

SESSION DESCRIPTION

ID: 11

Operationalizing Ecosystem Services for agroecosystem One Health: data-driven insights, limits and interdisciplinary prospects

Hosts:

	Name	Organisation	E-mail
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Abstract:

The sustainability of agroecosystems is deeply implicated with One Health principles (Durso and Cook 2019; Mission Board for Soil Health and Food 2020). Ecosystem Services as an interdisciplinary, holistic framework, is uniquely positioned to help operationalize the nexus of soil, plant, animal, microbial, ecosystem and human health that comprises the One Health provocation. Taking this as a starting point, we seek to present and critically evaluate data-driven methodologies for data collection, integration, and analysis for using Ecosystem Services to operationalize One Health for agroecosystems. We are interested in papers on data collection (e.g. audio sensors, social media Big Data, Earth Observation, microbiomics), data integration (e.g. Linked Open Data, Federated Data, ontologies), and modelling and prediction (e.g. causal inference, bioinformatics, spatial statistics, Machine/ Deep Learning) frameworks and methods that can serve as building blocks for monitoring, understanding and predicting One Health in agroecosystems. We would particularly welcome papers on:

- Data-driven One Health assessments of sustainable agricultural systems and practices (e.g. cover crops, integrated pest management, rotational diversity, regenerative agriculture) using Ecosystem Services
- How do we link the various aspects of One Health (soil, animal, plant, ecosystem, microbial, human) through Ecosystem Services
- Limits of the Ecosystem Services framework in relation to the One Health provocation
- New ontologies for linking the Ecosystem Services and One Health frameworks; can we integrate the relational aspects of Ecosystem Services – One Health ontologies?
- Data integration and modelling methods for cross-scale data in the context of One Health (e.g. molecular microbial diversity and Earth Observation data)

- Conceptual frameworks and theoretical papers on the limits of data-driven One Health perspectives (e.g. Big Data ethics, social studies of algorithms and modelling), especially considering the environmental justice aspects of One Health (Murray et al. 2022)
- Future prospects and challenges

References

Durso, L. M., & Cook, K. L. (2019). One health and antibiotic resistance in agroecosystems. *EcoHealth*, 16, 414–419.

Mission Board for Soil Health and Food (2020) Caring for soil is caring for life. <https://www.novamont.com/public/modello-novamont/Mission%20Soil%20Health%20and%20Food%20-%20report%20EN.pdf>

Murray, M. H., Buckley, J., Byers, K. A., Fake, K., Lehrer, E. W., Magle, S. B., ... & Schell, C. J. (2022). One health for all: advancing human and ecosystem health in cities by integrating an environmental justice lens. *Annual Review of Ecology, Evolution, and Systematics*, 53, 403–426.

Goals and objectives of the session:

In this session, through a careful combination of 7 invited and submitted presentation and a final summarizing plenary presentation, we aim to unify and integrate the Ecosystem Services and One Health perspectives for agroecosystems in a single operational framework. Emphasis will be placed on the operational aspects of this integration, and the data collection, integration, and analysis methods that will be required for monitoring, understanding, and predicting One Health outcomes in real agroecosystems. The interdisciplinary aspects of One Health will be highlighted, and critically explored through a combination of empirical and theoretical presentations.

Planned output / Deliverables:

Depending on the quality, quantity and coherence of the invited and submitted papers, we have a two-fold aim for planned outputs:

- At a minimum, we envisage a perspective paper co-authored by session organizers and participants that reviews the literature and presents the case for linking Ecosystem Services, One Health, and Environmental Justice perspectives for operational, data-driven agroecosystem management.
- If the presentations are of high quality and coherence, and the participants agree, we would organize a SI for a suitable venue that would include the paper outlined above, but with key empirical / theoretical studies backing it up.

Session format:

The proposed format is a quasi-typical conference presentation panel. As mentioned above, we envisage 7+1 presentations, with roughly 15 minutes allocated to each.

Voluntary contributions accepted:

Open for abstracts to be submitted to the session for review.