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EcoFINDERS at Time in Jazz was
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TUTTI GIÙ PER TERRA
"The invisible world"
workshop

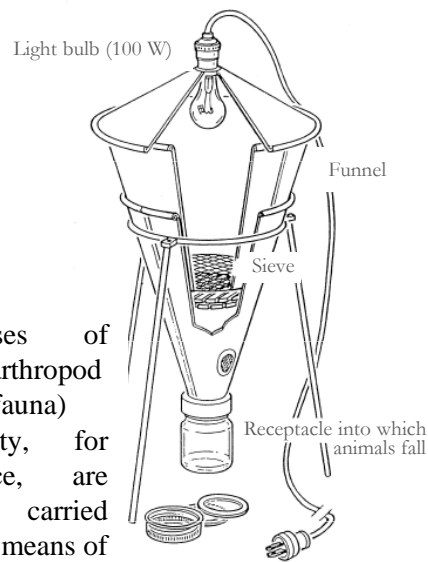
How is soil
biodiversity
studied?

Researchers of the
EcoFINDERS project
hunt for creatures
hidden into soil

Berchidda
August 14, 2011

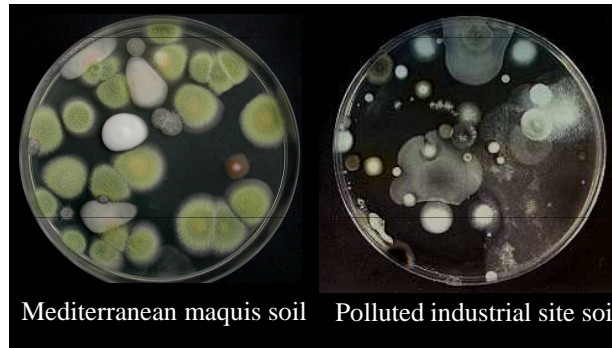
The huge diversity of creatures inhabiting soil cannot be studied just by means of direct observation. Soil is indeed an opaque matrix; furthermore, many organisms (particularly the simplest microorganisms) lack morphological features allowing species identification.

Therefore, scientists have to rely on extraction methods.



Analyses of microarthropod (mesofauna) diversity, for instance, are often carried out by means of a special apparatus (the Berlese-Tullgren funnel), that exploits the avoidance response of animals to dryness caused by heating (by a small lamp at top of a funnel).

This downward movement eventually causes the soil animals to fall into a container with preservative, from where they can be collected, counted and identified.



A classic method to assess the richness and diversity of bacteria and fungi consists in seeding soil, following dilution, on culture media into sterile containers (Petri dishes). After some days the development of microorganisms, able to feed on nutrients contained in the medium used, can be observed.

Comparison of Petri dishes prepared with different soils allows to appreciate differences in their biodiversity.

Progress in molecular biology offers new tools. It is nowadays possible to analyse directly the genetic material (DNA) of soil organisms. DNA is first extracted from soil and then specific portions of it are subjected to an amplification reaction (the so-

called "Polymerase Chain Reaction", or PCR). Such a reaction yields, from a starting minimal quantity of DNA, an amount sufficient for analysis.

This technique enables researchers to address the diversity even of microorganisms that cannot be cultured on standard media.

The most recent technological advancements (454 pyrosequencing) yield hundreds of thousands DNA sequences in a very short time.



Researchers of the EcoFINDERS project will take advantage of the latter approach to analyse a variety of European soils, including soil from Berchidda-Monti.

Text by M. Girlanda