Sicilian endemic arachnids: open problems and patterns of distributions

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Sicilian arthropod fauna is still inadequately studied, as demonstrated by numerous discoveries in recent years. This gap is particularly troublesome for endemic species, some of which may already be at risk of extinction due to limited knowledge by the scientific community. Endemic arachnids are a perfect example of this issue.

This study aims to compile and update current knowledge on Sicilian endemic arachnids, by merging classical and digital literature data and new field records, and to analyze potential distribution patterns.

All available data on Sicilian endemic arachnids, extracted from online databases and scientific literature, were integrated with an ongoing region-wide sampling campaign. Species occurrences were compiled and georeferenced for the first time, and their distribution patterns were analyzed, with an important focus on hypogean ecosystems, protected areas and the last year of collection for each species.

Counting spiders, scorpions, pseudoscorpions, harvestmen and mites (restricted to oribatid), results show that Sicily and circum-Sicilian islands have 42 endemic arachnid species. These taxa seem to be widely distributed in Eastern Sicily, but are unexpectedly scarce in the western part of the island. They are widely distributed in regional parks and reserves, except for hypogean species, which are more distributed outside protected areas. Remarkably, most species can be considered "lost", not having been collected at least in the last 20 years, and one-fifth of them has been discovered in the last two decades.

Possible explanations for these distribution patterns (East vs. West, protected vs. unprotected areas) and a general assessment on the current state knowledge are discussed.