# A novel genetic group of *Macrotermes* termites in Ongava

## Insights on the diversity of African Macrotermes

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*Macrotermes* termites have a symbiotic relationship with Basidiomycetes fungi and play important ecological roles as soil conditioners in Africa and Asia. African *Macrotermes* include 13 taxonomic species that are also widely consumed throughout Southern Africa for their nutritional richness and traditional medicinal value.

Unambiguous morphological identification of *Macrotermes* species is challenging, and taxonomic difficulties have hampered ecological and food science studies. Molecular methodologies such as DNA barcoding are useful for documenting biodiversity; however, sequence data has only been generated for a few African countries and vast areas of the continent, including most of Southern Africa, remain unsurveyed.

This study reports the first DNA data for *Macrotermes* in Namibia and provides a comprehensive characterization of this taxonomic group at Ongava Game Reserve.

#### **TERMITE COLLECTION AND DNA ANALYSIS**

A total of 82 *Macrotermes* termitaria were sampled at the Ongava Game Reserve between March and May of 2021. One specimen from each mound was sequenced for the standard COI barcoding region (702 bp). The new sequences were analysed in the context of all COI sequences publicly available for African *Macrotermes* using phylogenetics and genetic divergence methods.



### - RESULTS AND DISCUSSION



Maximum-likelihood tree based on a 536 bp alignment of 366 African *Macrotermes* COI sequences.

All *Macrotermes* from Ongava clustered with sequences from Botswana and represented one genetic group previously unreported likely belonging to the same species. *Macrotermes* from Ongava had two closely related haplotypes, of which one was found in 98% of the termitaria.

*Macrotermes* in Namibia and Botswana were most similar to public sequences classified as *Macrotermes michaelseni* found in Kenya; however, they did not form a single group with those in our tree. This result highlights that the diversity of African *Macrotermes* is still poorly described, and that morphological identification of species should be coupled with DNA-based methodologies.

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- This study provides the first DNA sequence data for *Macrotermes* in Namibia.
- *Macrotermes* collected at Ongava belong to a single genetic group and are likely the same species found in northern Botswana.
- This genetic group was not yet found elsewhere on the continent; however, geographic coverage is still very deficient.
- *Macrotermes* at Ongava have low genetic diversity, and 98% of the colonies share the same maternal ancestral.
  - The number of genetic groups of African *Macrotermes* is higher than the number of taxonomic species, and the high level of inconsistency between morphological identification and genetic diversity warrants a reassessment of taxonomic classifications and identification keys.