GLOBAL
SOIL BIODIVERSITY
INITIATIVE

PROPOSAL FOR A GLOBAL SOIL BIODIVERSITY ASSESSMENT TO BE GUIDED BY THE GLOBAL SOIL BIODIVERSITY INITIATIVE

Global Soil Partnership
First Plenary Assembly: 11-12 June 2013, Rome

The Role of the Global Soil Biodiversity Initiative in Global Sustainability

The Global Soil Biodiversity Initiative (GSBI) is a bottom-up collaboration of international scientists dedicated to enhancing the use of soil biodiversity science and ecosystem processes and services in policy and management of global terrestrial ecosystems. The Earth's soils are living, dynamic interfaces that are habitats for millions of microbial and animal species. Soil biota are critical to human well-being because their activities underpin soil resources and the delivery of major ecosystem services. Further, soil organisms sustain the soil's capacity to provide us with food now and in the decades to come. Despite the numerous ecosystem services provided by the life in soil, soil biodiversity has received little international attention in the context of agriculture and virtually no attention for other systems (both managed and natural). ***To sustain soil ecosystem functioning and services the focus on soil biodiversity needs to increase in both agricultural and natural systems for the continued sustainability of all systems and land uses.***

Proposal for the first Global Soil Biodiversity Assessment:

Here the GSBI proposes a Global Soil Biodiversity Assessment (GSBA) to bring the rapidly developing science of soil biodiversity and ecosystem services into the local, regional and global management of lands for global sustainability.

- The GSBA will be scientifically credible, independent and peer-reviewed, and will identify uncertainties.
- The Assessment will outline the current state of knowledge, and highlight relationships between soil biodiversity and ecosystem functions and services.
- The GSBA will identify and prioritize key scientific information needed for policymakers, and serve as an independent scientific resource for policymakers.
- Maps useful to policymakers and the public will show potential changes and links to global change drivers.
- The GSBI will assure that a network of international scientists (e.g., soil ecologists, taxonomists, soil scientists, biogeochemists, ecosystem scientists, agronomists) and policymakers representing different countries, regions and gender will be involved in the GSBA.
- The final product of the GSBA will be available in print and online, and include a *Global Soil Biodiversity Atlas*.

To initiate the Assessment, the GSBI held the first international planning meeting for the *Global Soil Biodiversity Assessment* at Colorado State University, Fort Collins, CO in ***February 26-28, 2013***. Over 20 international scientists were invited to participate. The primary outcome of this workshop towards an assessment will be a **Global Soil Biodiversity Atlas**. The Atlas will present current knowledge on soil biodiversity across

regions and management systems in a compelling manner and bring awareness to the importance of soil biodiversity in maintaining ecosystem services. The Atlas target date for release is December 2014 and is supported by the European Commission-Joint Research Centre.

THE GSBI ACHIEVES ITS MISSION THROUGH SCIENTIFIC ACTIVITIES:

Meeting the challenges of land degradation (including soil degradation and loss of soil biodiversity) climate change and food security, while having to sustain the productivity of our natural and managed lands requires not only knowing the role of interacting soil organisms and the services they provide, but also implementing that knowledge. Recent research and technological advances have vastly increased scientific knowledge on soil organisms, and clearly highlight that changes to soil biodiversity and ecosystem functioning are occurring, especially in the context of climate change. ***The primary mission of the Global Soil Biodiversity Initiative is to develop a platform for promoting the translation of expert scientific knowledge on soil biodiversity into environmental policy and sustainable land management.***

GSBI ACTIVITIES:

I. Inform policy and research alike by providing clear, transparent and scientifically credible information:

- **a.** Provide policymakers with specific evidence for the management and preservation of soil biodiversity in maintaining ecosystem function.
- **b.** Produce "state of the science" papers on critical topics of global importance.
- **c.** Clearly link soil biodiversity to sustaining ecosystem services and management of food, lands, water and atmosphere.

II. Collaborate with existing and new initiatives on biodiversity that relate to soil: UNCCD, UNFCC and Other Organizations:

- **a.** The GSBI offers to collaborate with all existing entities (CBD, FAO, IPBES, UNCCD, UNFCC, European Commission) within the framework of the Global Soil Partnership (GSP), and with other organizations (e.g., IUCN, Future Earth, NGOs) by providing scientific knowledge on soil biodiversity and ecosystem services and identifying gaps in knowledge.
- **b.** Link GSBI goals and mission to UN Strategic Biodiversity Goals and Aichi Biodiversity Targets in the framework of the implementation process of the CBD.
    - **i.** Address underlying causes of loss of soil biodiversity and highlight vulnerable soil ecosystems.
        1. Identify incentives for managing soil biodiversity for improved ecosystem services and human well-being.
        2. Provide examples of successful management of soil biodiversity for improved ecosystem services and sustainable production and consumption.

ii. Highlight the massive biodiversity held within soils and suggest methods to reduce pressures on soil biodiversity and the services they provide (some of which we have yet to utilize).
    1. Facilitate soil, water and regional land conservation of soil biodiversity.
    2. Provide information on regional differences in soil biodiversity function and services in agricultural and natural systems.

c. Provide a global network across sectors with links to organizations such as CBD, FAO, IPBES.

d. Highlight and endorse regional and global research activities by linking with CBD, FAO, IPBES, Future Earth and other organizations.
    i. Outline tactics to preserve soil biodiversity health and functioning soil systems.
    ii. Link global individual research projects and surveys, acting as a research clearing house.

III. Encourage capacity building in all aspects of soil biodiversity and ecosystem services:

a. Educate students to understand and manage soils biodiversity in order to meet global challenges.

b. Provide links to information online on management of soil biodiversity for ecosystem services, such as: soil quality and health standards and indicators for monitoring.

c. Promote technologies such as use of cell phones to transmit information to a central database and users.

d. Harmonize standard methods and monitoring methods.

e. Relay information to public and education mechanisms, in print and online.

f. Encourage the connection of land users from a local to regional scale.

CURRENT ACTIVIES OF THE GSBI

I. Position Paper: The international participants at the first GSBI Open Science meeting in London, 2012 produced the GSBI Position Paper (globalsoilbiodiversity.org/London2012). The document outlines the need and goals of the GSBI.

II. Research Endorsement: The GSBI encourages regional and global soil biodiversity research projects and networks and is open to future endeavors. Global projects will focus on relating soil biodiversity across global scales. A regional project for Europe (ECOFINDERS) financed within the EU FP7 programme is supporting the GSBI.

STRUCTURE OF THE GSBI

I. Coordination: The GSBI is coordinated by a Secretariat housed in the USA (Colorado State University). An Advisory Board of international scientists, interested parties and the European Commission set priorities. The GSBI receives institutional funding only from the founding institutions of the Leadership.

II. **Founding Institutions:** Colorado State University, USA; Lancaster University, UK; Wageningen University and the Netherlands Institute of Ecology (NIOO), Netherlands; University of California, Davis, USA; European Commission, EU.

III. **Supporting Entities:** Support has been provided by the Founding Institutions EcoFinders, the EC-Joint Research Centre and the University of Western Sydney, AUS. Activities at RIO+20 were supported by EMBRAPA, Brazil.

IV. **Timeline of the GSBI: Progress and events:**

- First GSBI Conference- Assessing soil biodiversity and role for ecosystem services, Dijon, FR (December 2014)
- GSB-Atlas Planning Workshop (February 2013)
- Rio +20 Side Event (June 2012)
- 1st open meeting held (London, March 2012)
- Latin American Congress of Soils (March 2012)
- GSBI Initiated in Fall 2011