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Identification of cryptic diversity in *Trichodrilus* Latreille (Clitellata, Lumbriculidae) in Moroccan ground waters

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Ground waters and hypogean habitats in general, were recently shown to harbour remarkably high numbers of sibling, or cryptic species, which cannot be identified by Standard morphological means, and might account for an important part of groundwater diversity. Most of these cryptic lineages have small geographic ranges, and ranges over 200 km are extremely rare. A recent survey of oligochaetes in Morocco has shown that the stygobiotic lumbriculid *Trichodrilus* is surprisingly low in species richness in the country, in spite of a wide geographical distribution, suggesting the existence of cryptic diversity in the genus. The genetic variation, and the existence of potential cryptic taxonomic diversity in *Trichodrilus* was investigated in sequencing the mitochondrial COI and 12S genes for a total of 26 specimens, representative of 5 hydrogeographic basins, and 5 different valleys within the Tensift basin. Comparisons between pairwise distances (K2P) and neighbour-joining tree re-constructions separated the specimens into two non-overlapping groups characterized by a mean genetic variation of (1) $8.58\% \pm 3.03$ and (2) $23.88\% \pm 1.42$, respectively (COI). Considering such a gap as a threshold separating intraspecific variation from interspecific differences suggests that a minimum of 5 species is present in Moroccan ground waters, instead of 3 morpho-species identified so far. The observation that, in the same station, some specimens were distant from each other by 11.0% enables us to refine this interpretation and to suggest that the latter value is a better threshold for discriminating between species. This threshold has important implications because (1) it increases the species richness of *Trichodrilus* to a minimum of 10, and (2) it suggests that its own assemblage of endemic species can characterize each hydrogeographic basin. At the scale of the Tensift basin, the supposedly intraspecific genetic diversity remains high, $5.40\% \pm 2.69$ on average, suggesting that the investigation of intraspecific genetic variation with appropriate genetic markers, such as microsatellites, could help to identify assemblages characteristic of subunits, such as aquifers, within one hydrogeographic basin. This study gives interesting perspectives since it suggests that DNA barcoding could provide a simple tool to help water agencies to better manage this invaluable resource. The identification, through barcoding, of indicator species assemblages sampled during drilling for water, should enable to accurately identify the aquifer and, hence, to avoid its overdevelopment.

Key words: cryptic biodiversity, *Trichodrilus*, Clitellata, ground water, Morocco, molecular taxonomy