Can soil organisms become our best teachers? Exploring soil biodiversity as an ecosystem service provider of excellent environmental education

Loren B. Byrne, Roger Williams University, Bristol, RI, USA

Sustainable, thriving human societies depend on the conservation and management of biodiversity and ecosystem services. Those, in turn, depend on the actions of environmentally literate citizens who understand environmental issues and use ecological knowledge for decision making. Since soil biodiversity has critical roles for supporting human well-being, it should feature prominently in environmental education programs that seek to foster higher levels of people's environmental literacy. This should be easily accomplished because soil organisms have many characteristics that suggest their utility for environmental education: they are easy, quick and inexpensive to find in urbanized environments; many are fascinating, beautiful and fun to interact with. Also, their relatively small, less-well-known and underused stature can spark people's curiosity. Nevertheless, soil biodiversity is often overlooked in education programs, and most people's soil literacy is probably relatively low. This presentation explores opportunities to cultivate the recognized but under-examined ecosystem service of teaching with a focus on using "soil organisms as teachers" (a.k.a. educational service providers). Many possibilities exist to develop creative, hands-on education resources and activities that integrate soil organisms, such as living soil bins, scavenger hunts, and "outdoor classrooms" to dig in. A case study from Rhode Island, USA illustrates how a soil ecologist partnered with a local environmental education center to create soil biodiversity exhibits and teaching materials with outcomes that can be adapted in other places and contexts. Additionally, soil ecologists should help develop "soil surveys" (quizzes, questionnaires) to assess whether people's environmental literacy is improved by soil biodiversity education experiences. Such efforts by those who understand and love soil organisms the most is needed to cultivate the valuable ecosystem service of teaching by soil organisms. This enhanced service may help environmental education programs excel in fostering both the soil-specific and general environmental knowledge needed to support more sustainable soil-literate societies.