



BCRA

Supported by Funding from The Cave Science and Technology Research Initiative.

MATIENZO KARST ENTOMOLOGY PROJECT

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SPELEOBIOLOGY IN THE CANTABRIAN MOUNTAIN KARST MASSIF OF NORTHERN SPAIN.



A Hypogean Ground Beetle (*Laemostenus cavicola*) in Torca del Refñada

This larger Iberian karst region includes the Picos de Europa and the Spanish Pyrenees. However, while both these areas are rich with speleological interest, they differ environmentally from the study area to a significant degree in many respects. Personal observations in the course of this exploration have indicated that the fauna are also different to a marked degree as supported by the first two seasons of field work. The study is being continued in a variety of cave systems selected to represent the variety of underground habitats displayed in the massif including those with active stream systems, dry sand or mud floored, relic fossil passage and sections filled with breakdown and boulders at intervals of depth into the system from the entrance zone. The Field work is centered on a dedicated team running a site collection period in March and April, supported by voluntary inputs from visiting speleologists throughout the year and aiming to teach basic entomological skills to all those that would like to be involved as part of each main visit.



Orb Spider (*Meta bournetii*) in Cueva del Agua

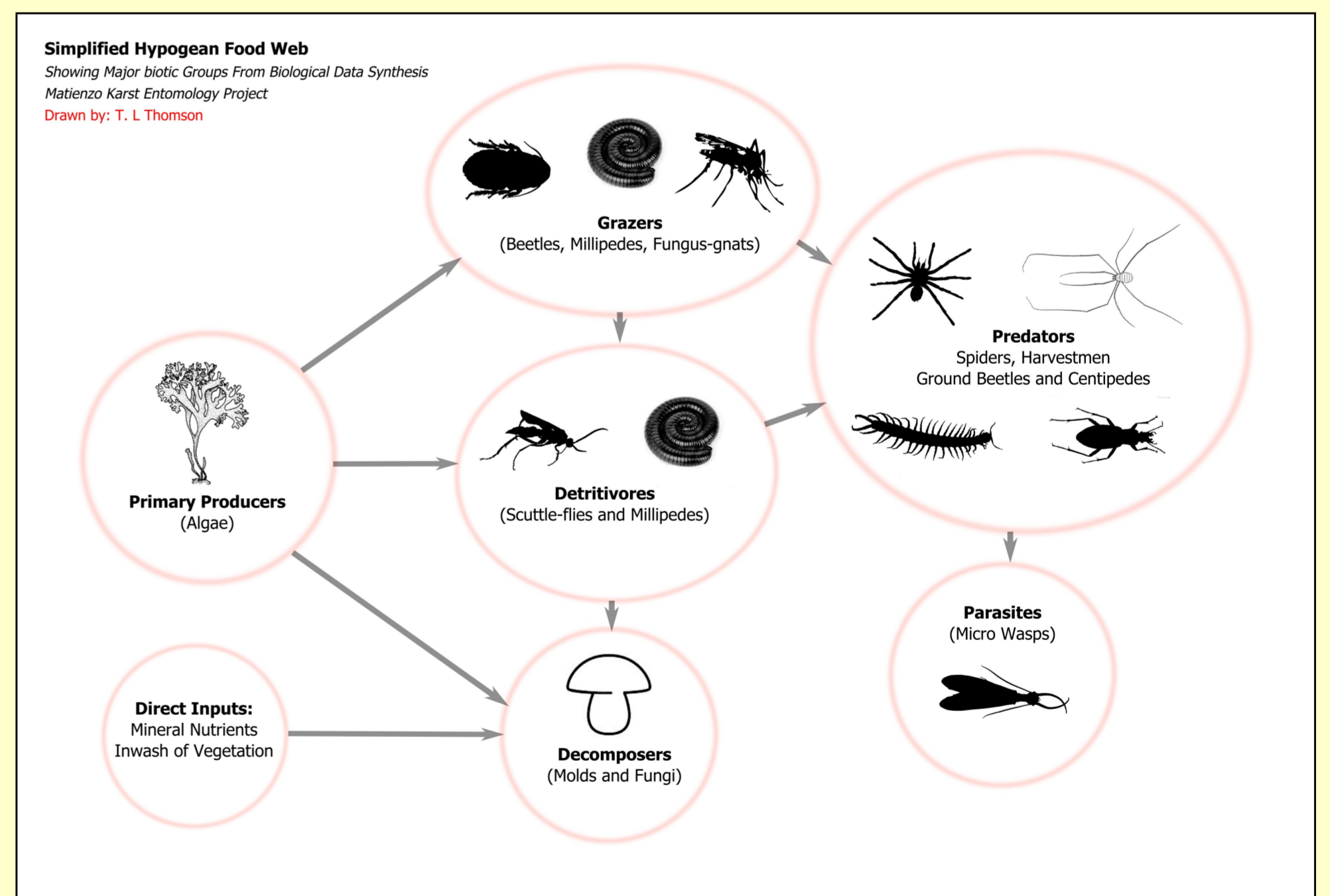
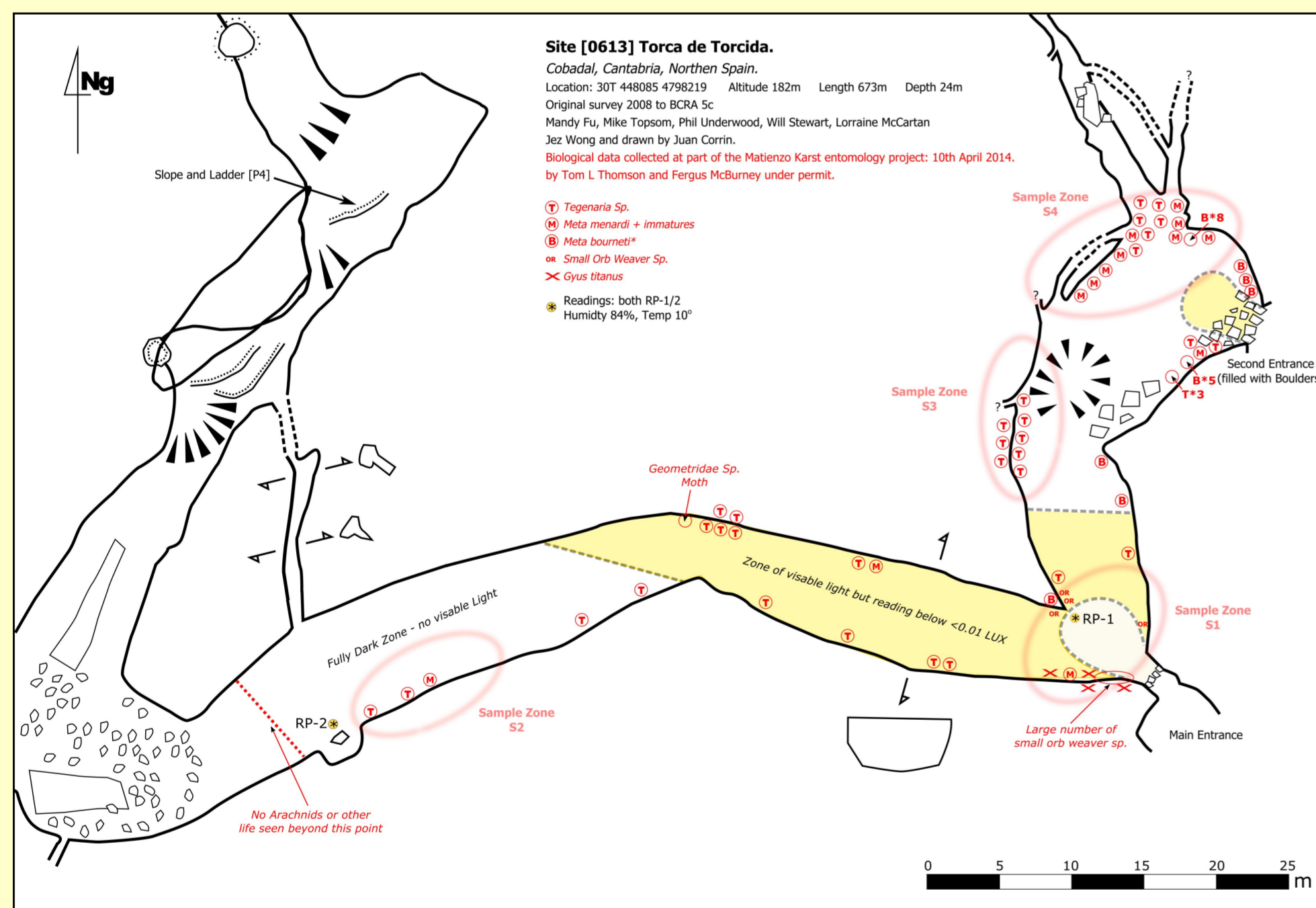
The project is an independent research initiative working within the international caving community, which started as a crossover project between the hobby caving and mainstream academic communities. The aims of the research are to study the fauna of the caves in the Matienzo basin of the central Cantabrian karst, as there has been minimal work to date on the invertebrate life within these cave systems with no formal scientific work undertaken to study this specific karst massif or to collect enough specimens to create a check list of species. Only very select data exists for the wider region which is only on specific groups without a clear food web linkage. This project seeks to bridge that knowledge gap, and give us a clearer picture of the Speleological Biodiversity.



Shed skin of a *Lithobius Sp.* Centipede in Cueva de Riaño.

We are building on this open research model and seek to work with an ever growing group of contributors, both voluntary and in a professional capacity. There is still a long way to go however and we are currently seeking funding to carry out genetics analysis work on the most intriguing and hard to identify specimens. This will enable further linkages to be made between organisms and species groups both fully subterranean and transitory from surface, together with environmental conditions data it will all add to the slowly growing picture of whole cave biome. This in turn will determine the niche of terrestrial species in the ecology of these caves and their importance to full adapted hypogean species of the deep underground ecosystem.

Survey, Fieldwork and Current Progress:



The initial phase of work was focused on testing of trapping methods and identifying key species in the ecology of the underground food web, both Hypogean (within the cave) and Epigeal (migrants from surface to feed or shelter in the cave). Surveys such as that shown above are an important tool in this phase, to look at the species in cave entrance zones and to investigate the relationship of species distribution and population density under two key sets of variables:

- (a) Cave topography in terms of size, shape, availability of refuges for web building and shelter.
- (b) Environmental factors of air flow, temperature, humidity and illumination.

Observations of the species collected to date suggest that biodiversity and diversity limitations aside all the major biotic groups found in a classic food web can still be discerned including: Primary Producers, Decomposers, Grazers, Predators, Detritivores and Parasites. What is also clear is a complex relationship between species adapted for a complete subterranean life cycle and surface species (such as flies & micro wasps) which appear capable of spending extended periods of time and significant portions of their life cycle underground at great depth despite their lack of adaptation and the disadvantage compared to adapted species this represents.

Working with the Caving and Academia Communities Across Europe



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