

# Termite diversity and functional traits quantitatively modeled for the first time

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A soldier termite (Macrotermitinae) in the Okavango Delta. Credit: Wikipedia

As ecosystem engineers, termites provide a range of ecosystem services. Although termites represent an ideal study system to examine broad-scale diversity patterns, their broad scale biogeographical patterns have yet to be extensively investigated.

To explore patterns in termite taxonomic richness and functional biogeography, researchers from the Xishuangbanna Tropical Botanical Garden (XTBG) of the Chinese Academy of Sciences created a dataset of termite species and their functional traits together with [environmental data](#).

The researchers investigated the distribution of termite diversity globally and morphological traits and diversity across China. They also determined what [environmental factors](#) explain termite taxonomic and functional biogeography at both the global and within-China scales, and explored how those compared between scales.

The researchers mapped out global patterns of termite richness. The analyses showed increasing termite species richness with decreasing latitude at both the global scale and within China. Termite species diversity peaked in tropical regions with over 100 species.

They also detected obvious latitudinal trends in the mean community value of termite morphological traits on average, with [body size](#) and leg length decreasing with increasing latitude. On average, termite species became bigger towards the tropics.

Moreover, their data showed that temperature, normalized [difference vegetation index](#) and water variables were the most important drivers controlling the variation in termite richness. Soil and temperature were the most important drivers controlling the variation in the geographic distribution of termite functional traits.

"This is the first study to quantitatively model termite diversity and functional traits at large scales. And it provides a useful baseline for further ecological analysis," said Yang Xiaodong of XTBG.

The study was published in *iScience*.

**More information:** Shengjie Liu et al, Understanding global and regional patterns of termite diversity and regional functional traits, *iScience* (2022). [DOI: 10.1016/j.isci.2022.105538](https://doi.org/10.1016/j.isci.2022.105538)

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