



Earthworm populations in an altitudinal gradient (1000-1850 m) of the Coastal Atlantic Rainforest, Brazil

CARDOSO Guilherme Borges Xarão, NADOLNY Herlon, TEDESCHI Victor, FEIJOO Alexander, JAMES Samuel W., BROWN George G.

PUCPR, Curitiba-PR, Brazil; Ecosistema Consultoria Ambiental, Curitiba-PR, Brazil; Universidad Tecnológica de Pereira, Pereira, Colombia; University of Iowa, Iowa City-IA, USA; Embrapa Forestry, Colombo-PR, Brazil

e-mail: guilhermexc@gmail.com; herlonnadolny@gmail.com; tedeschi.v.h.p@gmail.com; afeijoo@utp.edu.co; samuel-james@uiowa.edu; george.brown@embrapa.br

The Brazilian Atlantic Rainforest is one of the world's biodiversity hotspots, but it is highly fragmented and only 7-13% of the original extent is preserved, mainly along the coastal mountain range which extends from Rio Grande do Sul to Southern Bahia. Around 150 earthworm species are known from this biome, but many locations still remain unsampled and with an unknown diversity. In the present study, we aimed at evaluating the abundance and diversity of earthworms in an altitudinal gradient from 1000-1850 m along the Pico Paraná/Caratua Massif, in the coastal range of Paraná State. Earthworms were sampled quantitatively using the handsorting method in three 50x50x20 cm deep monoliths, and in 12 TSBF-sized (25x25x20 cm) holes at 1000±30 m, 1150±30 m, 1300±30 m, 1450±30m, 1600±30 m, 1750±30 m and 1800-1850 m elevation. At 1450 m populations were assessed in burned (grassy vegetation) and unburned (forest) plots. Quantitative samples were taken in Dec. 2011, Mar. and Jul. 2012. Earthworms were counted, weighed and identified to species level. Furthermore, qualitative samples were taken on at least seven occasions by searching manually for earthworms in various niches (dead logs, bromeliads, soil, moss, litter, etc.).

Thirteen earthworms have been identified so far, being 5 *Glossoscolex* sp. (all new species), *Urobenus brasiliensis*, *Andiorrhinus duseni*, *Fimoscolex* sp. nov. and *Kerriona* sp. nov., as well as two *Amyntas* (*A. corticis*, *A. gracilis*), *Pontoscolex corethrurus* and an unidentified Ocneroдрilidae sp. The exotic/peregrine species were only found at the lowest elevation station. Abundance was highest at the base of the mountain=1000 m (11-43 indiv. m²; 1.5-35.2 g m²), the summit=1800-1850 m (24-30 indiv. m²; 1.7-2.4 g m²) and in the burned area=1450 m (5-47 indiv. m²; 4.8-54.5 g m²). In the intermediate and higher elevation forest plots, earthworm abundance tended to be much lower, with frequent zeroes in the samples, probably due to shallower and/or sandier-rockier soils, due to steep slopes, reducing habitat quality for earthworms despite a generally high OM content. This is the first study of earthworm diversity along an altitudinal transect in Brazil, and shows that many new species can be found using this methodology, but also that a significant collection effort is necessary to do so.