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Earthworms in different land-use systems in Santa Catarina, Brazil

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The anthropogenic impact in the environment, due the use and management of soil, has an important influence in the earthworm populations (density and diversity). The state of Santa Catarina has not much information on earthworms surveys. The aim of this study was to evaluate the density and diversity of earthworms in different land-use systems (LUS). The study was carried in the Santa Catarina State in Brazil and is part of the SisBIOTA/SC Project. Five ecosystems were sampled (forest - F, eucalyptus plantation - RE, pasture - PA, no-till - PD and crop-livestock integration - ILP) in six counties (three from the WEST and PLATEAU regions within SC state). Nine monoliths of 25 x 25 cm x 20 cm (TSBF) were sampled at each site and worms were collected by hand shorting. Sampling was carried out in winter (July and August of 2011) and summer (December of 2011 and January of 2012). Rarefaction curves of earthworms diversity were derived for each site, using the results of identification of adult, subadult and juvenile (with accurate identification to the species level) earthworms, as well as boxplots of worm density in the different LUS. The rarefaction curves show a tendency for a decrease in the specific richness in function of reducing the anthropogenic impact in the LUS (ILP>PD>PA>RE=MT) (13>9>8>6=6 sps). For the MT and RE systems, the rarefaction curve is far from reaching stability especially due the low number of individuals collected. The estimated species richness (ACE) shows that the diversity of those sites can be higher. A total of 17 species were identified in all LUS, 11 native (*Urobenus brasiliensis*, *Ocnerodrilidae* sp.1, *Ocnerodrilidae* sp.2, *Ocnerodrilidae* sp.3, *Glossoscolex* sp.1, *Glossoscolex* sp.2, *Glossoscolex* sp.3, *Glossoscolex* sp.4, *Fimoscolex* sp.1, *Fimoscolex* sp.3, *Fimoscolex* sp.4) and 6 exotic (*Amynthas gracilis*, *Amynthas corticis*, *Metaphire californica*, *Octolasion tyrtaeum*, *Bimastus parvus* and *Dichogaster gracilis*). The exotic species are mostly related to the agricultural sites (ILP and PD), although native species were also found in those sites. The highest earthworm densities were observed in ILP, followed by PA and PD, while MT and RE sites presented the lowest values. This preliminary results shows a tendency of the agricultural sites (ILP and PD) to maintain a higher density and diversity of earthworms compared to the sites with lower impact (PA, RE and MT).