

Rotifer News

A newsletter for rotiferologists throughout the world



Group Photo of Participants of the International Workshop on Advances in Rotifer Phylogeny with a Focus on Reproductive Traits (July 31 – Aug 4, 2023, University of Texas at El Paso, USA). Photo credit: JR Hernandez, UTEP, Communications Dept.

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Produced at the

*National Autonomous University of
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Editorial: *New Appearance of Previous issues of Rotifer News*

Starting from the current number, all published Rotifer News issues have a new facelift in the website. The first page of each issue has been now displayed in the website. A click on the issue number or on the title page will automatically open the full pdf version of the newsletter.

A Report of the workshop by Walsh et al. on the Advances in Rotifer Phylogeny with a focus on Reproductive Traits held at the University of Texas at El Paso (July 31 – August 4, 2023) appears in this issue. Thanks to the organizers of this workshop, many new members, mostly young, have shown great interest in attending the VRC meeting and in receiving the RN regularly.

In this issue Abstracts of *Virtual Rotifer Collaboratorium* (VRC) held during the last few months have been included with the details of e-mail accounts so that the interested readers may consult the authors for further information.

A note on the growing interest in participating in the VRC has been provided by S Nandini.

The proceedings of the Rotifera XVI (Zagreb (Croatia), 2022) have reached near completion, with a record number of articles (23) already available on line from the *Hydrobiologia* website. Details on this aspect presented by Špoljar et al. appear elsewhere in this issue. RN congratulates the Guest Editors of this special issue for their exemplary hardwork. The proceedings

will likely appear in *Hydrobiologia* during 2024.

Venue for the next international rotifer symposium (IRS-XVII) has been under consideration by the IRS Committee and a final decision will be communicated to the global rotifer researchers by Linda May.

An interesting item, *Occasional Notes on the Odd and Bizarre in Rotifer Biology* has been initiated in this issue. First of this is a note communicated by RL Wallace. Any comments received from the readers of RN will be added to a future issue.

Other features included in this are the changes in the email addresses and new records of rotifers and recent literature.

RN still lacks input from readers of different countries on the titles of Master's and Doctoral Dissertations from their respective regions. Authors of regional identification guides, books and book-chapters on rotifers are also invited to provide bibliographic details for indexing in the RN.

Organizers of regional/national level workshops, courses and conferences related to Rotifera are encouraged to share the details of such events through RN.

The next RN Issue 42 is expected by January, 2024.

S.S.S. Sarma
Editor

New record of *Brachionus josefinae* Silva-Briano & Segers, 1992 (Rotifera) to Australia

Exciting observations in Taxonomy

A Mexican 'endemic' brachionid, *B. josefinae* Silva-Briano & Segers, 1992, described from Aguascalientes, surprised me in a sample collected from a dam in arid South Australia in summer 2022 (17.12.22).

The characteristic broad foot, general morphology and distinctive egg shape cannot be confused with any other species. All collected individuals were strongly extended in the ethanol preservative; head and foot apertures could not be seen (Fig. 1a,b).

How it got here I can only guess. Bird-vectorated dispersal is unlikely! Perhaps human-mediated transport, mining associated? The dam is on a mining lease.

It was collected by Adam Harman, Principal of Lateral Environmental, Perth, WA, sent to me for identification.

It co-occurred with another *Brachionus*, likely one of the *B. urceolaris* group (Fig. 2), but I have yet to pick some out for a closer look. There is always a reporting deadline shorter than the time it takes for accurate taxonomy.

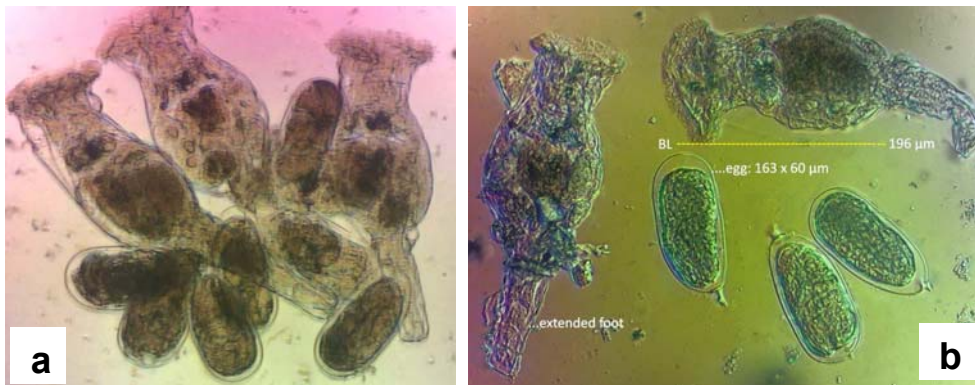


Fig.1a: *Brachionus josefinae* with eggs attached; 1b: with extended foot and eggs separated.

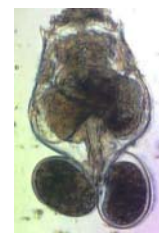


Fig. 2.
Brachionus urceolaris s.l.

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Occasional Notes on the Odd and Bizarre in Rotifer Biology

A new forum for Rotifer News called "Occasional Notes on the Odd and Bizarre in Rotifer Biology" has been inaugurated by Bob Wallace in this issue. This forum is to ask questions, posit relationship, and otherwise present ideas that, in and of themselves, are not worth a complete exposition. Rotifer News invites other contributions to this forum.

"A pearl of great price" or The Pearl (John Steinbeck 1947)

The first contribution to Occasional Notes on the Odd and Bizarre in Rotifer Biology concerns a short paper by Alexander (1939a) of the Mellon Institute (Pittsburg, PA, USA). In this 3-page paper, Alexander reports on the contents (insides) of a "natural pearl" that is concluded to contain the "chitinous" remains of the enigmatic rotifer *Atrochus tentaculatus* Wierzejski, 1893 (Monogononta; Atrochidae). The material at the center of this pearl was 375 µm long by 140 µm width at the wider end. At the wider end 15 spines or tentacles were present; they measured from 70–75 µm in length. Note that in this paper Alexander does not report the species of mollusk in which the pearl was found.

The proposition was that formation of this structure resulted when the rotifer became lodged in the tissues of the mollusk and thereby acted as an irritant inducing the formation of the pearl. That is, with concentric layers of

CaCO₃, and, no doubt, as this object was described as pearl, there must have been some organic material.

According to this paper two photomicrographs of the specimen were sent to Prof. W. P. Alexander of the Buffalo Museum of Science who identified the species of rotifer. [There is no indication as to whether the two Alexanders were related.] Regardless, the paper reports that Prof. Alexander "... had no difficulty in identifying the animal" as *A. tentaculatus*. However, the only documentation that A.E. Alexander provided in the paper was a drawing (simple sketch) of the rotifer that the author stated was "discovered at the center of a natural pearl." I note that, in my estimation, the sketch does, resemble, in a distorted way, *A. tentaculatus*.

While I may seem skeptical about this report, I note that A.E. Alexander published at least two other works on pearl formation (Alexander 1939b; Alexander 1939c), as well as citing other published works that report examples of biological material initiating pearl formation: e.g., water mite and cercaria. [For full disclosure I have not read the other two papers.]

Literature cited

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biologically synthesized pearl, New Research Uncovers facts. Scientific American 160(4): 228–229.
Alexander AE 1939c Science dissects the pearl. Scientific American 160(5): 294–297

Robert L. Wallace

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participating (and possibly presenting some interesting data) in the future VRC meetings. The email addresses of interested participants collected during the above workshop have been added to the mailing list and will be invited to participate in the future.

S. Nandini

Organizer, VRC

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Virtual Rotifer Collaboratorium (VRC)

A Report

Continuing our tradition of the VRC, some new and interesting themes have been addressed and discussed since the beginning of this year. We began with a review by S.S.S. Sarma on Rotifers as bioindicators. An interesting talk from a historical perspective was presented by Paul Turner (The Unconventional Journey of an amateur rotiferologist). Ulrike Obertegger very interesting presentation was on “Trait based research on Rotifera: the holy grail or just messy?” Francesca Leasi presented a talk on the important subject of “The evolution of salinity tolerance in monogonont rotifers”.

During the workshop on Advances in Rotifer Phylogeny with a focus on Reproductive Traits (hosted by Elizabeth Walsh, Bob Wallace, Jon Mohl, and Rick Hochberg) at the University of Texas at El Paso from July 31 – Aug 4, 2023, several young rotiferologists showed keen interest in

Progress with Proceedings of Rotifera XVI (Zagreb, 2022)

Special issue in Hydrobiologia. Rotifera XVI – Diverse rotifers in diverse ecosystems

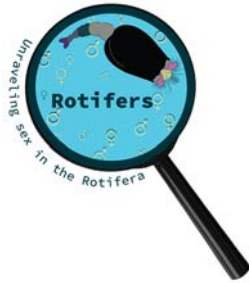
We really appreciate that participants of Rotifera XVI, held last year in Zagreb, responded and participated with a high number of papers in the special issue of Hydrobiologia that accompanies our conference. Overall, 36 manuscripts were submitted, among them 23 are already accepted, 8 are in the reviewing process, and unfortunately, 5 articles were rejected. Very soon our special issue web site will be updated. We expect special issue release at the beginning of 2024.

M. Špoljar, D. Fontaneto, E.J. Walsh & N. Kuczyńska-Kippen

Guest Editors

Workshop Report

Advances in Rotifer Phylogeny with a focus on Reproductive Traits



Workshop Logo

Designed by

Fayelee Overman
UTEP Centennial
Museum

A Workshop, *Advances in Rotifer Phylogeny with a focus on Reproductive Traits*, was hosted by Liz Walsh, Bob Wallace, Jon Mohl, and Rick Hochberg at the University of Texas at El Paso from July 31 – Aug 4, 2023. Attendees represented 5 countries including Czech Republic, Germany, Italy, Mexico, and the U.S.A. There were 40 participants including 13 faculty, 2 post-doctoral researchers, 9 doctoral, 10 master's, 5 undergraduate students, and 1 research assistant (see coverpage). The program included 11 lectures on the following topics: (1) Introduction to Rotifera (presented by Bob Wallace, Ripon College), (2) Culture and Egg Collection (Bob Wallace), (3) DNA extraction & marker analysis, including UCEs (Liz Walsh, UTEP), (4) Bioinformatic pipeline for UCE (Jon Mohl, UTEP), (5) Molecular phylogenomics using RadSeq (Phillip Lavretsky, UTEP), (6) Delimitation of cryptic species (Diego Fontaneto, Research Council of Italy), (7) Mapping evolution of reproductive traits (Rick Hochberg, U Mass Lowell), (8) Microscopical techniques (Rick Hochberg), (9) Using illustrating

software (Thiago Araujo, U Mass Lowell), (10) Microbiome and ecology of rotifers (Francesca Leasi, U Tenn Chattanooga), and (11) Current research topics (SSS Sarma, Nandini Sarma, UNAM-Iztacala, Mexico). A combination of wet and dry labs was provided on culturing rotifers, preparing samples for DNA extraction for single gene, genomic, and eDNA sequencing, PCR reactions, scientific illustration, cryptic species delimitation, as well a demonstration on Nanopore sequencing and a tour of UTEP's Border Biomedical Research Center's Imaging Core facilities. An optional field trip to Bosque del Apache National Wildlife Refuge was attended by 16 participants. The workshop was funded in part by NSF DEB (DEB 2051684; EJW: DEB 2051704; RLW: DEB 2051710), UTEP College of Science, Texas, USA, Liz Walsh, and Bob Wallace.

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Abstracts of VRC Meetings

Trait based research on Rotifera: the holy grail or just messy?

Ulrike Obertegger
FEM-CRI (Italy)

Talk presented on 6th of June, 2023

I gave a talk about my research including rotifer functional diversity for the VRC in April 2022. Already then, I advertised a team effort to provide a trait matrix for rotifers. During my role as reviewer for many manuscripts on rotifer functional diversity, I realized that authors do not that often disclose their trait assignment, make errors, and lack a comprehensive view on the topic. Therefore, I decided to assemble a trait matrix of rotifers in collaboration with R.L. Wallace because what initially seemed to be an easy task, turned out to be quite complicated. The trait matrix was assembled for 138 rotifer genera and considers the main morphological characters (e.g., lorica, trophi structure, corona type, defence, presence of foot) and feeding traits. While morphology of rotifers might seem easily accessible, it is not, and we took a pragmatic approach to avoid splitting genera into many categories, important for statistical analyses. Seven different categorizations of feeding traits were found, and their advantages and drawbacks outlined. Finally, I showed and explained the final trait matrix that indicates knowledge gaps on rotifer feeding traits. I, furthermore, pointed out that it is not a problem to disagree on certain trait assignments as long as authors disclose their trait assignment. According to me, the question if rotifer

functional research can provide unexpected insights into rotifer community dynamics is still open, and I hope that using the trait matrix will initiate new research opportunities and help avoiding errors in trait assignment. The whole story can be found in Water:

<https://doi.org/10.3390/w15081459>.

<p>Email: Ulrike Obertegger <ulrike.obertegger@fmach.it></p>

Extended Abstract

The unconventional journey of an amateur rotiferologist

Paul Turner

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Talk presented on 7 February 2023

My interest in Rotifers started when I was a teenager, but it ALL really began with my maternal grandfather back in the 20's.

My maternal grandfather, Lewis Dorsey reared *Daphnia* as exotic fish food for the discerning aquarium fish lovers as part of his livelihood during the depression years. One day his *Daphnia* cultures appeared contaminated by another critter, so he sought out the advice of Frank Myers who at the time was at the Academy of Natural Sciences Philadelphia. Frank



Photo 1

Myers explained his contaminants were in fact *Brachionus* species of rotifer. Lewis was fascinated with the Myers's explanation of the life history of rotifers, and as a result, he and Frank Myers struck up a lifelong personal and professional friendship.

One day in the woods, Lewis encountered a college student and struck up a conversation. Albert was his name, and he was something of a naturalist and was often found in the woods identifying animal tracks or taking samples of soil or water for his biology class. He was an odd fellow. Lewis liked Al so he invited him home for dinner, which is where Al met

Lewis's daughter Betty, which led to their marriage in 1940.

After Lewis's death in the 60's, Al inherited microscopes and equipment Lew had used, and conducted his own research on-and-off for years, never quite reaching publication level.

During my teen years I had the opportunity to use the equipment in my father's 'lab' (Photos 1-3) and struck up my own interest in rotifers. With an under-graduate degree and the help of my undergraduate adviser, I published my first rotifer survey of a local lake. I then joined the U.S. Air Force, and with the permission of my superiors,



Photo 2



Photo 3

continued my interest and research into global distribution of rotifers as a 'hobby'. While stationed in the Washington D.C. area I was fortunate to be able to become a Research Associate of the Natural Museum of Natural History, and for 3 years I curated and added to their rotifer collection.

Most of the equipment and microscopes I used were the 'vintage' microscopes handed down from my grandfather...a J. Zentmayer monocular microscope (this won the centennial prize in 1876 for the 'best design'), a Stephenson binocular microscope, and a Watson Research microscope. Later I bought and used an Olympus CHA binocular microscope with a drawing tube.

Further information on Lewis and Frank Myers is available from Rotifer News Issue 39.

Paul Turner

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Rotifers as Bioindicators

S.S.S. Sarma* & S. Nandini

Laboratorio de Zoología Acuática,
Universidad Nacional Autónoma de México,
FES Iztacala, Tlalnepantla,
State of Mexico, Mexico.

Talk presented on 10th of January 2023

*Presenting author

Rotifers are used as bioindicators to assess water quality worldwide. Both planktonic and sessile rotifers are used for this purpose. The bioindicator species used in the field are not necessarily the same for bioassays under laboratory conditions. The emphasis here was on bioindicators, where samples collected from the field are normally used. For bioindicators, no live samples are needed, except for taxonomic resolution such as sessile taxa. In this review we provided details on the use of rotifers: species richness (presence or absence of particular taxa), their relative abundances, changes in their morphology/morphometry, as bio-accumulators and biosensors. We also provided the application of different indices such as TSI_{Rot}, Saprobic, Simpson, Shannon-Wiener, Margalef, Wetland zooplankton index, and Biotic index. In addition, rotifer species occurrences as indicators of geographical distribution, habitat types and physico-chemical variables of waterbodies were discussed.

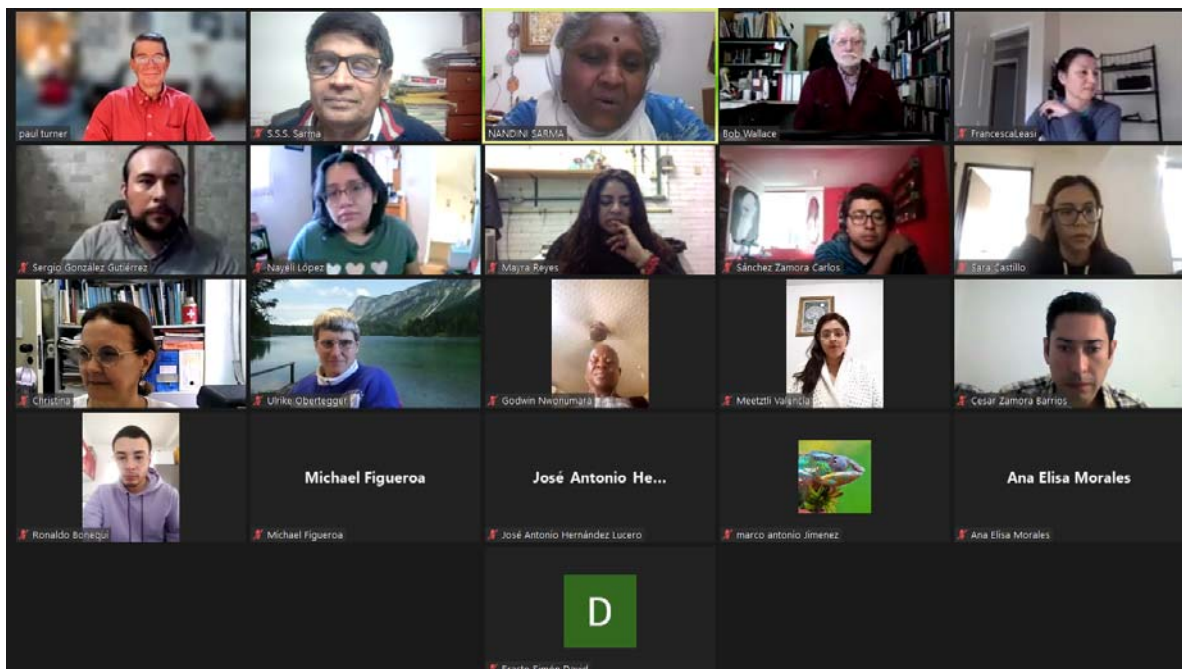
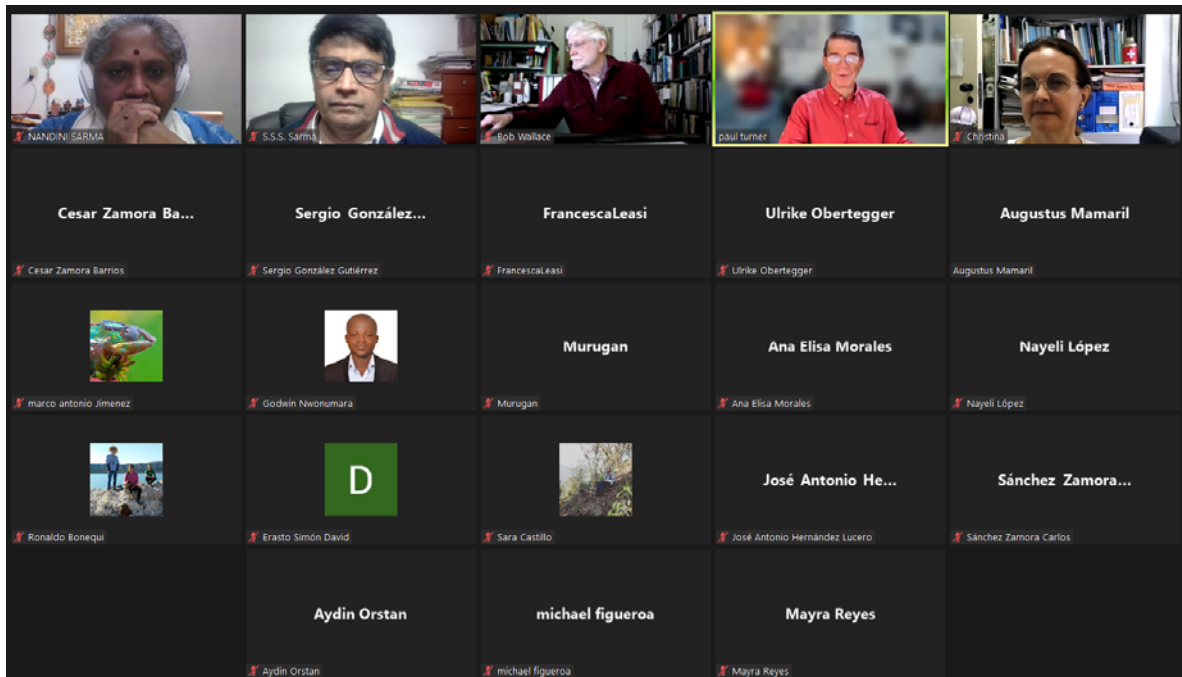
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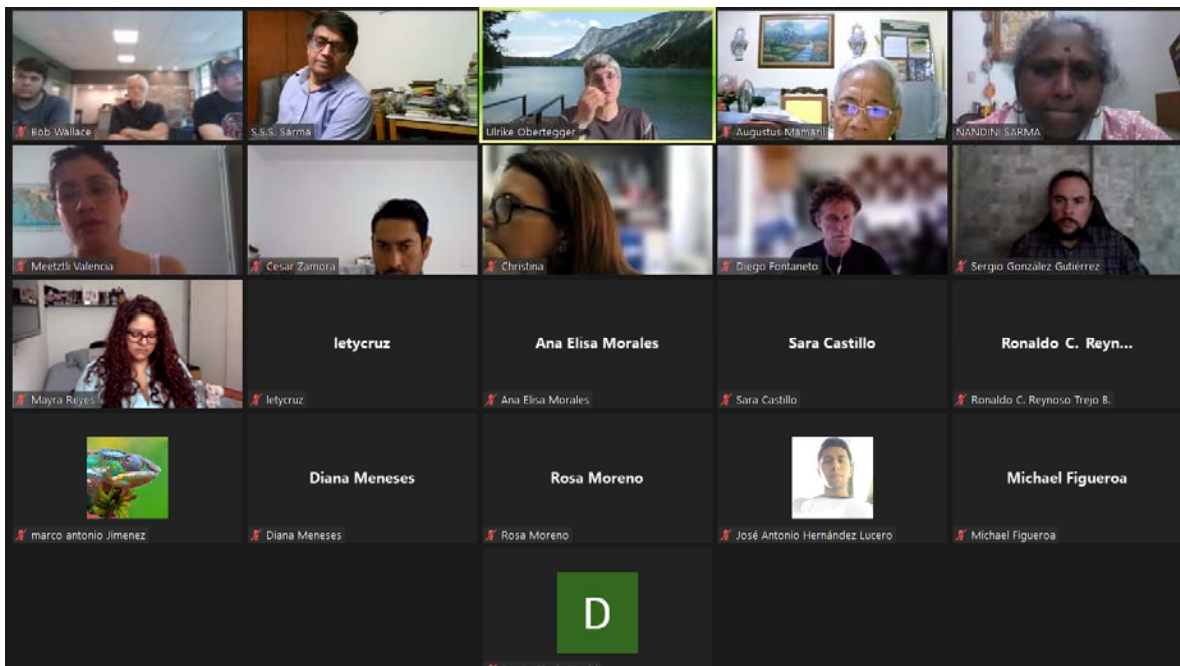
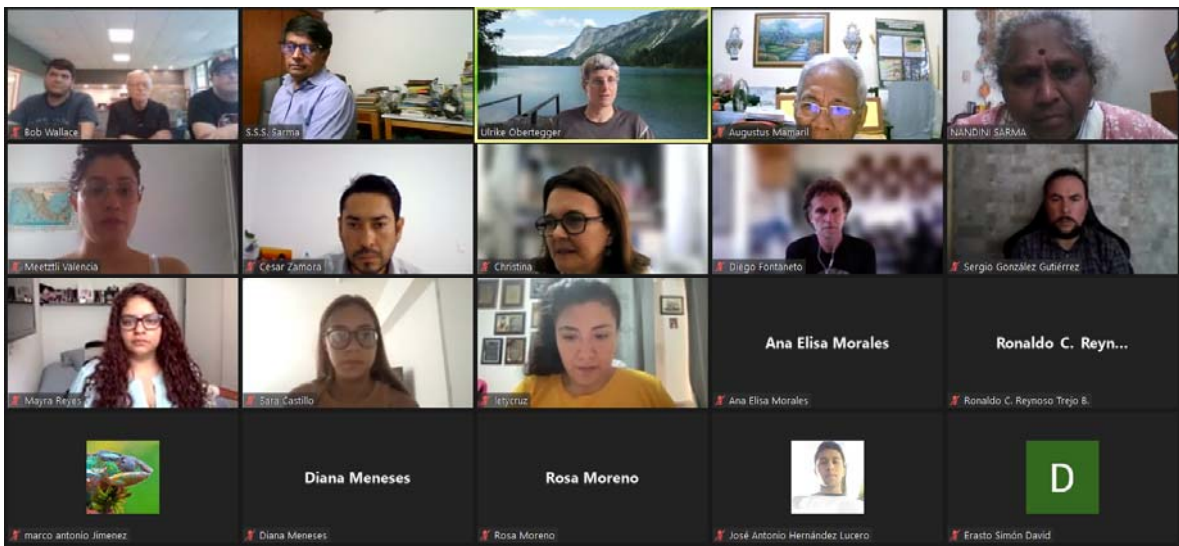
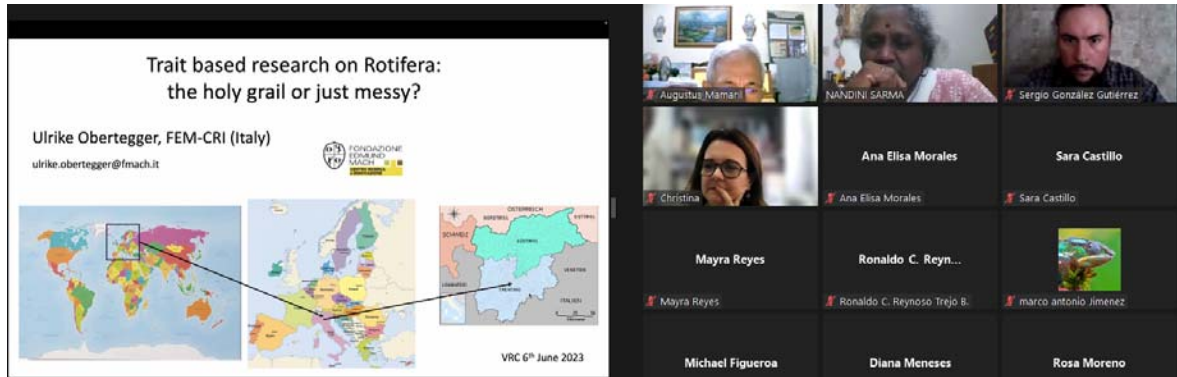
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Screen shots during the talk presented by Paul Turner



Screen shots during the talk presented by Ulrike Obertegger



The evolution of salinity tolerance in monogonont rotifers

Francesca Leasi

Talk presented on 18th of July, 2023

Salinity variation is a major consequence of climate change and among the most discriminating ecological barriers of species distributions. While the ability to cope with salinity variation is well-documented in many organisms, the underlying mechanisms of salinity tolerance (euryhalinity) and its evolutionary processes remain less clear.

This is especially true for small-sized invertebrates, which are typically overlooked despite playing fundamental ecological and trophic roles in all aquatic ecosystems. Through this presentation, my goal is to address deficiencies in the taxonomic, evolutionary/phylogenetic, and functional biodiversity of monogononts across salinities. Therefore, I will propose methods to achieve a better understanding of salt-water monogononts by testing hypotheses on their evolution, physiological mechanisms, and ecology across salinities.

Francesca Leasi

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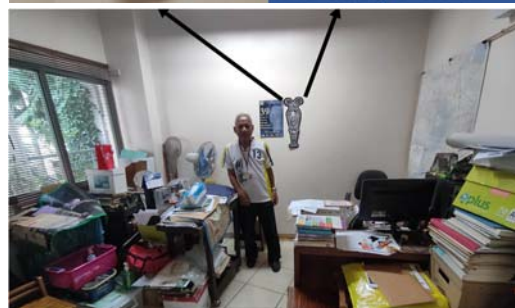
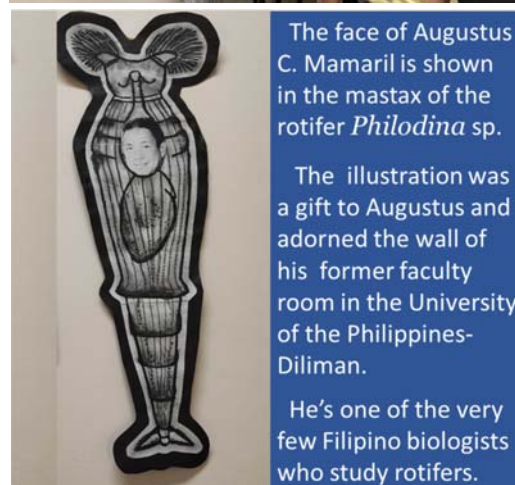
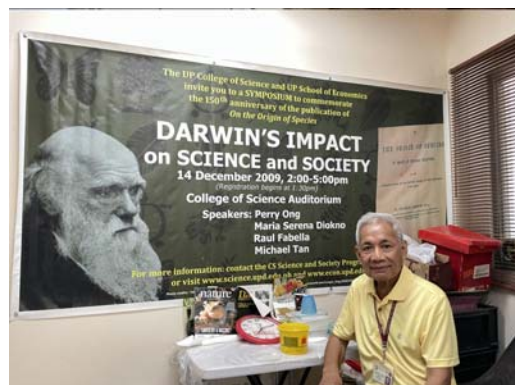
Notes and News

Change of contact address

Augustus C. Mamaril of Philippines has informed that his new e-mail address is:

<acmamaril46@gmail.com>

Those who want to contact him may do so using the above new e-mail contact address.



Augustus C. Mamaril in his Faculty Room (photos: Author)

Recent Literature

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