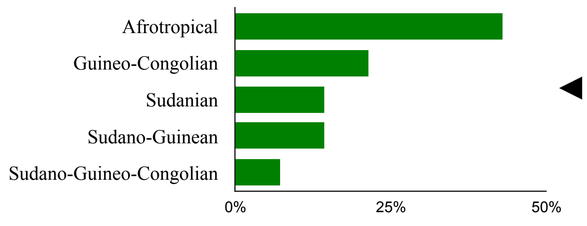
- Distribution of species was influenced by the mean temperature of driest quarter (BIO9), altitude, and precipitation seasonality (BIO15)
- Richness was driven by BIO9, BIO15, altitude and clay content between 5-15 cm depth



Conditional inference tree showing factors driving distribution of WS



Ecological factors determining the richness pattern of WS in the SGZ



Phytogeographical types of inventoried WS

- 205 uses, mainly as medicine (73%) and food (20%), were documented
- TK varied as regards PD, gender and sociolinguistic group. Informants from Bassila PD held highest knowledge, likewise men and Tchabè people did.
- High agreement on the use of WS among and across use-categories
- 5 WS including *Aframomum alboviolaceum, Lippia multiflora, Monodora tenuifolia, Xylopia aethiopica, and Zanthoxylum zanthoxyloides* were the most prioritized for conservation

4 What are the implications

- Diversification of home gardens with the WS, particularly in the geographical areas of Tchabè in Bassila PD
- Implementation of *ex situ* conservation in areas where there is cultural erosion regarding the WS
- Valorization of the WS for food and medicinal purposes

[1]Laboratoire de Génétique Moléculaire et d'Analyse des Génomes; [2]Laboratory of Applied Ecology; [3]Laboratory of Biomathematics and Forest Estimations; [4]Department of Plant Biology - University of Abomey-Calavi ; * Correspondence: k.medard@gmail.com