



Diversity of pests attacking honey bee subspecies in Cameroon, Ethiopia, Kenya, and Madagascar

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INTRODUCTION

The global honey bee decline constitutes a substantial threat to food security and economic development, and could impact countries and regions where agriculture remains the principal source of generating income. While the nature and severity of this scenario has been well-studied and documented in the United States and Europe, the status of bee health in Africa remains minimal and fragmented. To address this knowledge gap, the African Reference Laboratory for the Management of Bee Diseases and Pests based at the International Centre of Insect Physiology and Ecology (*icipe*) in Nairobi, Kenya undertook a study to assess the pest diversity and abundance on the continent starting with selected countries on the mainland and islands of Africa.

OBJECTIVE

To assess and quantify the pest diversity of honey bee subspecies in Cameroon, Ethiopia, Kenya, and Madagascar, representing different agroecological zones in Africa and the Island Nations.

METHODS

Samples of honey bee colony pests were collected during colony inspections across several agroecological zones between 2013 and 2015 in Kenya, Ethiopia, Cameroon, and Madagascar using standard sampling procedures for varroa mite (*Varroa destructor*), small hive beetle (*Aethina tumida*), wax moths (*Galleria mellonella* and *Achroia grisella*), and tracheal mites (*Acarapsis* species) as described by (Dietemann et al. 2013). Large hive beetle was sampled using the method described by Torto et al. (2010). Sampling sites were chosen to represent agroecological zones that cumulatively contribute to at least >90% of the total honey production for that country. A minimum of 90 colonies were sampled in each country.

RESULTS

- Honey bees were kept in Langstroth hives (LH) in Kenya (LH – 100%); Kenya top bar hives (KTBH) in Cameroon (KTBH – 100%); Dadant hives (DH) in Madagascar (DH – 80%, LH – 20%), and modified LH with fixed bottom boards in Ethiopia (modified LH – 100%). Other local hive types included the traditional log hive (Kenya), cylindrical grass hive (Cameroon), and the mud box hive (Ethiopia).
- The most frequently encountered pests were *Varroa* mite, small hive beetle, and the greater wax moth, which were widespread across the different countries and varied in their abundance from one agroecological zone to another. No tracheal mites were observed in any country.

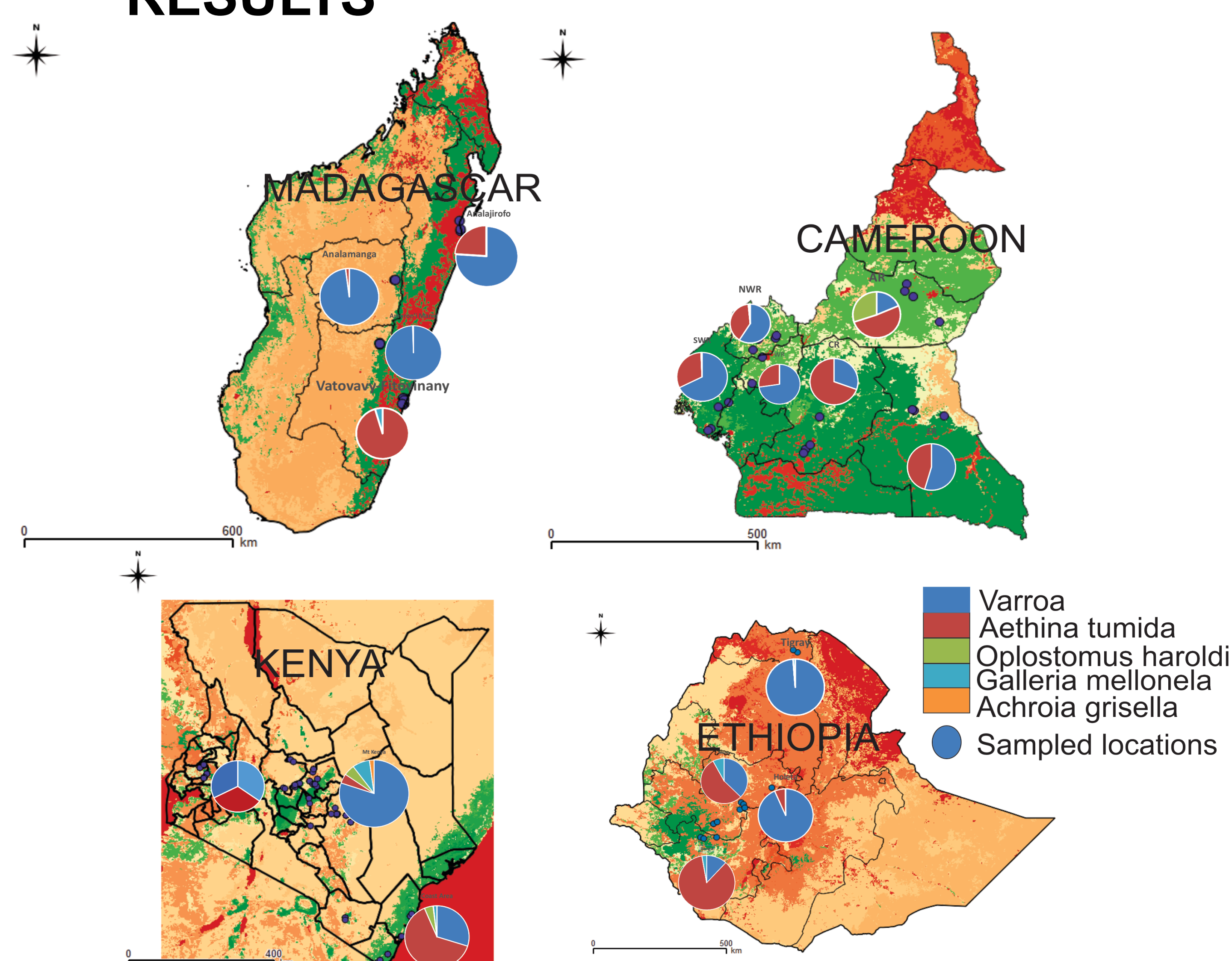


Figure 1. Maps of Madagascar, Cameroon, Kenya and Ethiopia showing study sites and proportions of the different pests encountered against an agroecological zone land cover background

CONCLUSION

Honey bee subspecies in different parts of Africa appear to share a similar pest diversity regardless of the differences in hive type.

IMPACT

The similarity in pest status across countries suggests that management options developed for one pest species may find applicability across country boundaries, making control efforts more sustainable and affordable. Additionally, this information may further simplify trade in hive-related products, and facilitate the drafting and/or harmonising of new/existing policies that promote the trade in pollination services, hive products and conservation of honey bees on a continental scale.

REFERENCES

- Dietemann et al. 2013. J. Apic. Res.; 2. Torto et al., 2010. Ann Entomol. Soc. Am.103, 389–396.