



e-ICOC Report

Proposal and timeline

In response to the cancellation of the 14th International Conference on Copepoda in South Africa and the sad prospect of facing a 7-year hiatus in WAC-sponsored ICOC activities, Rony Huys (Natural History Museum, London) and Alexandra Savchenko (Moscow State University) submitted a proposal on 10 February 2022 to the President of WAC, Prof. Diana Galassi, to host the copepod conference as a virtual event (e-ICOC) using the Zoom videoconferencing platform. The proposal was endorsed by the Executive Council on 20 February and distributed to WAC membership the following day. By 28 February the topics of the four symposia were defined and co-convenors as well as invited speakers for each symposium were nominated. The Keynote Speaker and his topic were confirmed on 7 March and membership of the Steering Committee was completed by 10 March. The e-ICOC2022 domain name was purchased on 17 March and finally, on 8 April, the e-ICOC website was launched which also marked the activation of online registration. Throughout this process we relied heavily on our website designer, Stanislav Iliutkin, who had to implement voting mechanisms for student communications and election of WAC Officers. The deadline for abstract submission closed on 31 May and registration for non-presenting participants and poster submissions closed on 10 July, exactly five months after we submitted the e-ICOC proposal.

As co-organisers of the online e-ICOC we had three objectives in mind when we started putting the event together in March at very short notice: (1) to re-unite copepodologists after a 5-year interruption in the organisation of physical ICOCs and to create the opportunity for all to participate in the most appropriate international scientific platform for disseminating their research, (2) to give priority to early-career researchers who needed to present their work as part of their career milestones, by waiving registration fees and creating a significant number of time slots for students, and (3) to promote diversity and inclusion. The WAC Executive Council made it clear that it stood in support of all copepod researchers, irrespective of their nationality.

Due to unexpected interest in e-ICOC and to avoid parallel Zoom sessions, the organisers made the decision to extend the duration of the virtual conference by an extra day and run it over six days in order to give all participants the opportunity to present their research in their preferred presentation format and in the best possible circumstances. The conference was initially planned for the middle of July but was moved to 25 – 30 July to avoid overlap with the 25th Conference on Subterranean Biology (18 – 22 July) in Cluj-Napoca, Romania. Two Zoom testing sessions were organised a few days before the conference to give participants, who were less familiar with Zoom videoconferencing, the opportunity to familiarize themselves with the platform.

e-ICOC was not a replacement for the normal in-person International Conferences on Copepoda. The cycle of these physical meetings is planned to continue from 2024 with Prof. Susumu Ohtsuka taking the lead in organising the next ICOC in Hiroshima, Japan. As during previously organised copepod conferences, e-ICOC hosted the WAC Business Meeting during which members of the Executive Council presented the Society's financial reports, overview of activities for 2017–2022, election of Officers and plans for 2022/2024.

As the conference was an online event, registration fees were significantly reduced compared to the physical format (85 USD for non-WAC members, 50 USD for WAC members), facilitating the attendance of more participants, and enabling more inclusion. Registration was free for all students,

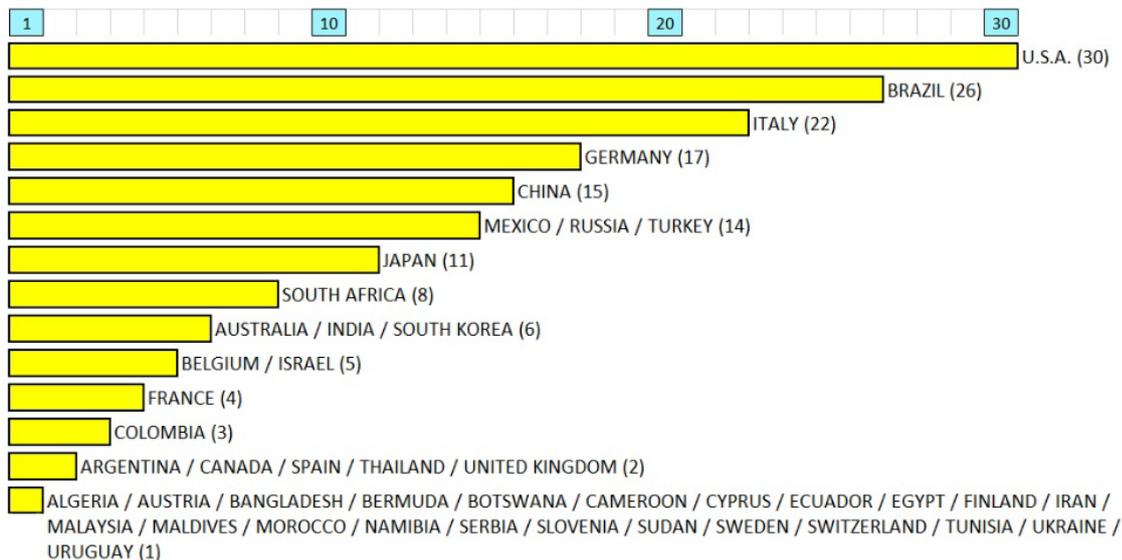
participants from sanctioned countries and those who had already paid for the cancelled 14th ICOC in South Africa. A Code of Conduct was put in place to ensure that participants would feel comfortable while sharing their slides and posters.

The e-ICOC was held in the London Time Zone (BST – GMT + 1) and the programme was designed as such to give as many participants as possible the opportunity to present within their own time zone. Unfortunately, not all participants could be given a time slot that was convenient. All conference talks were recorded and uploaded to a closed YouTube playlist which participants could access at a more convenient time. The playlist was only available to e-ICOC attendees and included all oral presentations, lightning talks, Q&A sessions as well as the Opening and Closing Ceremonies, WAC Business Meeting, presentation of the Monoculus Award and Maxilliped and Keynote Lectures. All posters and the YouTube playlist will be accessible to attendees via the e-ICOC website until 15 August after which access will be deactivated.

Participation

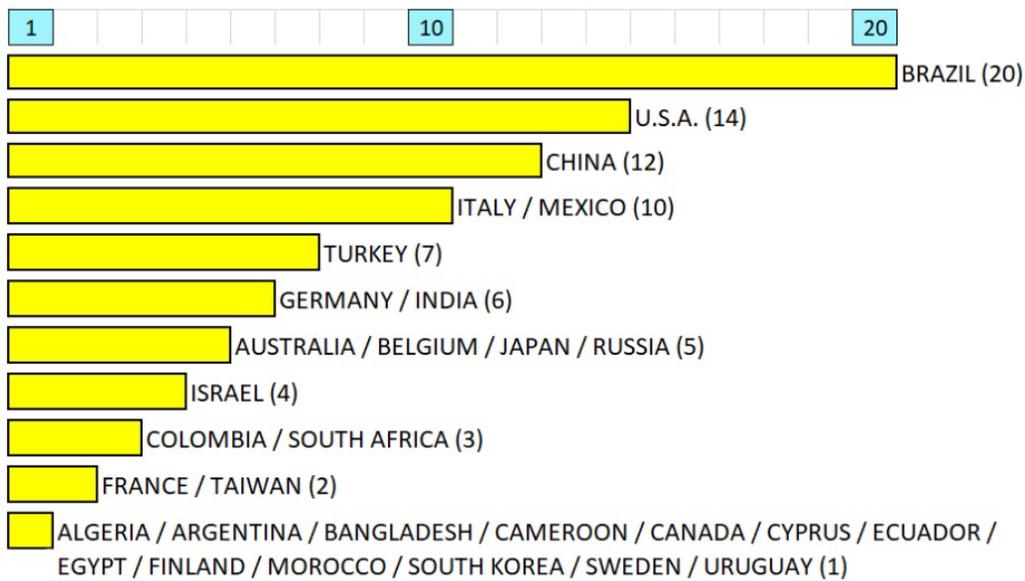
A total of 242 participants, representing 46 countries, were welcomed to e-ICOC. We received well over 300 registrations but about 70 of them did not provide proof of current student status or did not pay their registration fee and, consequently, were not admitted to the conference. At the time of the launch of the website the organisers identified fellow copepodologists who could act as a focal point and facilitate dissemination of the e-ICOC announcement in their country of origin. This approach proved particularly effective in the U.S.A., Brazil, Italy, Germany, China, Mexico, Russia and Turkey.

All participants by country



Student participation in e-ICOC was unprecedentedly high and contributed significantly to the success of the meeting. A total of 132 students from 30 countries were welcomed, arguably outnumbering professional participants at the conference for the first time in WAC ICOC history. Oral and poster communications were presented by 136 participants, including 67 professionals and 69 students. The 146 presentations that were included in the programme represented 16 40-min symposium talks, 62 20-min regular oral presentations and 68 posters (30 of which were accompanied by a 5-min lightning talk).

Student participants by country



Programme

Due to unexpected interest the programme was jam packed. The conference ran over six days from 9 am till 5–6 pm BST with two 20-min coffee breaks and a 1-hour lunch break each day.

Presentations were grouped in ten thematic sessions. Contrary to previous in-person ICOCs there was no dedicated poster session during the e-ICOC meeting. Instead, poster presenters were strongly encouraged to present 5-min lightning talks which were incorporated as an integral part of six thematic sessions: Marine Harpacticoida – systematics, evolution and ecology; Marine plankton II and III; Freshwater copepods II; Symbiotic copepods; and Genomics, genetics and barcoding. Each of these sessions consisted of a number of 20-min oral presentations, followed by 5-min lightning talks and posters that matched the theme. At the end of each thematic session there was a 20-min Q&A slot for everyone to engage in discussions and ask additional questions. All oral presentations and Q&A sessions were recorded and uploaded to the e-ICOC YouTube playlist.

All submitted posters were uploaded to the e-ICOC conference website and became accessible to registered participants only, from a few days before the start of the conference until two weeks after the closing date of the event (15th August). This gave participants sufficient time to examine every poster and formulate relevant questions which could be posted in a dedicated comments box accompanying each uploaded poster. Registered participants were encouraged to engage in discussions using the comment box. This proved very successful and not only led to considerable interaction between poster presenters and attendees, but also to future collaboration and exchange. Questions and answers in the comment box were moderated by the co-organisers throughout the meeting.

We had an excellent team of European Time Zone moderators in place who assisted the organisers and chairpersons in the smooth running of the conference and especially timekeeping. Nancy Mercado Salas, Tiziana Di Lorenzo, Maria Cristina Bruno and Jimmy Bernot did a sterling job by monitoring raised hands and collecting all questions from the Zoom chat so that some of them could be posed during the Q&A slot at the end of each session.

Prior to the start of the groundwater copepod symposium, co-convened by Diana Galassi and Tiziana Di Lorenzo on the afternoon of Friday 29 July, a surprise video collage was presented to Diana to celebrate her birthday. Colleagues from around the globe congratulated our President and

expressed their gratitude for the inspiration she has been and continues to be to groundwater researchers worldwide. This was an emotional experience enjoyed by all.

Symposia

We welcomed 16 excellent speakers from a broad range of disciplines and backgrounds, arranged in four symposia.

Symposium 1: Marine planktonic copepods: from biodiversity to ecology (Co-convenors: Iole Di Capua & Astrid Cornils)

- Petra H. Lenz and co-authors – Transcriptomics: An ecophysiological profiler for copepods
- Susumu Ohtsuka and co-authors – Carnivory and detritivory in oceanic calanoid copepods: functional morphological approaches
- Marco Uttieri – *Pseudodiaptomus marinus* fits all – From taxonomy to invasion ecology
- Lidia Yebra – Integrative taxonomy in trophodynamic studies

Symposium 2: Biodiversity and evolution of symbiotic Copepoda (Co-convenors: Danny Tang & Julianne Kalman Passarelli)

- Susan Dippenaar – A glimpse into the relationships and diversity of the Siphonostomatoida
- Rony Huys and co-authors – Origin of the Chitonophilidae: the pinnacle of radically divergent body plans in the Copepoda
- Susumu Ohtsuka and co-authors – New discoveries on the development, life cycle and attachment mechanism of *Caligus*
- Daisuke Uyeno – Recent progress in the study of the diversity of copepods associated with molluscs in temperate and tropical waters

Symposium 3: Living underground: diversity, ecology and evolution of groundwater copepods (Co-convenors: Diana Galassi & Tiziana Di Lorenzo)

- Anton Brancelj – Subterranean Copepoda in Southeast Asia – what do we know about them?
- Paulo Corgosinho – Living between the grains: What do we know about the systematics, biogeography and phylogenetic position of the family Parastenocarididae?
- Tiziana Di Lorenzo – Do groundwater copepods have narrower trait ranges than surfacewater copepods?
- Eduardo Suárez-Morales – Living in Xibalbás realm: diversity, distribution and conservation of anchialine copepods of the Yucatán Peninsula

Symposium 4: Copepoda from surface freshwater habitats (Co-convenors: Nancy Mercado Salas & Grace Wyngaard)

- Nancy Mercado Salas and co-authors – Copepods in oddly investigated continental habitats: the phytotelmata case
- Gilmar Perbiche Neves and co-authors – Neotropical and Afrotropical freshwater copepods: recent advances
- La-orsri Sanoamuang – Diaptomid copepod diversity and zoogeographic distribution in freshwater ecosystems of the lower Mekong River Basin (Calanoida: Diaptomidae)
- Grace Wyngaard and co-authors – The curious cases of the shrinking genomes: Copepods as a puzzle piece in understanding chromatin diminution

Monoculus Award

The triennial Monoculus Award is awarded to scientists for their exceptionally devoted service and contributions to the activities of the World Association of Copepodologists. This year's award was

presented virtually by the President to Ruth Böttger-Schnack for her outstanding research on copepods in general, and oncaeids in particular, for her contributions as a tutor to pre-conference training workshops organised under the auspices of WAC, and for training and passing on her knowledge on oncaeid systematics and morphology to students worldwide. Ruth was nominated by Prof. Susumu Ohtsuka on behalf of several eminent Japanese copepodologists. This is a well-deserved tribute which was long overdue.

Keynote Speaker

Prof. J. Rudi Strickler (University of Wisconsin-Milwaukee – now at University of Texas Marine Science Institute (UTMSI), Port Aransas, Texas) presented a 1-hour invited lecture on the “Copepod’s Domain”. In his entertaining talk Rudi introduced us to the world copepods live in which is vastly different from ours. For planktonic copepods it is three-dimensional with very few landmarks, while for their parasitic counterparts it creates a considerable impediment to finding a host or a mate when the target is 100,000 body-lengths away in any of the three dimensions. In the fluid environment, with very low excess gravity (gravity minus buoyancy), copepods face specific challenges during the various activities and processes of their life history, including grooming, disposal of unwanted items, orientation and positioning during mating, and capture and manipulation of prey. Rudi explained how the interplay between gravity and viscosity sets boundary conditions for evolution, while the lack of obvious landmarks prioritizes the requirement for a sensory system that keys in on the complexity of the fluid around the animals.

Maxilliped Lecture

The Maxilliped Lecture, to be given by the outgoing President of the WAC, has been a traditional event at each ICOC since 1987. This year, Past-President Eduardo Suárez-Morales introduced President Diana Galassi prior to her lecture in a pre-recorded video. The Maxilliped Lecture traditionally reviews a broad field on some aspect of copepodology, rather than novel discoveries, and is *ex cathedra* (with the full authority of office), implying that no discussion is permitted after the presentation. Diana presented a thought-provoking and highly inspiring lecture on her specialist subject entitled: “Making the invisible visible”: going deep into the conservation of groundwater Crustacea Harpacticoida.

WAC Business Meeting

Items on the agenda included communications from the president of WAC (Diana Galassi), the announcement of the 15th ICOC (Susumu Ohtsuka), the Treasurer’s report (Chad Walter), the General Secretary’s report (Hans Dam), status of refunds from the 14th ICOC (Susan Dippenaar), proposed changes to WAC by-laws (Diana Galassi) and the announcement of nominees standing for election to the WAC Council.

Student awards

Contrary to previous ICOCs, when a team of professional volunteers evaluated the student oral presentations and posters, all registered professionals were able to vote for up to six oral presentations and six posters during e-ICOC, using the automated voting system implemented on the website. The quality of student presentations was exceptionally high in both categories.

The Zbigniew Kabata Student Award (named after the Founder President of WAC) for best oral presentation given by a student participant was awarded to Mattia Di Cicco (University of L’Aquila) for his presentation “Unravelling the sub-lethal effects of diclofenac on the swimming behaviour of the freshwater interstitial crustacean *Bryocamptus pygmaeus* (Crustacea, Copepoda, Harpacticoida)”. His contribution was chosen from 32 student oral communications from all fields of copepodology. The Kabata Award recipient received a certificate and a cash prize of 400 USD.

In addition, ten awards were presented for other outstanding research (five for oral communications and five for poster presentations) in the student category. Runners-up (2–6) in the Z. Kabata Student Award competition were automatically awarded for the five best student oral presentation. Each of the ten awardees received a certificate, a cash prize of 150 USD and a handmade copepod-themed scarf which will be sent through the post.

Awardees in the oral presentation category were:

1. **Érica Becker** (Universidade Federal de Santa Catarina, Florianópolis, Brazil)
Ecological mechanisms shaping copepod functional diversity along biogeographic zones in the Southwestern Atlantic and Antarctic waters
2. **Irina Enshina** (Saint Petersburg State University, Russia)
Microanatomy of the endoparasitic copepod *Nucellicola* sp. (Copepoda: Chitonophilidae)
3. **Elena Kochanova** (Finnish Museum of Natural History, University of Helsinki, Finland)
Cryptic diversification of the harpacticoid copepod *Harpacticella inopinata* in Lake Baikal
4. **Aleksandr Novikov** (Kazan Federal University, Kazan, Russia)
Sexual dimorphism of appendages in Canthocamptidae (Harpacticoida): role in taxonomy and relationship to sexual arms race
5. **Nanami Yumura** (Hiroshima University, Hiroshima, Japan)
Exploring evolutionary trends within the Pennellidae (Copepoda: Siphonostomatoida) using molecular data

All awardees in the poster presentation category also presented a lightning talk:

1. **Cennet Arslan** (Mersin University, Mersin, Turkey)
Towards the revision of *Phyllopodopsyllus* T. Scott, 1906 (Copepoda, Harpacticoida) species distributed along the Turkish coasts
2. **Marco Cifoni** (Stazione Zoologica Anton Dohrn, Naples, Italy)
Microplastic ingestion by copepod species in the Gulf of Naples (Western Mediterranean Sea)
3. **Alexandra Hahn** (GEOMAR Helmholtz Centre of Ocean Research, Kiel, Germany)
Effects of plasticity and adaptation on the seasonal thermal tolerance of Baltic copepods
4. **Sophia Lecuona & Jade Morris** (University of California Santa Barbara, Santa Barbara, U.S.A.)
A novel copepod egg predator infesting commercially important yellow rock crabs in Santa Barbara, CA
5. **Aleksandr Novikov** (Kazan Federal University, Kazan, Russia)
We know nothing about the stygofauna of microcrustaceans in the European part of Russia: two new genera of Copepoda in only two samples from Tatarstan

Election of WAC Officers

Except for the Past-President, all Officer positions of the WAC Council were declared vacant, and nominees were asked to submit a self-nomination statement which was posted on the e-ICOC website and made available to all participants. Only WAC members in good standing and participating in e-ICOC were eligible to vote online using the automated voting system which was not accessible to non-WAC members. Members were able to vote for one nominee only for each of the following positions: President, Vice-President, General Secretary and Treasurer. Up to a

maximum of six Executive Council nominees could be voted for by any attending WAC member. Voting took place from immediately after the Business Meeting on Thursday 28 July until 23.59 GMT + 1 on Friday 29 July. The automated election results were disclosed by the organisers to the incumbent President and the General Secretary, and Elected Officers were announced by the outgoing President, Diana Galassi, on Saturday 30 July during the Closing Ceremony.

The full slate of newly elected WAC officers is as follows:

President: Hans Dam

Vice-President: Mark Ohman

General Secretary: Leocadio Blanco Bercial

Treasurer: T. Chad Walter

Executive Council: James (Jimmy) Bernot, Iole Di Capua, Rony Huys, Alexandra (Sasha) Savchenko, Grace Wyngaard, Atsushi Yamaguchi

WAC Membership

A total of 58 new members from 20 different countries have joined WAC since the 13th ICOC in 2017 and were welcomed to the society by the President during the Opening Ceremony. The great majority of these members attended and presented during e-ICOC.

Botswana: Maxwell Barson

Brazil: Érica Becker, Paulo Corgosinho, Adriane Wandeness

China: Xupeng Chi, Lin Ma, Fanghong Mu

France: Mohammed Madui, Kevin Sugier, Jordan Toullec

Germany: Maya Bode-Dalby

Iran: Vahid Sepahvand

Israel: Tamar Guy-Haim

Italy: Genuario Belmonte, Ylenia Carotenuto, Francesco Cerasoli, Vezio Cottarelli, Tiziana Di Lorenzo, Maria Grazia Mazzocchi, Marco Uttieri, Fabrizio Vecchi

Japan: Atsushi Yamaguchi

Maldives: Enas Mohamed

Mexico: Aurora Gaona-Hernández, Miguel Martínez-Mercado, José R. Palomares-García

Serbia: Vera Vukanić

South Africa: James Omondi Outa

South Korea: Kyuhee Cho, Jong Guk Kim, Jimin Lee, Seunghan Lee

Spain: Ma Luz Fernandez de Puellas, Lidia Yebra

Switzerland: Fabio Benedetti

Tunisia: Ilhem Hamdi

Turkey: Alp Alper, Alper Kabaca, Süphan Karaytuğ, Nuran Özlem Yildiz, Serdar Sak, Serdar Sönmez, Tuba Terbiyik Kurt

Ukraine: Liudmyla Gaponova

U.S.A.: Marcus Boyle, Reid Brennan, Ann Bucklin, Christina Burdi, Joseph Connolly, Joseph Covi, James DeMayo, Michelle Jungbluth, Petra Lenz, Christopher Marshall, Stephanie Matthews, Linsey Sala, Anne Slaughter, Joshua Stone

e-ICOC Group Photo

Screenshots of participants attending particular sessions were taken at regular intervals during the meeting. About 60% of the attendees were captured during the conference and their photos were assembled in an e-ICOC poster which can now be downloaded from the e-ICOC website by every conference participant.

Certificates of Conference Participation

Each participant received a certificate confirming their attendance which is downloadable from the e-ICOC website.

Closing Ceremony

Recipients of the Zbigniew Kabata Award and Additional Student Awards were announced by the co-organisers. Based on the results generated by the anonymous automated voting system on the e-ICOC website, the outgoing President announced the nominees that had been elected to the WAC Council. A pre-recorded video by Susumu Ohtsuka was presented by the co-organisers, introducing attendees to the preliminary programme of the meeting and showcasing the venue of 15th ICOC in Hiroshima, Japan (summer 2024). Both the outgoing President (Diana Galassi) and the newly elected President (Hans Dam) presented their closing remarks. The e-ICOC organizers expressed their special thanks to WAC for financial support, to Stanislav Iliutkin (webmaster) for his outstanding commitment, to all chairpersons, symposium organizers and moderators for streamlining the conference, and to colleagues who acted as focal points to publicize the e-ICOC in their countries and attract attention from students and early-career participants, in particular Diana Galassi, Maria Cristina Bruno and Iole Di Capua for Italy, Süphan Karaytuğ for Turkey, Rubens Lopes and Paulo Corgosinho for Brazil, Samuel Gómez and Eduardo Suárez Morales for Mexico, Fanghong Mu and Lin Ma for China, Hans Dam and Grace Wyngaard for U.S.A., and Susumu Ohtsuka for Japan.

The meeting was widely perceived as highly successful and friendly with no breaches of the Code of Conduct being reported.

Submitted respectfully by the co-organisers to WAC membership on 4 August 2022

Rony Huys & Alexandra Savchenko