



## BOOK OF ABSTRACT

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### I. SESSION DESCRIPTION

**ID: T3**

#### Title of session:

From data repositories to ecosystem services assessments – mind the gap

#### Hosts:

	<b>Title</b>	<b>Name</b>	<b>Organisation</b>	<b>E-mail</b>
<b>Host:</b>	Ms	Debora Drucker	Embrapa Informática Agropecuária	<a href="mailto:debora.drucker@embrapa.br">debora.drucker@embrapa.br</a>
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<b>Co-host:</b>	Mr	Jorge Antonio Gómez Díaz	Instituto de Ecología A.C.	jorge.gomez@inecol.mx
<b>Co-host:</b>	Mr	Antonio Mauro Saraiva	Universidade de São Paulo	saraiva@usp.br

#### Abstract:

Access to trustable data sources is crucial to allow effective Ecosystem Services (ES). Assessment and monitoring as indicators and models play a significant role in this endeavor. Worldwide, there is a large and growing amount of data being generated and a variety of research data repositories providing long term access to data, but benefit transfer needs to rely on large, complete and exploitable databases which, for the moment, are missing. In this session, we intend to promote the discussion on the main obstacles for the generation of databases and the effectiveness of data repositories on subsidizing ES policies, programs and



projects, as well as on the identification of their shortcomings, ways forward to overcome them and the exploration of successful experiences.

### Goals and objectives of the session:

In this session, we aim to gather experiences on the generation and management of valuation databases to subsidize policies, programs and projects related to ecosystem services. (i.e., support Payment for Ecosystem Services Programs, financial compensation for preservation / conservation, credit lines for conservation practices, among others, with a focus on ecosystem services).

Within that objective, presentation of experiences that relate data repositories usage to ES valuation or to ES evaluation or monitoring facing interventions of programs or projects are encouraged. Presentations of reports on experiences of database integration and dissemination of ES related data are also welcome.

### Planned output / Deliverables:

An overview of current initiatives on data repositories usage in ES assessments, and experiences exchange to move such initiatives forward and to promote new ones.

### Related to ESP Working Group/National Network:

[Thematic working groups T3 – ES Indicators](#)



## II. SESSION PROGRAM

**Date of session:** Tuesday, 23 October 2018

**Time of session:** 15:30–17:00

### Timetable speakers

Time	First name	Surname	Organization	Title of presentation
15:30–15:35	Debora	Drucker	Embrapa Informatics	Introduction
15:35–15:45	Fernando	Rodriguez	University of Salamanca	A new database of economic valuations of ecosystem services based on an open source collaborative platform
15:45–15:55	Marilia	Valli	UNESP	NuBBE Database, the importance of a database of natural products from the Brazilian biodiversity to support ecosystem preservation
15:55–16:05	Dora Ann	Lange Canhos	Centro de Referência em Informação Ambiental	speciesLink and Ecosystem Services
16:05–16:15	Kayna	Agostini	Federal University of São Carlos	BRAZILIAN ASSESSMENT REPORT ON POLLINATORS, POLLINATION AND FOOD PRODUCTION
16:15–16:25	Juliana Sampaio	Farinaci	National Institute for Space Research (INPE)	Knowledge gaps in the IPBES Regional Assessment Report on Biodiversity and Ecosystem Services for the Americas
16:25–16:35	Aline	Furtado Rodrigues	International Institute for Sustainability / Pontifical Catholic University of Rio de Janeiro	Systematic review on Soil Ecosystem Services in Brazil
16:35–16:45	Julia Camara	Assis	UNESP – Rio Claro	Insights for Biodiversity Accounting in tropical regions



Time	First name	Surname	Organization	Title of presentation
16:45-17:00	Host/co-host			Discussion

### III. ABSTRACTS

The abstracts appear in alphabetic order based on the last name of the first author. The first author is the presenting author unless indicated otherwise.

#### 1. Type of submission: **Abstract**

T. Thematic Working Group sessions: T3 From data repositories to ecosystem services assessments – mind the gap

### Brazilian assessment report on pollinators, pollination and food production

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Along the last decades, pollination biologists have studied plant–pollinators interactions in several dimensions in Brazil, including pollination deficit and pollinator diversity, which supported conservation initiatives related with the pollination ecosystem service. In this perspective, the collaboration between the Brazilian Platform of Biodiversity and Ecosystem Services (BPBES) and the Brazilian Plant–Pollinator Interactions Network (REBIPP) produced a national assessment to synthesize the ongoing knowledge on pollinators, pollination and food production in a science–policy interface. This assessment summarizes the scientific information on the pollination services associated to cultivated and wild crops used as human food, and other pollinator provisions, like bee products and their associated cultural value. We reviewed data on the pollination services of 191 crops and provided a list of approximately 600 flower–visiting animal species from which 250 were reported as pollinators of crops. This



list comprises bees, beetles, flies, birds, butterflies, moths, wasps and bats. Although bees accounted for about 50% of this richness and pollinate 63% of crops, several native crops depend on other pollinator groups. Most crops are highly pollinator-dependent (essential=35%; great=24%). Regarding this dependence and the annual crop production value, we estimated a pollination value around U\$ 11 billions, mainly (80%) associated with the production of soybeans, coffee, orange and apple. The current threats to pollination services and the opportunities to mitigate them are also described. Habitat lost and pesticides are the main threats and can generate pollination deficits. Forest cover and pollinator management can preserve this ecosystem service. Manageable native species have been known as effective to increase food yield and most of them are stingless bees from which honey and other products have high aggregated values. With this assessment, we give the scientific support for the establishment of strategic plans and public policies for the conservation of the pollination ecosystem services and food assurance.

**Keywords:** conservation policies, crop pollination, food assurance, pollinator protection, valuation of ecosystem services

2. *Type of submission: Abstract*

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## Insights for Biodiversity Accounting in tropical regions

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In countries with emerging economies such as China, India and Brazil, which present extensive territories and a wide variety of ecosystems, economic goals and political decisions must take biodiversity, water, carbon and land valuation into account. For a country to develop, not only economic growth should occupy the national agenda. Embracing the United Nations proposal on System of Environmental-Economic Accounting (SEEA) and the Experimental Ecosystem



Accounting (EEA), we decided to develop a novel strategy for an Experimental Biodiversity Accounting which is one of the SEEA thematic accounts along with the water, land and carbon accounts. Our goals are to perform the Biodiversity Account to assist the development of the Environmental Accounts and, at the same time, aid policy and management decisions. For this we used species distribution models as input layers. Therefore, we modelled the distribution of 26 vertebrate species selected by their ecological relevance, vulnerability, sensitivity and endemism. For these 26 species we adopted a common modelling background that comprised four different biomes. We used the ensemble of 5 replicates of 4 different algorithms to come up with a frequency probability of each species occurrence. We then combined species results in groups of species according to taxonomic and ecological criteria. Our results present a spatially explicit representation of biodiversity frequency that could be expanded both in the number of species and in the area covered. Although we did not perform a temporal comparison, main goal of the accounting framework, we do provide a benchmark for future evaluation of biodiversity modification. This approach can be easily adopted by governmental institutions that wish to give a step forward to achieve sustainable development by taking biodiversity into account. Our results also have implications for biodiversity accounting in other large, biodiversity rich countries as well.

**Keywords:** System of Environmental–Economic Accounting, Experimental Ecosystem Accounting, Species Distribution Model, biodiversity indicator



3. *Type of submission: Abstract*

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## Knowledge gaps in the IPBES Regional Assessment Report on Biodiversity and Ecosystem Services for the Americas

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Assessing status and trends in biodiversity is an important process for identifying and classifying knowledge gaps and is a necessary contribution for supporting decisions, promoting conservation, and informing ongoing and future assessment processes. The Intergovernmental Science–Policy Platform on Biodiversity and Ecosystem Services (IPBES) Regional Assessment Report on Biodiversity and Ecosystem Services for the Americas, released in 2018, was carried out by 104 selected experts assisted by 76 contributing authors, primarily from the Americas, who have analyzed about 4,100 scientific publications. The IPBES Americas Assessment provides the best–available evidence for decision makers about nature’s capacity to contribute to people’s well–being. However, it identifies gaps in capacity and knowledge, which hampered the appraisal of the impact of biodiversity and ecosystem services on people’s quality of life, including: (i) the contributions of biodiversity and ecosystem services to quality of life (NCPs – nature’s contribution to people), considering the mismatch of social data produced at the political scale and ecological data produced at a biome scale, (ii) the relative absence of long–term data, particularly for some regulating and non–material NCPs, (iii) the linkages from indirect to direct drivers and from the drivers to specific changes in biodiversity and NCP, (iv) the factors that affect the ability to generalize and scale up or down the results of individual studies, and (v) the evaluation of the impacts of short–term and long–term policy and programmes. There are also gaps in the ecological information available on all ecosystems types of the Americas, particularly in South America and in the deep oceans, and on valuation methodologies. Investments in generating new knowledge on these areas, may better elucidate how human quality of life is highly dependent on a healthy natural environment as well as how threats to natural environments affect quality of life in the short, median and long–



term. In this presentation, we will discuss in more details the information gaps identified in the assessment and their implications, chapter by chapter.

**Keywords:** Nature´s contribution to people, ecosystem services, biodiversity, quality of life

4. *Type of submission: Abstract*

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## speciesLink and Ecosystem Services

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speciesLink is a Brazilian network that integrates primary data on species distribution ([www.splink.org.br](http://www.splink.org.br)), providing free and open access to biodiversity data and tools for research, education, and policy making.

The network consists of data providers, mostly biological collections, data users, RNP (Rede Nacional de Educação e Pesquisa), Brazil's National Research and Education Network, and CRIA (Centro de Referência em Informação Ambiental), responsible for the information system.

speciesLink is the e–infrastructure for Brazil's National Institute of Science and Technology – The Virtual Herbarium of Plants and Fungi. The Virtual Herbarium, with over 6 million data records associated to 2 million images is essential for the development of Brazil's Catalog of Plants and Fungi, now Brazilian Flora 2020, and for the evaluation of Brazil's red list of plants, coordinated by the Centro Nacional da Conservação da Flora – CNCFlora.

The information system focuses on: aggregating species occurrence data from different sources; helping biological collections in improving the quality of their data; providing data in a useful and usable manner; and, in identify data gaps, both taxonomic and geographic, to help prioritize new collecting and digitization efforts ([lacunas.inct.florabrasil.net](http://lacunas.inct.florabrasil.net)). A workflow





to produce and publish plant species' distribution models online is also available for any specialist interested ([biogeo.inct.florabrasil.net](http://biogeo.inct.florabrasil.net)). Over 10% of species listed in the Brazilian Flora 2020 project have a distribution model published online.

Neotropical bees represent another taxonomic group with a significant amount of data within speciesLink. Besides over 200 thousand records on species' occurrence, the system includes Moure's bee catalogue ([moure.cria.org.br](http://moure.cria.org.br)) and a bee-plant interaction database ([beesandplants.cria.org.br](http://beesandplants.cria.org.br)).

Currently new partnerships are being established to extend the usage of species occurrence data to valuing biodiversity and developing ecosystem service delivery models.

**Keywords:** biodiversity, species occurrence data, data gaps, species distribution models, ecosystem services

5. *Type of submission: Abstract*

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## Systematic review on Soil Ecosystem Services in Brazil

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Although soil is a fundamental resource for human well-being, soil ecosystem services, such as carbon sequestration and water regulation often remain overlooked and poorly understood. Consequently, frameworks on ecosystem services (ES) such as Millennium Ecosystem Assessment fail to fully acknowledge the underpinning of soil in ecosystem services delivery. Research on soil functions and services is therefore urgent and necessary. Brazil has extensive areas of degraded soil stemming from deforestation and inadequate agricultural management. Our research aims to understand the state of the art of soil ES in Brazil, through a systematic



review. The hypothesis is that some soil functions have been discussed since the last century, however, all contributions related to these surveys have not been used in the ES framework. The search for the studies was carried out through web of science, scopus, science direct and scielo databases and not restricted by publication date. While searching articles, the following key words were initially used: Soil & Land use change & Brazil, and Soil & Ecosystem Services & Brazil. These words were searched both in English and Portuguese. Our preliminary results indicate that the number of articles contemplate the term "Soil & Land use change & Brazil" is higher than the searches with the term "Soil & Ecosystem Services & Brazil". Most of the studies with the term "Soil & ecosystem services" are found in works published in the 21st century. Our analyses will provide important information on how soil ES research has been conducted in Brazil, improving the understanding of soil functions and their contributions to people, and propose how collected soil information can be inserted in the ES framework.

**Keywords:** Soil quality, Soil functions, Land use change, Nature contributions to people.

6. *Type of submission: Abstract*

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## **A new database of economic valuations of ecosystem services based on an open source collaborative platform**

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Currently, many public and private organizations are trying to introduce criteria based on ecosystem services into their decision-making processes. One of the obstacles that hinders this task is its cost. Thus, the wide range of biophysical and economic valuation techniques available to obtain the necessary information usually require significant resources, both in time and money. One possibility for overcoming such a limitation is the implementation of techniques based on the benefit transfer. Transfers can be based on unit values, benefit functions or meta-regression analysis functions. Nevertheless, benefit transfer needs to rely



on large and complete databases which, for the moment, are missing or have become obsolete. In this communication we present a collaborative platform that aims to collectively build an open source database of studies about economic valuations of ecosystem services.

The platform we present in this session, hosted at the University of Salamanca, allows any researcher to upload new studies that will be added to the database after an internal validation process. It is also possible to view and consult previously uploaded studies. Valuations are shown in easily transferable units, either in terms of area (monetary units per hectare or year) or in terms of willingness to pay per individual or per household. We have already fed this new online database with over 500 studies, making it the largest and most up-to-date global database of economic valuation studies of ecosystem services currently available.

**Keywords:** benefit transfer, economic valuation of ecosystem services, collaborative platform, database

7. *Type of submission: Abstract*

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## **NuBBE Database, the importance of a database of natural products from the Brazilian biodiversity to support ecosystem preservation**

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The preservation of Ecosystem Services has been in the past few years one of the most urgent issues to be addressed. World population reached 7.6 billion people this year, and to ensure a minimum quality of life for the people while preserving the ecosystem is one of the concerns of world leaders. Science and education are the basis to develop new alternatives for sustainability. Databases have played a crucial role as hubs for the acquisition, organization and distribution of knowledge for the solution of many important human and environmental topics. Besides being the basis of our existence, biodiversity provides exclusive chemical



scaffolds for the design of active compounds and is the main source of drugs approved worldwide. The first natural product library from Brazilian biodiversity (NuBBE Database, NuBBEDB) was created by our research group and has proven to be an important source of information for several areas of studies. Currently this database contains more than 2000 compounds, freely accessible online (<http://nubbe.iq.unesp.br/portal/nubbedb.html>) and provides valuable and integrative data such as chemical, spectral, biological, taxonomic, geographic and pharmacological information. This database is a useful research tool not only to scientific purposes but could also be useful to assist decisions, support public policies and private investments, encouraging the preservation and sustainable use of the Brazilian biodiversity.

**Keywords:** Brazilian Biodiversity, Database, Natural Products