AFLP markers and DNA barcodes indicate diverse cryptic species lineages within *Urobenus brasiliensis* (Clitellata: Rhinodrilidae)

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With increased attention to genetic data, cryptic lineage complexes within morphologically homogenous nominal earthworm species are becoming better known. Preliminary data from various earthworm sampling campaigns in south-eastern Brazil showed that there were many lineages of nominal *Urobenus brasiliensis* (Clitellata: Rhinodrilidae) separated by divergences of >10% in the COI DNA barcode marker.

We conducted extensive sampling in south-eastern and southern Brazil in order to examine the hypothesis that there is geographical structure in the genetic data. Further, we were interested in gene flow among *U. brasiliensis* populations, concordance between nuclear and mitochondrial markers, and any morphological correlates of the genetically-defined lineages. There is strong geographical structure in the mitochondrial (COI) and nuclear (AFLP markers) data sets, and this structure is congruent between data sets. Clusters identified by barcodes largely agreed with the AFLP clusters. However, morphological variation among these clusters is minimal. Our results suggest that it may be difficult, if not impossible, to arrive at morphologically definable species-level taxa in the complex. An additional problem is that we do not have genetic data from the type specimen or another specimen from type location of the species, making it uncertain which lineage would bear the name *U. brasiliensis*.