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## Positive feedback loop between burrowing earthworms and soil pH reinforces litter effects on belowground functioning

Ellen Desie<sup>1</sup>, Koenraad Van Meerbeek<sup>2</sup>, Hans De Wandeler<sup>2</sup>, Helge Bruelheide<sup>3,4</sup>, Timo Domish<sup>5</sup>, Bogdan Jaroszewicz<sup>6</sup>, François-Xavier Joly<sup>7</sup>, Karen Vancampenhout<sup>1</sup>, Lars Vesterdal<sup>8</sup>, and Bart Muys<sup>2</sup>

<sup>1</sup>Department of Earth and Environmental Sciences, KU Leuven Campus Geel, Geel, Belgium (ellen.desie@kuleuven.be)

<sup>2</sup>KU Leuven, KU Leuven, Department of Earth and Environmental Sciences, Heverlee, Belgium

<sup>3</sup>Institute of Biology/Geobotany and Botanical Garden, Martin Luther University Halle-Wittenberg, Halle, Germany

<sup>4</sup>German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig, Leipzig, Germany

<sup>5</sup>Natural Resources Institute Finland (Luke), Joensuu, Finland

<sup>6</sup>Białowieża Geobotanical Station, Faculty of Biology, University of Warsaw, Białowieża, Poland

<sup>7</sup>Department of Microbiology and Ecosystem Science, University of Vienna, Vienna, Austria

<sup>8</sup>Department of Geosciences and Natural Resource Management, University of Copenhagen, Frederiksberg C, Denmark

In many terrestrial ecosystems, earthworms operate at the interface between plants and soil. Their incidence and abundance depends on several soil properties, yet simultaneously they also impact soil properties themselves. The existence of a positive feedback loop in which earthworm activity maintains their own niche — by promoting turnover rate in the forest floor, thereby increasing topsoil pH and creating suitable living conditions for themselves — has been suggested before, yet lacks supporting evidence. In our European study we found that in forests where moisture is not limiting, soil acidity is an important factor determining the context of belowground interactions, and we were able to confirm the hypothesized feedback loop for forest ecosystems with soil pH  $\leq 5$ . This indicates that the activity of burrowing earthworms is pivotal in belowground functioning, amplifying external drivers (e.g. tree species effects) on biochemical cycling and triggering potential regime shifts in the abiotic compartment. In acidified soils (e.g. pH  $\leq 5$ ), forest management is often focused on counteracting acidification and restoring the soil nutrient status. In that regard, managing soil fauna is a promising avenue to steer belowground functioning and may even be necessary upon restoration.