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Bio-Speleology and Possible Trophic Networks in Sri Lankan Caves

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Abstract

Caves are characterized by a combination of darkness, relatively stable temperature, humidity and limited supply of nutrients hence considered as an extreme environment where there is no photosynthetic plants grow. Caves receive energy allochthonously via animals (bats, rats, birds, and crickets), root exudates, and water flow and windborne input; such inputs supports many detrititvores, scavangers, and a rich predator guild. A great range of cave types, karst and karst-like features occur in Sri Lanka in a range of host rocks. Although rich with folklore, believes, legends and myths speleology is not a celebrity among scientific disciplines in Sri Lanka. Somehow cave studies are a frontier in scientific explorations around the world, hence, this attempt was made to understand the ecological role of several Sri Lankan caves in relation to the agriculture production. We have studied 18 dark caves in Sri Lanka since 2008 and documented the fauna in the aphotic zones. Based on feeding habits of the fauna, a generalized food chain and a food web were designed. The cave fauna belong to detritivores (bacteria, fungi, annelids, nematodes, insects, millipedes) and carnivores (spiders). Michrochiropteran bats are the main source of organic matter into the caves. The contribution of agriculture for the GDP for the year 2013 was 12.8% and this production is atleast partially contributed by bats by pollinating crops and surpressing insects pests. Studying these trophic links may help improve agriculture production as well as the cave ecosystems and bats.

***Keywords*:** Michrochiropteran bats, Speleology, Sri Lanka