



# Edies

*International Commission on Stratigraphy  
Subcommission on Ediacaran Stratigraphy*

**Newsletter of the Subcommission  
on Ediacaran Stratigraphy**

**Number 5  
January, 2017**



*International Commission on Stratigraphy*



*Subcommission on Ediacaran Stratigraphy*

## Remarks from the Chair

-By Shuhai Xiao

The year of 2016 was a particularly busy one for the Ediacaran Subcommission. The Subcommission sponsored two very successful field workshops/meetings: (1) the Palaeo Down Under 2 meeting in Adelaide and a field excursion to examine key Ediacaran sections in the Flinders Ranges; and (2) an IGC symposium in Cape Town and a pre-IGC field trip to investigate possible TES horizons in the Nama Group of Namibia (see attached field workshop report).

The Mistaken Point site has been selected as a UNESCO World Heritage site. Thanks and congratulations to Guy Narbonne, Alex Liu, Marc Laflamme, and many others who have contributed to Ediacaran stratigraphy and paleobiology in Newfoundland. This is a great way to promote Ediacaran science and to protect Ediacaran sites.

We have elected Andy Knoll and Malcolm Water as the inaugural honorary members. Andy and Malcolm led the Terminal Proterozoic Subcommission that was responsible for the establishment of the Ediacaran GSSP. Both of them have made numerous impactful contributions in Ediacaran stratigraphy, Paleobiology, and Earth system history. Congratulations to Andy and Malcolm!

We have also elected five new voting members: Alex Liu, Pengju Liu (not related to Alex), Jim Schiffbauer, Mukund Sharma, and Rachel Wood. Their brief biographic sketches are attached. They replaced out-going voting members: Martin Brasier (deceased), Kath Grey, Soren Jensen, Vibhuti Rai, and Chongyu Yin. Let's extend our warm welcome to the new voting members and give an applause to the out-going members for their services!

Finally, we have a new logo (attached). This combines the ICS logo and a line drawing of *Dickinsonia*, which was provided to me by Dima Grazhdankin.

The SES and TES working groups are now open for business. TES-WG led the organization of the pre-IGC field trip in Namibia (see attached field workshop report). I met with Chuanming Zhou (SES-WG chair) and Pengju Liu in Nanjing on December 20, 2016, to discuss SES-WG plans for 2017.

In addition to SES and TES working groups, we are hoping to kick off the discussion on series-level division of the Ediacaran System at the International Symposium on the Ediacaran-Cambrian Transition (ISECT) in Newfoundland, June 15-29, 2017. You are encouraged to attend this symposium and the business meeting at the symposium. The Subcommission white paper, published in the November 2016 issue of *Episodes* (attached), can serve as a starting point for this discussion.

As usual, I hope you enjoy reading the 5<sup>th</sup> newsletter of the Ediacaran Subcommission. Newsletters are considered as gray literature where people share information in informal ways. Whereas one can share information in numerous venues, including Facebook, Twitter, and many other social media, the *Edies* is specifically tailored for the community of Ediacaran researchers. Thus, I continue to value the *Edies*, and would like to thank you for your contributions and thank Marc for his effort to compile the information.

## Notes from the Secretary

-By Marc Laflamme

Welcome to our fifth newsletter! First off, I'd also like to welcome our new voting members, and personally thank our out-going

voting members for their diligent work over the past 4 years. These are some big shoes to fill, but I have no doubt that they will excel in their new positions.

I'd like to draw your attention to a few upcoming meetings that might be of interest to our members. June 11-14<sup>th</sup>, we have the 1<sup>st</sup> Geobiology Society Conference in Banff <http://cms.eas.ualberta.ca/Geobiology2017/>.

This should be a fantastic venue for students and faculty alike, with a special emphasis on early-career geobiologists. This year's GACMAC <http://www.kingstongacmac.ca/en/>, will be held at Queen's University in Kingston, Ontario, with a special session dedicated to "*Patterns, Processes, Biases and Trends in the Fossil Record*", which is likely to highlight quite a few Ediacaran talks.

#### **TES Working Group Members**

##### **Voting Members:**

Narbonne, Guy M. (Chair)  
Moczydlowska-Vidal, Malgorzata (Secretary)  
Alvaro, Jose-Javier  
Buatois, Luis A.  
Gehling, James G.  
Grazhdankin, Dmitri V.  
Jensen, Soren  
Kaufman, Alan Jay  
Laflamme, Marc  
Liu, Alex  
Schiffbauer, James  
Sharma, Mukund  
Warren, Lucas  
Wood, Rachel  
Xiao, Shuhai  
Yuan, Xunlai  
Zhu, Maoyan

##### **Corresponding Members:**

Christie-Blick, Nicholas  
Duda, Jean-Pierre  
Dornbos, Stephen  
Erwin, Doug  
Grey, Kathleen

Jiang, Ganqing  
Li, Chao  
Ivantsov, Andrey  
Knoll, Andrew  
Mangano, Gabriela  
Meyer, Michael  
Rai, Vibhuti  
Reitner, Jochim  
Rich, Patricia  
Schiffbauer, James  
Shields-Zhou, Graham A.  
Weaver, Patricia  
Yin, Chongyu  
Zhu, Maoyan

#### **SES Working Group Members**

##### **Voting Members:**

Chuanming Zhou (Chair)  
Christie-Blick, Nicholas  
Grazhdankin, Dima  
Grey, Kathleen  
Jiang, Ganqing  
Kaufman, Alan Jay  
Liu, Pengju  
Moczydlowska-Vidal, Malgorzata  
Sharma, Mukund  
Shields, Graham  
Xiao, Shuhai

##### **Corresponding Members:**

Adamson, Peter William  
Alvaro, Jose-Javier  
Gehling, James G.  
Gaucher, Claudio  
Jensen, Sören  
Joshi, Harshita  
Kenchington, Charlotte  
Laflamme, Marc  
Li, Chao  
Liu, Pengju  
Liu, Alex  
Nagovitsin, Konstantin  
Rai, Vibhuti  
Schiffbauer, James  
Shukla, Rajita  
Sperling, Erik  
Tiwari, Meera

Vickers-Rich, Patricia  
Willman, Sebastian  
Xunlai Yuan

Yin, Chongyu  
Zhu, Maoyan

**New Voting members:**

Alex Liu, Cambridge University



Alex Liu is a University Lecturer in Palaeobiology at the University of Cambridge, U.K. He completed his doctoral degree with Martin Brasier in Oxford in 2011, and had postdoctoral research positions in Cambridge and Bristol before taking up his current position in October 2016. Alex's work focuses on all aspects of Ediacaran palaeobiology, including taphonomy, ichnology, morphogenesis and systematics. His research has focused primarily on material from Newfoundland, but also includes ongoing collaborative projects on material from China, Russia, and Brazil.

Rachel Wood, University of Edinburgh



Rachel Wood majored in Geology and Zoology, and has had a long term interest in reef evolution, carbonates, diagenesis, the rise of biomineralisation at the Ediacaran - Cambrian transition. She held research fellowships at the University of Cambridge and worked in industry, and now holds a personal Chair in Carbonate Geoscience at the University of Edinburgh, UK.

Mukund Sharma, Birbal Sahni Institute of Palaeosciences



Mukund Sharma is a recognized Precambrian palaeobiologist of India. He is devoted on the studies of the Ediacaran Marwar Supergroup. His researches established several fossilized remains and carbonaceous remains from Bhima, Kurnool and Himalayan successions of the country. From Neoproterozoic Bhima Group of Karnataka, he reported multicellular organisms which evolved ~ 720 Ma. He demonstrated that a few multicellular metaphytes also existed in the Bhima assemblage. He has edited a thematic issue of the *Journal of Asian Earth Sciences*, on 'Proterozoic Basins of India', and organized two International Field Workshops (Vindhyan and the Marwar Supergroup).

Pengju Liu, Chinese Academy of Geological Sciences



Pengju Liu (China) is a senior research scientist at the Institute of Geology, Chinese Academy of Geological Sciences. His research interests include the taxonomy, taphonomy and biostratigraphy of Ediacaran microfossils. He currently focuses his research on acanthomorphic acritarchs from the Ediacaran Doushantuo Formation of South China.



James D. Schiffbauer, University of Missouri



Specializing in taphonomy, Dr. Schiffbauer blends the fields of geochemistry, geobiology, and paleobiology to investigate the confluence factors influencing pathways of soft-tissue fossil preservation, mostly in the Neoproterozoic and Paleozoic. He is an expert in electron-, ion-, and X-ray-microbeam analytical techniques, and their broad applications in geological sciences. Jim received his PhD in Geobiology from Virginia Tech (2009), and following his postdoctoral research joined the Department of Geological Sciences at the University of Missouri in 2012. He was recently appointed as Director of the new Mizzou $\mu$ X Core facility, which will house unique microbeam instrumentation designed specifically to target paleobiological questions.

### **Mistaken Point: The World's First Precambrian UNESCO World Heritage Site**

– *By Guy Narbonne*

The richly fossiliferous Ediacaran strata at Mistaken Point in eastern Newfoundland, Canada were inducted as a UNESCO World Heritage Site on July 16<sup>th</sup>, 2016. Mistaken Point fossils constitute an outstanding record of a critical milestone in the history of life on Earth, “when life got big” after almost three billion years of microbe-dominated evolution. Mistaken Point contains the world’s oldest-known abundant and diverse examples of large, architecturally complex organisms and also the oldest examples of complex, deep-sea communities of megascopic organisms. Other attributes contributing to Mistaken Point’s Outstanding Universal Value include its exceptional potential for radiometric dating of the assemblages and evidence for the role of

ancient oxygen levels in the regional and global appearance of complex multicellular life.

Mistaken Point is one of only 12 pre-hominid fossil sites designated as a UNESCO World Heritage Site, and is the first UNESCO WHS ever designated primarily on the basis of pre-Cambrian geology and/or fossils. We expect that others will follow. The successful designation was the result of 12 years of coordinated effort by scientists, the local communities of southeastern Newfoundland, and the provincial and national governments. Richard Thomas (Parks and Natural Areas Division, Newfoundland and Labrador) and Guy Narbonne (Queen’s University) were the principal authors of the nomination dossier, which also includes a useful appendix on the “Global Comparative Analysis” of Mistaken Point by Alex Liu (Cambridge) and the late Martin Brasier (Oxford). A copy of the nomination dossier is available online at



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<http://whc.unesco.org/uploads/nominations/1497.pdf>>.

**Field Workshop on the Ediacaran Nama Group of southern Namibia – 21–25 August 2016, Windhoek to Fish River Canyon, Southern Namibia,**

*-By Shuhai Xiao*

Among all established geological periods, the Ediacaran Period is the longest, lasting from 635 Ma to 541 Ma. It is within this 94 million years of geological history that the Earth had transformed from a world dominated by microbes to one increasingly influenced by animal activities. Important evolutionary innovations occurred in the Ediacaran Period, including the rise of macroscopic animals, complex ecological interactions, and metazoan biomineralization. Resolving the causes and consequences of these biological innovations is a major focus of recent geobiological investigation. However, without a solid geological time framework, Ediacaran workers are facing significant challenges to assemble the pieces of the puzzle from different parts of the world. To develop a better understanding of Ediacaran time and life, a group of 25 geologists, geochemists, sedimentologists, and paleontologists gathered together to examine the terminal Ediacaran Nama Group at a field workshop sponsored by IGCP 587 “Identity, Facies and Time: The Ediacaran (Vendian) Puzzle” and the ICS Subcommittee on Ediacaran Stratigraphy.

The terminal Ediacaran Nama Group near Aus, southern Namibia, holds a special place in the history of Ediacaran paleontology. Some of the earliest complex Ediacara fossils were first reported from the Nama Group (Gürich, 1929; Fedonkin et al., 2007; Xiao, 2008). This

succession contains important geological information about the Shuram carbon isotope excursion (potentially the greatest C-isotope excursion in Earth history), the expansion of animal bioturbation, the rise of animal skeletonization and biomineralization, and the decline and final demise of the Ediacara biota. It is also a key succession to define the Terminal Ediacaran Stage (TES) (Xiao et al., 2016), which has been identified as one of the priorities for the Subcommittee of Ediacaran Stratigraphy following a 2014 workshop in South China (Xiao et al., 2014) and a 2015 symposium in Graz, Austria.

Participants were drawn to Namibia by the new developments and discoveries made in the Nama Group in recent years. These include new discoveries and interpretations of Ediacaran and Cambrian fossils (e.g., Narbonne et al., 1997; Jensen et al., 2000; Grazhdankin and Seilacher, 2002; Wood et al., 2002; Grazhdankin and Seilacher, 2005; Jensen and Runnegar, 2005; Elliott et al., 2011; Wilson et al., 2012; Vickers-Rich et al., 2013; Meyer et al., 2014a; Meyer et al., 2014b; Darroch et al., 2015; Zhuravlev et al., 2015; Darroch et al., 2016; Elliott et al., 2016; Ivantsov et al., 2016), paleoecological investigation of reef-building skeletal fossils (e.g., Penny et al., 2014; Wood and Curtis, 2016), comprehensive geochemical analyses (e.g., Hall et al., 2013; Wood et al., 2015), and much needed radiometric ages from key stratigraphic horizons (Grotzinger et al., 1995). Building upon these advances, several research groups are actively working on the Nama Group in order to further improve our understanding of the late Ediacaran Period.

Before the field workshop officially kicked off, a small group of participants visited the Geological Survey of Namibia to examine its



Ediacara fossil collection, which has been significantly expanded over the past 15 years through IGCP 493/597 and includes the recently reported three-dimensional specimens of *Rangea* (Vickers-Rich et al., 2013) and *Ernietta* (Ivantsov et al., 2016). The field workshop started with an examination of classical fossil sites in Farm Aar where groundbreaking discoveries were made in the past. Participants were able to have an up-close look at large *Pteridinium* slabs assembled by the late Dolf Seilacher, *Rangea* excavation site published by Vickers-Rich and colleagues, *Beltanelliformis* excavation site near *Ernietta* Hill, as well as new and undescribed forms that are currently under investigation. Lively discussion and debate were heard on the outcrops about the morphology, ecology, taphonomy, and affinity of these enigmatic Ediacara fossils. At the lunch break in the Aar farmhouse, a brief ceremony was held to recognize Mrs. Barbara Boehm-Erni as a guardian of this paleontological heritage on her farm. Participants were also able to make a side trip to look at some amazing San carvings on the farm.

On the morning of August 23, participants were shown a section of the Kanies and Mara members at the base of the Nama Group, on Farm Pockenbank some 60 km south of Aus. The Mara Member is characterized by negative carbon isotope signatures and may be correlated with the Shuram negative carbon isotope excursion in Oman. Emerging data from the Mara Member suggest that anaerobic oxidation of methane may have contributed to the negative carbon isotope signatures seen in this and other Ediacaran units thought to be equivalent to the Shuram excursion. The Mara Member is also reported to host the oldest

specimens of the biomineralizing animal fossil *Cloudina* in Namibia and potentially globally. As such, the Mara Member offers a rare opportunity to resolve the relationship between the Shuram excursion and the first appearance of *Cloudina*, which is critical in defining TES (Xiao et al., 2016). In the afternoon, we jumped to the top of the Nama Group, observing some of the latest Ediacaran strata of the Spitzkopf Member on Farm Swartpunt. The abundance of trace fossils, soft-bodied Ediacara fossils, thrombotic microbial buildups, biomineralizing animal fossils such as *Cloudina* and *Namacalathus*, and numerous volcanic ash beds in these strata offers an unparalleled opportunity to test hypotheses about the extinction of the Ediacara biota.

On the last day of the field workshop, some participants ventured to explore the geology and ecology of the Fish River Canyon as well as the geology of hot springs at Ai-Ais, whereas others took a trip to observe the spectacular trace fossils and ancient valley fills in the early Cambrian Nomtsas Formation on Farm Sonntagsbrunn. The field trip ended with a night stay at Fish River Canyon Village, where participants continued their discussion—over traditional Namibian beverages and safari gourmets—on Nama Group stratigraphy and paleontology, as well as plans for future expeditions.

The Nama Group field workshop was followed by a 1.5-day symposium entitled “The Dawn of Animals: Cryogenian to Cambrian” at the 35<sup>th</sup> IGC in Cape Town. The symposium included 33 oral presentations and 12 poster presentations. During IGC, the Subcommittee on Ediacaran Stratigraphy held a business meeting on the evening of August 29, where an announcement was made to elect Andy Knoll



and Malcolm Walter as the inaugural honorary members of the Subcommittee. Plans for formal designation of the basal and terminal stages of the Ediacaran System are underway (Xiao et al., 2016) and detailed discussion of series-level subdivision will begin with a field excursion to Newfoundland in 2017.

Whereas the Nama Group records the end game of the Ediacara biota, the Nama Group field workshop will surely start a new chapter in the study of Ediacaran paleobiology and stratigraphy. With lingering questions and unresolved enigmas, many participants have already expressed interest to come back to Namibia in the near future. After all, as the longest geological period, the Ediacaran holds many secrets that will keep geologists busy for decades to come.

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Fig. 1. Group picture of participants in the Nama Group field workshop, taken in front of the Aar Farmhouse. From left to right: Pengju Liu, Qing Tang, Andrea Du Plessis, Tom Rich, Ben Yang, Greg Retallack, Xiaodong Shang, Preston (driver), Juliana Okubo, Bernd Roemer, Patricia Vichers-Rich, Angela Ehling, Lucas Warren, Barbara Boehm-Erni, Gabriel Jubé Uhlein, Maoyan Zhu, Guy Narbonne, Doris Honold, Shuhai Xiao, Stuart Clenaghams, Stuart Clenaghams, Heda Agić, Natasha Bykova, Mike Meyer, Jay Kaufman, Les Kriesfeld, Drew Muscente. Photograph by Jeff Smith.



Figure 2. Group picture on outcrops of the Dabis Formation, Farm Pockenbank.

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### **Palaeo Down Under 2 (PDU2)**

*-By Maoyan Zhu*

Palaeo Down Under 2 (PDU2) was held in Adelaide (South Australia) during 11th-15th July 2016. The conference was organized by Dr. Peter Kruse, Diego Garcia-Bellido, Dr., Mr. James Holmes and Prof. James Jago, and co-sponsored by Australia Palaeontologists, International Subcommittee on Ediacaran Stratigraphy and other bodies. The conference attracted more than 160 delegates from 13 countries. Dedicated symposia on the Ediacaran and Cambrian systems was a highlight of the programme, including 18 oral presentations about recent advances in Ediacaran research covering paleobiology, stratigraphy and paleoenvironments. Keynote lectures on the Ediacara Biota in South Australia was given by Mary Droser, and on the Precambrian-Cambrian transition in South China was given Maoyan Zhu. In particular, a pre-conference field excursion (1-9 July) was organized to visit the renowned and well-studied Ediacaran and Cambrian fossil localities in the Flinders Ranges to the north of Adelaide, as well the Emu Bay Shale Konservat-Lagerstätte on Kangaroo Island, south of Adelaide. A number of voting and corresponding members of the Ediacaran

Subcommission attended the field excursion and conference, including Jim Gehling, Chuanming Zhou, and Maoyan Zhu.

A business workshop of the Ediacaran subcommission was held during the conference, participants include voting members Jim Gehling, Chuanming Zhou, Maoyan Zhu, and some corresponding members from both the Ediacaran and Cambrian subcommissions including Diego Garcia-Bellido, Peter Haines, Allen Hiedi-Jane, Peter Kruse, and Guoxiang Li. The workshop focused on three issues: 1) how to define the terminal Ediacaran stage and the base of the Cambrian; 2) the age of the Acraman eject event and its possible link to the Gaskiers Glaciation since possible drostones have been founded both below and above the impact layer; and 3) age constrains for the initiation of the Wonaka/Shuram/DOUNCE isotope excursion at the mid-Ediacaran, and whether it is potential to be a marker to subdivide the Ediacaran.

*Upcoming meetings:*

**International Symposium on the Ediacaran–Cambrian Transition (ISECT NL2017)**  
<http://www.isect2017.org/>

The ISECT 2017 meeting will bring together researchers on all aspects of the palaeontology, geochemistry and stratigraphy of the Ediacaran and Cambrian intervals. The meeting will consist of a two day symposium exploring topics including the placement of the Ediacaran-Cambrian boundary. It will also provide delegates with the opportunity to visit some of Newfoundland's spectacular geological and palaeontological sites, including excursions to the Ediacaran-Cambrian boundary at Fortune Head; the Cambrian-Ordovician boundary in western

Newfoundland; the trilobite localities at Manuel's River, and the Mistaken Point Ecological Reserve World Heritage Site, home to some of the world's best assemblages of Ediacaran macrofossils. This conference will also serve as annual meetings for voting members of The International Subcommission on Ediacaran Stratigraphy (ISES) and The International Subcommission on Cambrian Stratigraphy (ISCS).

Five field excursions will be offered in conjunction with the meeting. These will visit the most spectacular Ediacaran and Cambrian field sites Newfoundland has to offer, and are summarised below. Bookings for fieldtrips can be made through the online meeting registration form. Please note that due to safety and permit/legislative considerations, **the number of places on the field trips is limited to 30 delegates**. Places will be offered in the order of payment date, in a strict **first-come, first-served** basis.

**[Trip 1: The Ediacaran Geology and Palaeontology of the Avalon Peninsula,](#)**  
**Dates:** 17–20th June 2017

**[Trip 2: The Cambrian–Ordovician GSSP sections of Western Newfoundland,](#)**  
**Dates:** 15–20th June 2017

**[Trip 3: The Ediacaran macrofossils of the Bonavista Peninsula,](#)** **Dates:** 23rd–26th June 2017

**Trip 4: The Ediacaran-Cambrian Boundary GSSP sections of the Burin Peninsula,**  
**Dates:** 23rd–29th June 2017

**[Trip 5: Mistaken Point Ecological Reserve - One day option,](#)** **Dates:** 23rd June 2017



### Important Dates:

**31st March 2017:** Deadline for abstract submission

**30th April 2017:** Final deadline for standard registration and payment of excursion fees

**22nd May 2017:** Close of registration

### Contributions by our members:

1. AGIĆ, H., MOCZYDŁOWSKA, M., CANFIELD, D.E. 2016. Reproductive cyst and operculum formation in the Cambrian-Ordovician galeate-plexus microfossils. *GFF, Geological Society of Sweden*, 138 (2), 278–294. Published online 05 February, 2016. Doi: 10.1080/11035897.2015.1116603.
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