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Conference Abstract

Nematodes down under: State of knowledge and future trends

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Abstract

Nematodes inhabit most environments that address their need of water, carbon, and energy. They also play an important role in epigean food webs by occupying different trophic levels, while providing essential ecosystem services such as regulating decomposition and nutrient mineralization. Conversely, little is known about the role that nematodes play in subterranean ecosystems. For this reason, an in-depth review was undertaken in order to concatenate data from existing literature and provide a baseline for future studies. A total of 41 surveyed scientific works, published over a time period of 138 years, reported 295 unique taxa from 78 different cave systems. Although an increase in scientific outputs was recorded from the late 1990s, there is a considerable lack of information on cave-dwelling nematodes from Asia, South America, and North America. Also, only seven true cave-dwelling (troglobitic) species have been discovered, which may indicate a lack of comprehensive taxonomic efforts. From an ecological perspective, very few works have reported on the importance of nematode assemblages associated with cave ecosystems. This has resulted in the causal factors leading to population resilience processes, as well as trophic interactions, remaining mostly speculative. Nonetheless, the isolated cave-dwelling nematode assemblage associated with Movile Cave, including the true cave-dwelling species *Chronogaster troglodytes*, fulfills an important role by feeding on microbial mats and in turn serving as a food source for predators. This example of a cave

nematode assemblage providing ecosystem services has inspired the undertaking of the Gcwihaba Caves Research Project, which aims at studying artificially opened caves in Ngamiland, Botswana. Compared to other caves in the area with natural openings, the artificially opened systems present different food source pathways, atmospheric conditions, and community assemblage structures. This provides a unique opportunity to study isolated cave communities, including nematode assemblages, as well as their ecological importance.

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