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**Termite and Ecosystem Processes: A Study from Western Ghats, South India****Shanbhag R.R.<sup>1\*</sup>, Sundararaj R.<sup>2</sup>, Jouquet P.<sup>3</sup>**

<sup>1</sup>Indian Plywood Industries Research and Training Institute, Bangalore, Karnataka, India, <sup>2</sup>Institute of Wood Science and Technology, Bangalore, Karnataka, India

<sup>3</sup>Indo-French Cell for Water Science (IFCWS), Civil Engineering Department, Indian Institute of Science, 560 012, Bangalore, Karnataka, India

\*rashmishanbhags@gmail.com

**Abstract**

Termites are undoubtedly key soil organisms in tropical and subtropical soils. They greatly influence the physical, chemical, biological properties of soils and, consequently, water dynamics hence well known as “soil engineers”. Their effect on the ecosystem can be appreciated only if we have the detailed knowledge about the process and functions carried out by them in the tropical soil. Some studies from Africa and Vietnam gave a glimpse of services provided by the termite and under that particular vegetation but under Indian context, no such studies were conducted as result we don’t have much data regarding their effect on soil properties, water infiltration and vice versa. Hence, field studies were carried out to understand the effect of termite activity and the ecological benefits derived in terms of soil dynamics and water infiltration. The study was conducted at Uttara Kannada district located at the lavishing western ghat. Mound building termite species *Odontotermes obesus*, was considered as study species as it is the widespread and dominant termite species of the Indo-oriental region. Numerical density, mound height and soil properties of *O. obesus* mounds were only analysed along with the neighbouring soil without termite activity in forest areas. To assess the influence of the vegetation on termite mound properties, the forest types were classified into plantations, evergreen, semi-evergreen or deciduous. In the forest, termite active sites, as well as sites devoid of termite activity, were selected and the rate of water infiltration in these sites was also measured using Beerkan method. Bulk density and water humidity were measured. Data obtained were analysed. Results revealed that the amount of rainfall defined termite mound abundance, and it has a remarkable influence on the density/height of termite mounds. In terms of soil properties, clay and C content in the soil which is known to bring the stability to the termite mounds did not show any significant relationship with density or height of the termite mound. But a positive linear relationship was observed between clay content in termite mound walls and that in the surrounding topsoil. The result of water infiltration studies at the sites showed that there was a significant variation in the rate of water infiltration in the termite active sites. The study presented here is the important one as it aims towards the efficient determination of the functional influence of soil biodiversity (termites) in tropical ecosystem functioning and a better evaluation of their impacts on soil erosion and water dynamic at the local and global scale. Moreover, the link between soil biodiversity and ecosystem services, such as water availability and quality, is often mentioned but rarely demonstrated. This paper is therefore original in its approach and in it quantifies the importance of biodiversity on soil erosion, water dynamic and quality in tropical ecosystems. There is a clear lack of information on the functional impact of termites on ecosystem functioning in India, in comparison with Africa where most of the studies have been carried out. This study aims to counterbalance this trend through this paper.

**Keywords:** Termites, Soil and water dynamics, Water infiltration