

sDiv working group meeting report

"sMoste"

The main goal of sMoste is to develop a theory concerning nature's contribution to people (NCPs) within the context of ecological networks, with the objective of optimizing its application to understudied and highly biodiverse regions where NCPs are crucial for local communities. Our particular focus is on India, the home country of two of our participants, Anshuman Swain (PI) and Mayank Kohli. During our initial meeting, we concentrated on two aspects: (1) analyzing the structure of NCP-containing ecological networks, with a specific emphasis on small subnetworks (motifs) that contain species and/or NCPs. Prior to the working group, Anshuman was actively involved in his home state of Odisha (India), collaborating with local researchers to compile a comprehensive food web that included NCPs for Tampara Lake. This enabled us to (2) apply the theory developed in part 1 to these food webs, as well as to the ones compiled by Laura Dee's group in Boulder (Colorado, USA).

General atmosphere and sDiv support

The meeting consisted of a balanced mix of four in-person participants and three remote participants, which surprisingly worked well despite spanning four different time zones. The atmosphere was highly engaging, supportive, and productive. Regular check-ins and updates were conducted as participants woke up and rejoined the meeting, ensuring that our thoughts and discussions were regularly summarized and synthesized. Speaking time was evenly distributed among participants, and the integration of remote participants ensured their active involvement in the discussions.

To kick off the workshop, each participant delivered a brief (5-minute) presentation on a relevant theme assigned beforehand, showcasing their expertise. This exercise facilitated the creation of a shared knowledge base on important themes, information, and references that we could build upon. Additionally, it highlighted the diverse strengths and expertise within the group. These presentations sparked extensive initial discussions and served as reference points throughout the workshop.

We received exceptional support from sDiv, which enabled the seamless execution of the hybrid meeting.

Project 1: Collection and analysis of food webs from India

General aim: To compile food webs for ecosystems from India, a highly diverse and understudied region. This will be valuable in and of itself, but will also underpin the application of the theory developed in Project 1.

Progress: Anshuman has been working with researchers in Odisha to compile seasonal food web data (with NCPs) for Tampara Lake. During the working group, we analyzed a number of food web metrics to understand how the food web changes across seasons.

Balance between activities: 30% presentation by Anshuman, 30% brainstorming and discussion, 40% analysis.

Next steps: This project will be led by Anshuman and his collaborators at the Zoological Survey of India. sMoste members will provide support where needed and appropriate. A manuscript draft has begun and analysis is underway. In addition, we will also compile a technical report, regarding the field collection of food web data and NCP assignment, which will be useful to researchers in general, and in specific, will be invaluable to our collaborators in India.

Project 2: Distribution of NCPs in food webs

General aim: To compare the participation and position of NCPs within ecological networks, compared to species nodes (using the traditional framework)

Progress: We discussed the different ways that NCPs can be embedded in an ecological network, and how we would expect this to differ from species. We began calculating relevant metrics for NCPs and species nodes in the networks from Laura Dee's group, as well as from Tampara Lake.

Balance between activities: 50% brainstorming, 35% work on output, 15% presentation of networks and network structures by group members.

Next steps: We have begun a manuscript draft for this project. Each member of the group has been assigned tasks relating to data curation, network analysis, theory development, and writing. We aim to submit the manuscript before the next meeting.

Project 3: Integrating NCPs into foodwebs - concepts and methods

General aim: Develop a novel conceptual framework (beyond the current traditional one used in Project 2) and a how-to guide for integrating NCPs into foodwebs when undertaking dynamic simulations.

Progress: The various possible link types between NCPs and species were discussed and agreed upon, and examples of each NCP-species link type were proposed. A diagram for the NCP-species links was created and a table of each link type developed to demonstrate real-world examples.

Balance between activities: 50% brainstorming, 35% work on output, 15% presentation of networks and network structures by group members.

Next steps: We have begun a manuscript draft for this project. Each member of the group has been assigned tasks relating to data curation, theory development, and writing. We aim to submit the manuscript before the next meeting.