



Editorial

Introduction



This special issue of Applied Soil Ecology contains the Proceedings of the 10th International Symposium on Earthworm Ecology (ISEE-10), held in Athens, Georgia, USA in June of 2014. ISEE-10 was attended by 120+ delegates representing 24 nationalities (Fig. 1). The papers collected here represent only a small fraction of the more than 150 oral and poster presentations that were delivered at the Symposium, but these papers still offer the reader a glimpse into the breadth and diversity of topics that were considered in the scientific program. That ISEE has reached its 10th iteration is testament to its maturity, and the continuing interest of the world's soil ecologists in earthworms, but also to the ability of earthworm ecologists to adapt their research to changing technologies. Although some of the session titles have been represented in the Symposium program for decades, the tools applied to problems in earthworm ecology have changed, and can only be considered as contemporary and on the cutting-edge. Following is a brief synopsis of the program for the Symposium.

On the first evening of ISEE-10, attendees were treated to an introductory lecture delivered by Prof. Dr. Stefan Scheu (University of Göttingen), and this set the stage very well for the next 4 days.

The first two days of the Symposium were organized around a theme of "Earthworms and Ecosystem Services." Using definitions from the Millennium Ecosystem Assessment Framework (Alcamo and Bennett, 2003), and building on work by Blouin et al. (2013), we identified several scenarios in which earthworm ecology and related fields of study can be evaluated in terms of direct benefits to humankind. Presentations in these "Ecosystem Services" sessions thus demonstrated our current understanding of how the presence of earthworms in ecosystems can influence the services provided to humans by these ecosystems.

Session 1: Earthworms and Ecosystem Services: Supporting Services

This session included offerings on nutrient cycling and plant growth. Topics taken directly from the Millennium Assessment (MA) framework included: (1) Nutrient dispersal and cycling, and (2) Primary production.

Session 2: Earthworms and Ecosystem Services: Provisioning Services

This session included offerings from the broadest variety of disciplines and sources. Topics ranging from immunology to ecotoxicology to vermicomposting were represented. A series of talks organized by Edwin Cooper (University of California, Los Angeles) was included in this session. Topics as taken directly from the MA framework definitions included: (1) Earthworms as a food source, (2) Earthworms as medicinal resources, (3) Earthworms as test and assay organisms, (4) Earthworms as a source of raw

materials (including organic matter and fertilizer), and (5) Earthworms as a genetic resource.

Session 3: Earthworms and Ecosystem Services: Regulating Services

This session included talks about vermicomposting, the decomposition process, bioremediation, and water and air purification. Topics taken directly from the MA framework included: (1) Waste management, (2) Decomposition and detoxification, (3) Water purification, (4) Air purification.

As part of the series of sessions dealing with Ecosystem Services, there was a special informal session with multimedia presentations during the first poster session entitled, "Earthworms and Ecosystem Services: Cultural Services." The category of Cultural Services is the last in the MA framework of Ecosystem Services. Participants displayed several examples of earthworms in cultural contexts including videos, toys and games, and traditional posters describing educational techniques involving earthworms. Topics taken directly from the MA framework for this session included: (1) Cultural (including representations of earthworms in art, literature, children's books, cartoons, entertainment); (2) Recreational (fishing), and bait collecting techniques; and (3) Science and education (citizen science projects, biology education).

One of the artworks that was on display as part of the Cultural Services is reproduced on the cover of this special issue, and was used as a symbol for all the activities associated with ISEE-10. The original is a multi-media sculpture created and painted by artist Daniel Shartle, of Chattanooga, Tennessee, USA. We are grateful to Mr. Shartle for granting permission to use the image, and we hope that it will join a number of iconic images associated with ISEE over the years.

The last two days of the Symposium were organized into sessions representing a mixture of applied and basic ecology, and studies using established and new methods. Topics included earthworm population and community ecology, behavior, feeding ecology, taxonomy and systematics, genomics and transcriptomics, and biogeography, among others. Specific session titles included the following:

Session 4: Earthworm Feeding Ecology and Interactions

This session was organized by Olaf Schmidt (University College Dublin, Ireland), María Briones (University of Vigo, Spain), and Anita Juen (University of Innsbruck, Austria). This session included many aspects of earthworm "interactions" with their food and with their predators, while also providing space for presentations employing molecular (or other new) technologies to answer these questions.



Fig. 1. Attendees of the 10th International Symposium on Earthworm Ecology, held in Athens, Georgia, USA during 22–27 June 2014.

Session 5: Earthworm Distributions, Biogeography, and Responses to Management

This session was devoted to all aspects of earthworm distribution ranging from square meters to continental scales, earthworm introductions/invasions, management effects on communities, etc., including some very broad scale earthworm biodiversity studies. The session served as a springboard into the Workshop: Global Earthworm Distributions, organized by Erin Cameron (University of Alberta, Canada), Nico Eisenhauer (Friedrich Schiller University Jena, Germany), and Thibaud Decaëns (University of Rouen, France).

Session 6: Evolutionary and Applied Biology of Earthworms Based on Molecular Data

This session was organized by Marta Novo (Cardiff University) and Rosa Fernández (Harvard University), and included presentations focusing on use of cutting-edge molecular technologies and the developing “-omics” fields of study.

Session 7: Taxonomy and Systematics of Earthworms

This session was a mixture of presentations using traditional and contemporary approaches to studying the systematics, phylogeny and taxonomy of earthworms and other oligochaetes. This exciting session included demonstrations of molecular approaches to constructing phylogenies, as well as use of computerized micro-tomography imaging of earthworms for taxonomic purposes.

Because any endeavor as complicated as organizing an ISEE and editing a Proceedings can only be accomplished by a team, I would like to thank all the members of the International and National organizing committees, but in particular my co-editors for the Proceedings, whose assistance in suggesting reviewers, evaluating the papers in their respective disciplinary specialties, and constant encouragement have made it possible to produce this Proceedings.

They are: Sharon L. Weyers, Kevin R. Butt, Samuel W. James, Jörg Römcke, María J.I. Briones, and Katalin Slavecz. The local organizing committee consisted mainly of my colleagues and fellow graduates of the University of Georgia, including David Coleman, Dac Crossley, Ching-Yu Huang, Joshua Lobe, Bruce Snyder, Evelyn Wenk, and Sharon Weyers; without their help, the Symposium would not have been a success. Further thanks are due to Shela Mou, of the USDA Forest Service, Southern Research Station whose organizational prowess made the actual event run smoothly and efficiently. Finally, I owe the greatest debt of gratitude to Prof. C.A.M van Gestel, Editor-in-Chief of Applied Soil Ecology for his assistance, encouragement, patience, and expertise, as we slowly spiraled in to the completion of these proceedings.

Following a vote by the attendees of ISEE-10, the site for ISEE-11 was chosen to be Shanghai, China, to be held in 2018. The organizers for the next edition of ISEE will be Profs. Jiangping Qiu and Zhenjun Sun. We look forward to the program of ISEE-11 with much anticipation, as our community moves forward in the world of earthworm ecology!

References

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