



Spatial and Seasonal Distribution of Bee Pollinator Species in a Sudanese Agro-ecological System in Burkina Faso (West Africa)

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INTRODUCTION

- Bees are the most important pollinators of many crops and wild plant species (Greenleaf and Kremen, 2006)
- The ecosystem service “pollination” provided by these insects is crucial to maintain overall biodiversity and to secure crop yields worldwide (Winfree et al. 2011)
- But, ecosystem degradation, depletion of plant species, habitat fragmentation, use of insecticides and global warming constitute severe threats to the bees
- Consequence : risk of extinction of bees
- Despite the great ecological and economic importance of bees as pollinators hardly anything is known about bee species in West Africa

Objective

Investigation of the diversity and abundance of bees (dry and rainy season; 12 months) in near-natural savannah habitats and nearby fields of cotton, sesame (main cash crops, pollinated by bees)

METHODOLOGY

Study sites: Dano and Bontioli (South-West) – Nazinga (South-Central) (Fig.1)

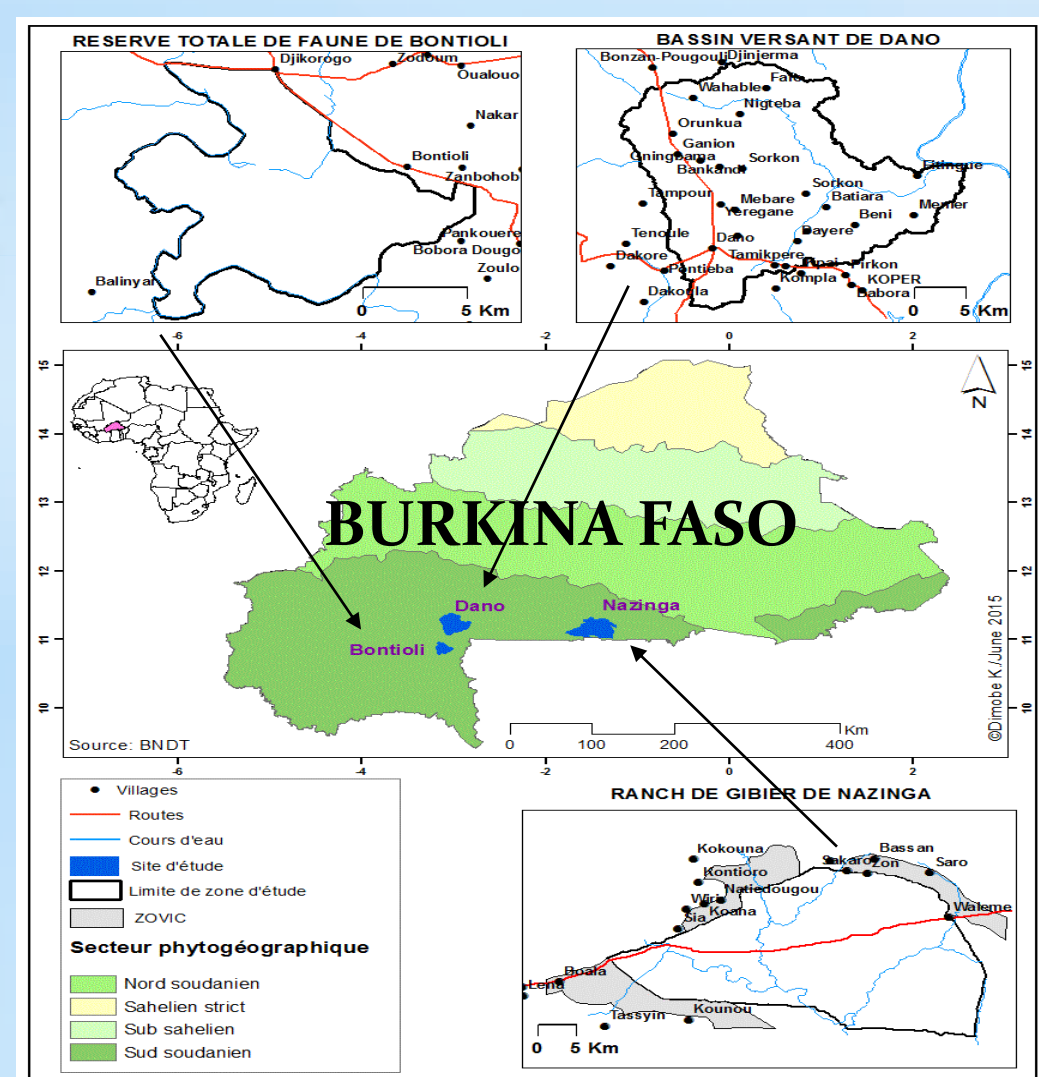


Fig. 1: Study sites

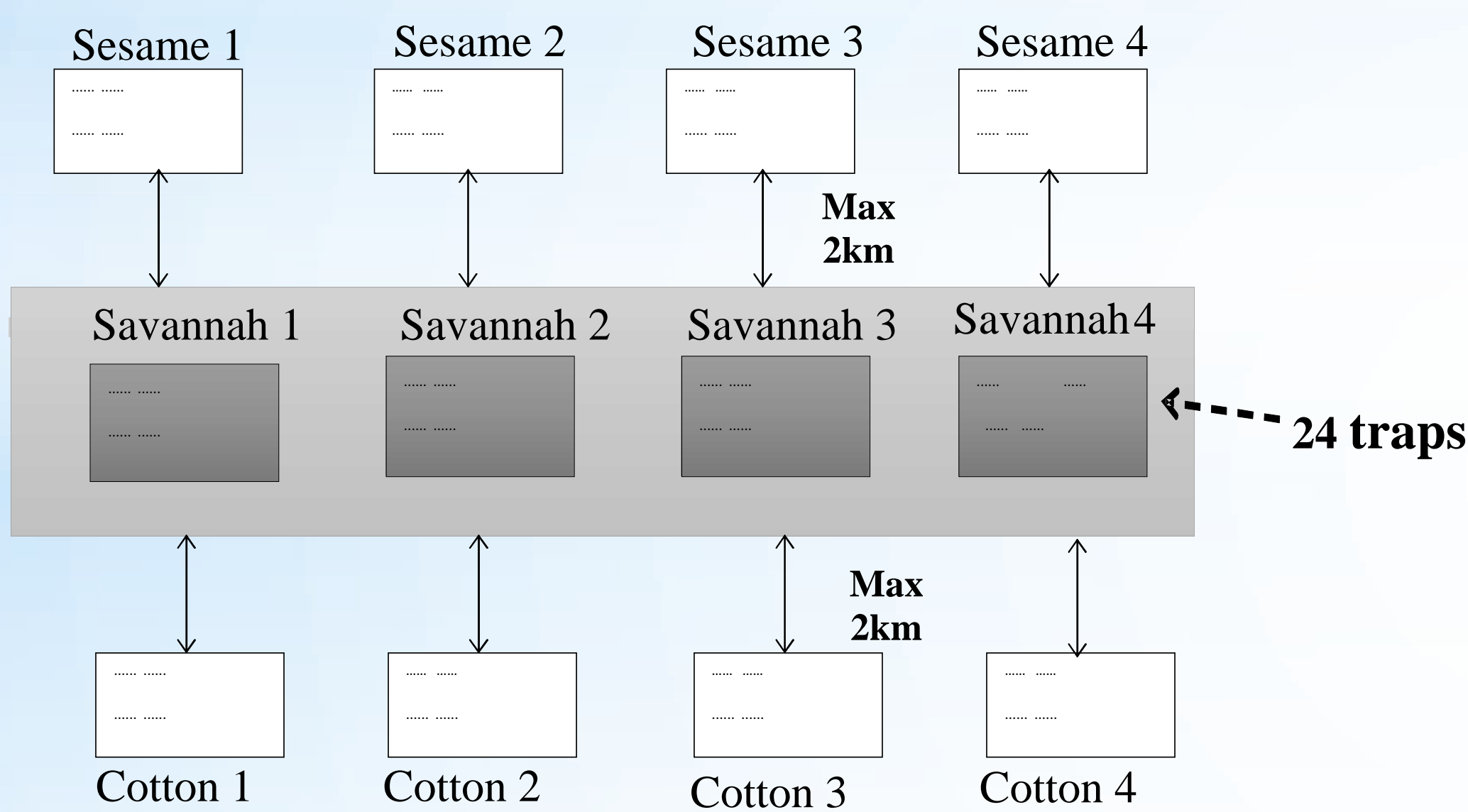


Fig.2: Sampling design

- Four sampling plots of each 5400 m² (60m x 90m) in near-natural savannah habitats and 4 in nearby fields at each study site (total plots : 12)
- Each sampling plot comprised four sampling blocks (15m x 30m) spaced to 30 m. In each block six traps were installed in a distance of 15 m.

Bees were caught with 288 coloured pantraps (UV White-Blue-Yellow)



Step 1: Activation of pantraps with salt water and drop of detergent

Step 2: Collection of bees after three days and conservation of bees in ethanol

Step 3: Sorting, pinning and identification of bees

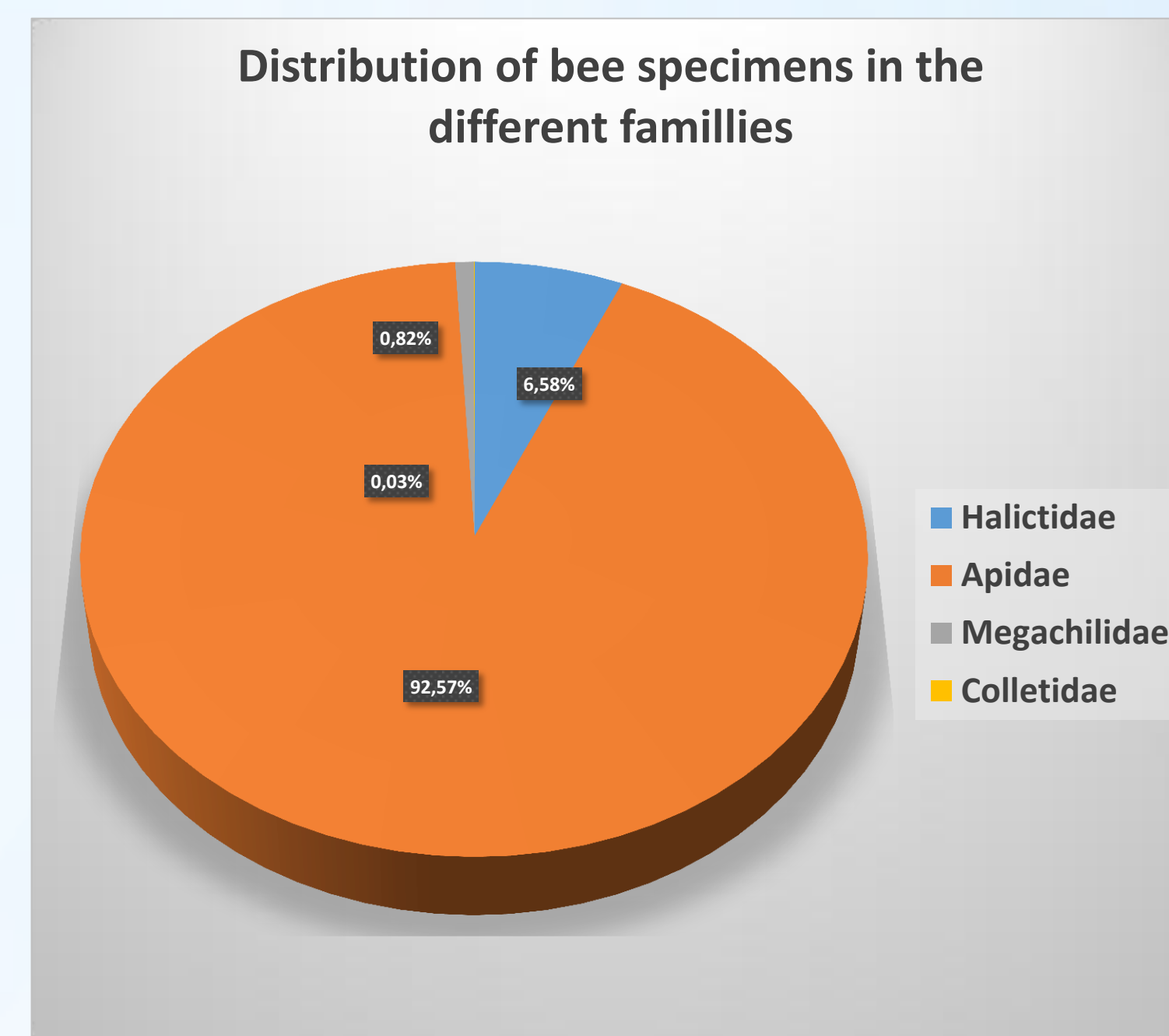
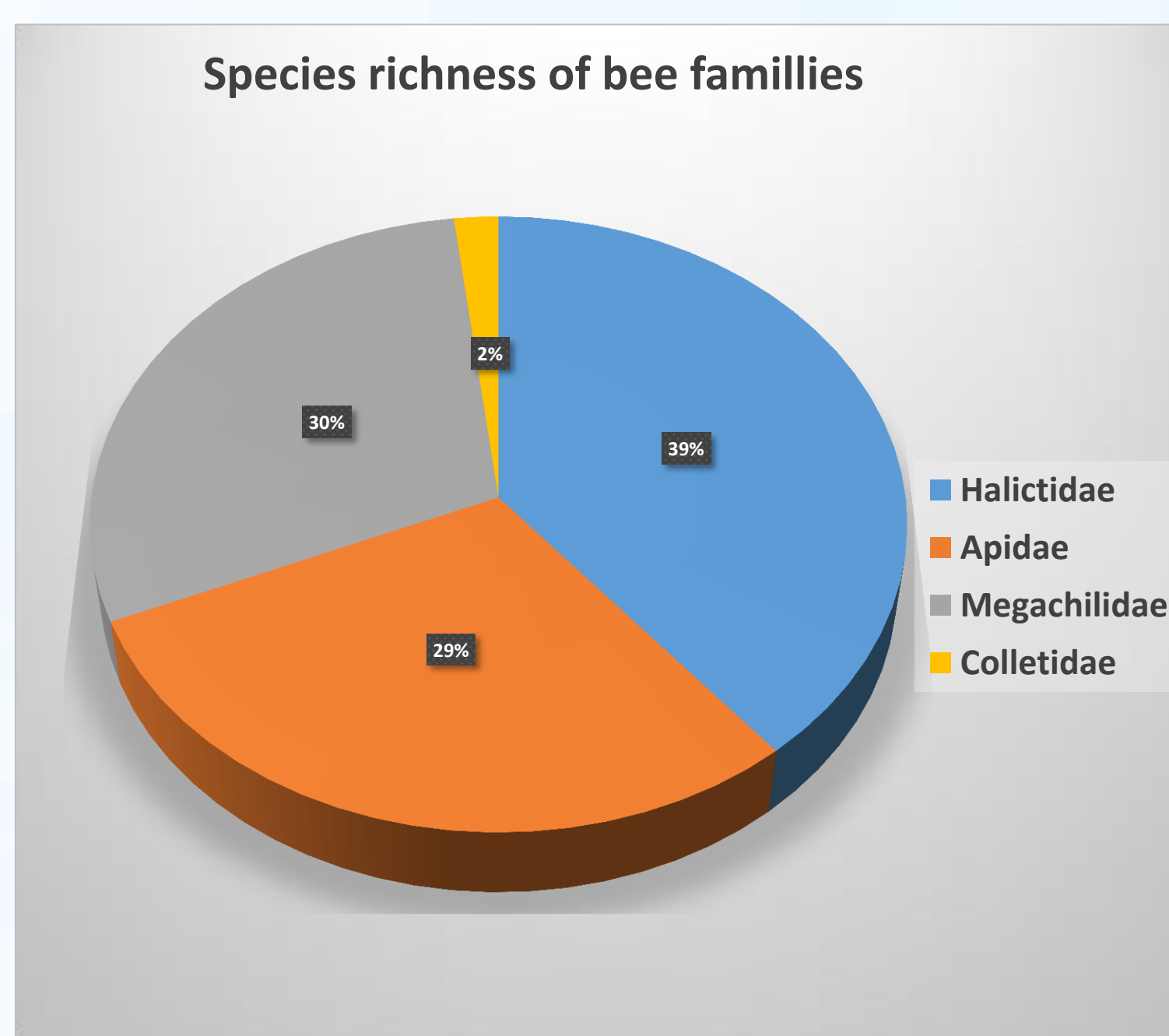
Step 4: Conservation of bees identified in entomology box

References:

Greenleaf, S.S., Kremen, C., 2006. Wild bees enhance honey bees' pollination of hybrid sunflower. Proc. Natl. Acad. Sci. U.S.A. 103, 13890-13895.
Winfree, R., Gross, B.J., Kremen, C., 2011. Valuing pollination services to agriculture. Ecol. Econ. 71, 80-88.

RESULTS

- ❖ No. bee specimens analysed = 19021 specimens
- ❖ No. bee families identified = 4 (Apidae-Halictidae-Megachilidae-Colletidae)
- ✓ Most diverse family = Halictidae (sweat bees) - 37 species
- ✓ Most abundant family = Apidae (e.g. honey bees and stingless bees)



❖ No. bee genera identified = 31 genera

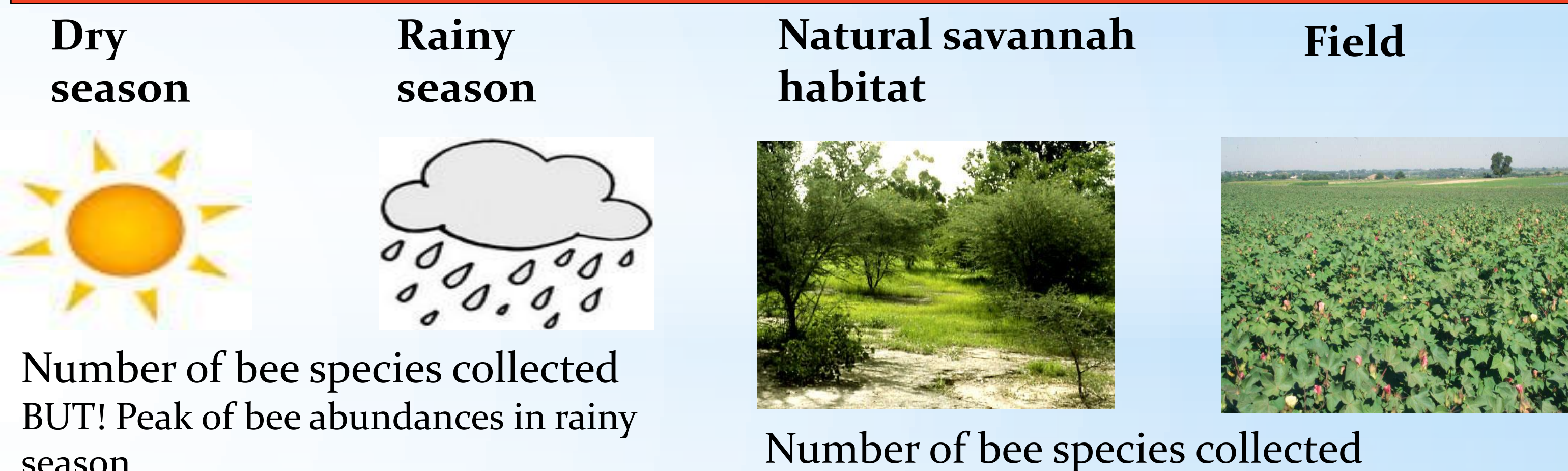
❖ No. bee species identified = 97 species

→ 96 wild bee species + managed honey bee *Apis mellifera*

✓ Most abundant species : *Hypotrigona gribodoi* (stingless bee) > 10000 specimens



Hypotrigona gribodoi



CONCLUSION

- First study (diversity and distribution of bees) in West Africa in relationship with the increasing pressure by human activities
- Establishment of a unique reference collection of bees in West Africa
- The assessment of bee species and their seasonal distribution is an important scientific basis for the establishment of appropriate management strategies
- We showed in another study on pollination the importance of bees in improving yield of cotton and sesame

