

Appendix S6

Indirect control of decomposition by an invertebrate predator

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Evaluating the role of termites in decomposition

We assume that the majority of non-microbial decomposition in open bags is termite-mediated, but we are confident that this is justifiable for several reasons. Firstly, numerous studies have shown that the decomposition rates of wood, dead grass, and dung are strongly influenced by termites in African tropical grasslands [e.g. (Coe 1977; Ohiagu & Wood 1979; Freymann *et al.* 2008; Veldhuis *et al.* 2017; Leitner *et al.* 2018)]. Secondly, termites have been recorded as the main consumers of grass litter in African savannas (Ohiagu & Wood 1979), and the other main dung-feeding macroinvertebrates, coprophagous beetles, only feed on fresh dung (Holter & Scholtz 2007). Also, other wood-feeding invertebrates tend to be far less important consumers of wood than termites (Wood & Sands 1978), and occur at very low abundances compared with termites (Tuma, Eggleton & Fayle 2020).

Coe, M. (1977) The role of termites in the removal of elephant dung in the Tsavo (East) National Park Kenya. *African Journal of Ecology*, **15**, 49-55.

Freymann, B.P., Buitenwerf, R., Desouza, O. & Olf, H. (2008) The importance of termites (Isoptera) for the recycling of herbivore dung in tropical ecosystems: a review. *European Journal of Entomology*, **105**, 165-173.

Holter, P. & Scholtz, C.H. (2007) What do dung beetles eat? *Ecological Entomology*, **32**, 690-697.

Leitner, M., Davies, A.B., Parr, C.L., Eggleton, P. & Robertson, M.P. (2018) Woody encroachment slows decomposition and termite activity in an African savanna. *Global change biology*, **24**, 2597-2606.

Ohiagu, C. & Wood, T. (1979) Grass production and decomposition in Southern Guinea savanna, Nigeria. *Oecologia*, **40**, 155-165.

Tuma, J., Eggleton, P. & Fayle, T.M. (2020) Ant-termite interactions: an important but under-explored ecological linkage. *Biological Reviews*, **95**, 555-572.

Veldhuis, M.P., Laso, F.J., Olf, H. & Berg, M.P. (2017) Termites promote resistance of decomposition to spatiotemporal variability in rainfall. *Ecology*, **98**, 467-477.

Wood, T.G. & Sands, W.A. (1978) The role of termites in ecosystems. *Production Ecology of Ants and Termites* (ed. M.V. Brian), pp. 245-292. Cambridge University Press, Cambridge, Massachusetts, USA.