Call for a Census of Soil Invertebrates (CoSI)

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Abstract. A case is argued for urgent reappraisal of biodiversity of soils in order to mitigate their rapid global decline (MEA). A first step is to compile a "stock inventory" of soil fauna thought to number around 210,000 species. Basic knowledge is yet wanting and even earthworms are poorly known despite being the major component as well as key "environmental-engineers" and vital links in all terrestrial food webs (including in waterways, hence their excellence yet trivial use as bait). That biodiversity of earthworms is disproportionately underappreciated is surprising as, with 10,000 already named and many more expected, they are no less species-rich than marine polychaetes, for example, that number ca. 8,000 valid taxa. A model for CoSI is the 10 yr, $1 billion global Census of Marine Life (CoML) that concluded with 250,000 total ocean taxa, but since 2 million species are already catalogued and estimates of diversity are of 10 million, this represents 12.5% of described species and just 2.5% of a probable total. Even claims that oceans occupy two thirds of the planet overlooks that land is hilly and the relative surface areas are perhaps 50:50. Socio-economic arguments flounder in context of 99% of the total worldwide human food supply produced on land, whereas oceans and other aquatic ecosystems provide a paltry 0.6% (FAO). Thus it seems timely and appropriate to advocate a sea change to firmly ground eco-taxonomic studies on our diminishing soils that support all life on Earth and, via runoff, provision or pollute the oceans too.

Key words. Biodiversity inventory, Annelida, Oligochaeta, extinction, taxonomy.

Introduction

*"*The nation that destroys its soil destroys itself" (T. Roosevelt 1937). Life on Earth springs from soil. Such a statement may seem trite, or obvious, yet no one could reasonably deny it. From this foundation we may assume that the manifest importance of our vital soil resource means that both its functioning and inventory is well understood scientifically and that its great value ensures it is well protected and conserved. Yet such conditions are far from realized. Instead we find that our knowledge even of the most obvious and important component of the living soil, the earthworms or so-called "environmental-engineers", are particularly poorly known and, moreover, the importance of soils study seems to be derogated to a minor component of our concern or interest commanding a fraction of funding given to other research spheres.

Only 12% of the Earth is habitable and the share of terrestrial surface that is cultivated is just 24% with 5% supporting permanent crops upon which we all depend for our basic survival according to the UN's Millennium Ecosystem Assessment (MEA 2005). Of this agricultural land, approximately 40% is seriously degraded. The 1991 UNEP funded Global Survey of Human-Induced Soil Degradation Report (GLASOD 1991) showed significant problems in virtually all parts of the world. The MEA, which despite its scope did not consider 'Soil Systems' separately, nevertheless ranked land degradation among the world's

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