



Bulletin

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Comments regarding this Bulletin should be addressed to the IBA Secretary: catherine.reid@canterbury.ac.nz

Copies of the Bulletin are archived at the Natural History Museum London.

Further information at <http://www.bryozoa.net/iba/index.html>

AWARDS

2018 INTERNATIONAL BRYOZOLOGY ASSOCIATION AWARDS

The IBA Council is pleased to announce the recipients of the 4th triennial International Bryozoology Association Awards. The Awards are made possible from voluntary contributions from IBA members. Kamil Zágoršek and Caroline Buttler were also successful in securing support for students to attend the conference from the Palaeontological Association, which gave the awards committee additional funds to disperse.

Katerina Achilleos - Biochemical pathways involved in calcification of marine invertebrates: focus on *Cellaria immersa*

Ana Carolina Sousa de Almeida - Diversity of marine bryozoans (Gymnolaemata) from Bahia State, northeast Brazil.

Melissa Kay Boonzaaier - The first account of zoogeographical distribution patterns of marine Bryozoa (Phylum) along the South African coastline.

Yasser A. El Safori – “Carboniferous bryozoans of Umm Bogma, Abu Durba, and Wadi Araba areas”

Hannah Mello – “Effect of marine protected areas on bryozoan biodiversity”

Leandro Pérez - Taxonomy of genus *Jolietina* Jullien, 1886 (Cheilostomata), with a description of a new species from Lower Miocene Argentina.

Maja Sannum – “using Adeonidae as a test case to improve extraction and analysis of DNA data from preserved specimens”

Yuta Tamberg – “The morphology and skeleton dimensions of modern cyclostomes and application in interpreting feeding in Palaeozoic bryozoans”

We look forward to hearing of their research in Liberec!

Tim Wood, IBA President

PHIL BOCK AWARDED MEDAL OF THE ORDER OF AUSTRALIA

MEDAL (OAM) OF THE ORDER OF AUSTRALIA IN THE GENERAL DIVISION

Mr Philip Ernest BOCK

For service to geology, marine biology, and to the community. Service includes:

- Honorary Researcher, Museums Victoria, since 1982.
- Member, International Bryozoology Association (IBA), current.
- Editor and Contributor, World Register of Marine Species (WoRMS), current.
- Member, International Society for Reef Studies, current.
- Uniting Church in Australia: Parishioner and Volunteer, Burwood Heights Congregation, 50 years.
- Volunteer, Burwood Heights Branch, Crossroads Victoria (an inter-denominational fellowship for people with special needs), current.
- Tutor, Geology Program, Nunawading and Mount Waverley Campuses, University of the Third Age, since 2000.
- Lecturer, Department of Applied Geology, RMIT University, 1966-1997.
- Co-Author, several books including: 'Australian Bryozoa, Volume 1: Biology, Ecology and Natural History', (Clayton, CSIRO Publishing, 2018) and 'The Great Barrier Reef: Biology, Environment and Management' (Collingwood, CSIRO Publishing, 2008).

Awards and recognition includes:

- Inaugural Recipient, Ellis Medal, International Bryozoology Association, 2016.
- Recipient, Golden Trilobite Award, Palaeontological Association, United Kingdom, for 'high quality amateur and institutional websites that promote the charitable aims of the association', 2010.
- Discoverer, previously undiscovered barnacle of Genus: *Tetraclitella*, in a sandstone block at the Melbourne Magistrates' Courts, 2006.

Extracted from [https://www.gg.gov.au/sites/default/files/files/honours/aaagazattes/2016-2026/Media%20Notes%20-%20OAM%20\(A%20-%20E\).pdf](https://www.gg.gov.au/sites/default/files/files/honours/aaagazattes/2016-2026/Media%20Notes%20-%20OAM%20(A%20-%20E).pdf)

NEW MEMBERS

Megan I. McCuller – I have a Master’s in Invertebrate Zoology from the University of New Hampshire (awarded in 2012) under my advisor Dr. Larry Harris, where I studied nudibranchs feeding on *Membranipora membranacea*. I began my foray into bryozoan taxonomy at the 2013 New England Rapid Assessment Survey for Marine Bioinvasive species with the support of Dr. James T. Carlton, who graciously invited me to help ID the bryozoans in his personal collections. In 2014 I was brought on to the Japanese Tsunami Marine Debris (JTMD) project, first as a general research assistant (picking and sorting all taxa), then as the bryozoan taxonomist. Systematic accounts were published through a special edition of *Aquatic Invasions* in February 2018.

I am currently the Collections Manager for Non-molluscan Invertebrates at the North Carolina Museum of Natural Sciences. While our Bryozoa lots are few, I have substantially increased the number of specimens found as associates working through databasing/digitizing other phyla. I plan on continuing my path as a self-taught bryozoologist and hope to contribute to the IBA and one day make it to the conference.

Until then, I look forward to digital communication with other members through my social media (twitter @mccullermi) and email megan.mcculler@naturalsciences.org / mccullermi@gmail.com



Lara Baptista – In 2015 I graduated in Genetics and Biotechnology at the University of Trás-os-Montes and Alto Douro (Portugal), followed by an MSc in Biodiversity, Genetics and Evolution at the University of Porto/CIBIO-InBIO. Currently, I am a student at the BIODIV doctoral program from the University of Porto, supervised by Drs Sérgio Ávila (CIBIO-A), António Múrias dos Santos (CIBIO-InBIO), Manuel Curto (University of Vienna), and Björn Berning (Landesmuseum Linz) as scientific consultant. As an islander native to the Azores, I am curious about the often-overlooked evolutionary processes affecting marine life in remote archipelagos. My PhD project aims to increase the understanding on this topic by performing population genetics and phylogeographic studies in the Azores, focusing on the bryozoan *Reteporella atlantica* and the gastropods *Cingula trifasciata* and *Stramonita haemostoma*. A comparative study of selected shallow water marine invertebrates with distinct larval types, and therefore with different dispersal capabilities, intends to identify genetic differentiation and population structure within the Azores. This project is expected to provide valuable insights in the evolution of the targeted species and the absence of single-island marine endemics in this isolated archipelago, as well as understanding the so-called “Azorean Biogeographical Paradox” (although the prevalent Gulf Stream comes from the west, the closest relatives of the Azorean biota occur in the eastern Atlantic). Testing the connectivity between regions on a broader Atlantic scale will allow me to infer demographic patterns, and to scrutinize the role of ocean circulation in the dispersal and colonization processes of organisms with a short-lived larva.

I also intend to perform an exploratory phylogenetic analysis of the bryozoan *Reteporella*, using microsatellite markers, to test if an adaptive radiation occurred in the Azores, as 11 *Reteporella* species have been reported to date but it is not certain how many species actually exist and how they are genetically related. By joining the IBA, I hope to benefit and share experiences and knowledge with bryozoologists worldwide. If anyone has any questions or suggestions regarding my project, please feel free to contact me (larabaptista@hotmail.com).



NEWS FROM THE MEMBERSHIP

Thomas Schwaha - London calling - Last August I was visiting the NHM in London for two weeks to study the phylactolaemate and ctenostome collection. I was particularly impressed with the Jeboram collection. He was the master of rearing ctenostome cultures. Here's just two quick images of massive colonies of *Tanganella mülleri*:



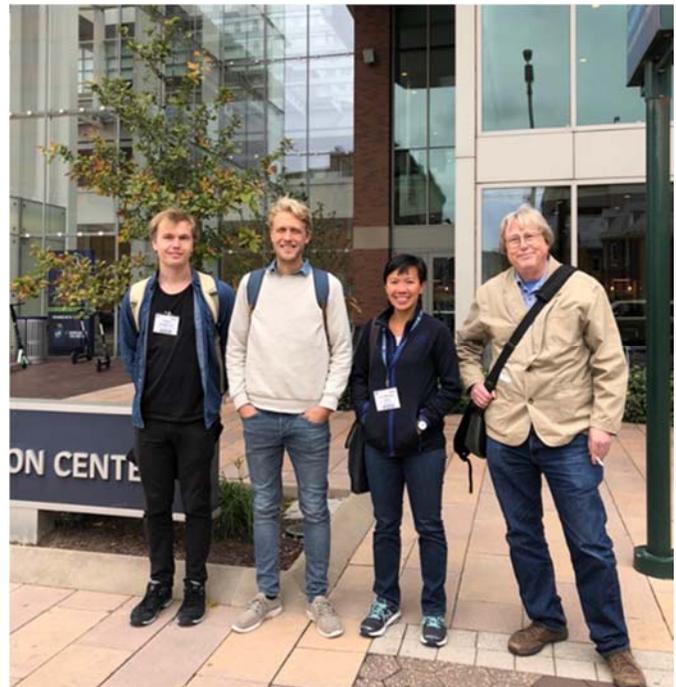
Certainly, there was not enough time to study all of the impressive collection, so I intend to return next year. Ultimately, I would like to write a manuscript on Diethardt Jeboram and would like to ask if anyone has 1) pictures of Jeboram, 2) some personal stories or anecdotes they would be willing to share. I know he was not a popular person, which is also very evident in his papers, but his contributions to ctenostome research are just massive. Many thanks to Mary Spencer Jones for the nice visit to the museum and the opportunity to study the collection. During my stay I was also lucky to meet Peter Batson again, since he was visiting Paul.

New grant - I was also awarded a 4 year grant on the evolution of phylactolaemates by the Austrian Science Fund (FWF). I have two positions to be filled, one PhD and a PostDoc. I will announce the PhD position beginning of next year, the PostDoc close to the end of 2019.

Thomas.

Lee Hsiang Liow - Updates from BLEED in Oslo - A tiny group of us met up at the Geological Society of America Meeting in Indianapolis this November. Mark Wilson and Steve Hageman were there too, although not for this photo-shot taken by a paleobotanist who was nearly run over. From right to left, Bjørn Kopperud (University of Oslo) presented his work on text-mining the bryozoan fossil record, Kjetil Voje (University of Oslo) presented work with Arthur Porto and Emanuela Di Martino on *Metrarhabdotos*, and Lee Hsiang Liow presented collaborative work with Paul D. Taylor on cheilostome zooid size evolution. We had many great conversations with Scott Lidgard (Field Museum of Natural History and the University of Chicago).

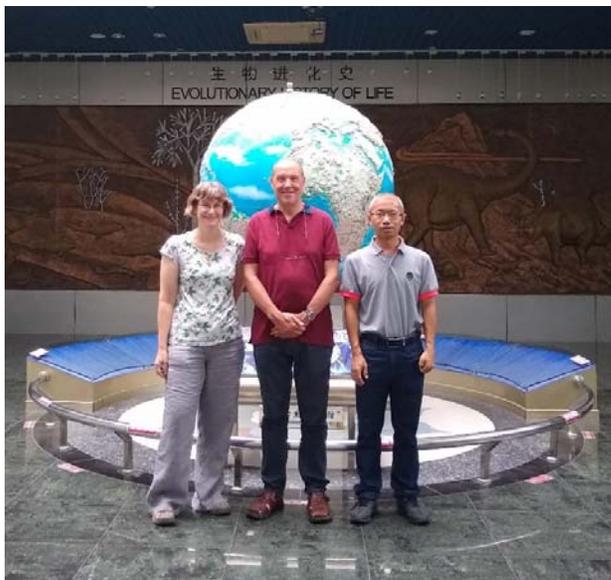
Many exciting things are going on in Oslo. Dennis Gordon, Abby Smith and Hannah Mello has been sending us lots of cheilostomes from New Zealand for Russell Orr and our students to sequence. We are busy in the lab! Mali Ramsfjell has been taking SEMs of material we are saving as vouchers from this sequencing work. We have



also been receiving samples from Andrea Waeschenach, Robyn Cummings, Björn Berning, Andrey Ostrovsky, and many other bryozoologists and non-bryozoologists, thank you all! We have just accepted a new Masters student Bianca Pricope who will be working (in collaboration with Andrey Ostrovsky) on cheilostome bacterial endosymbionts. Our current student Maja Sannum who works on “crappy cheilostome samples” (those with low DNA content, by applying ancient DNA techniques) has received support from IBA to attend the Liberec meeting next year, thank you IBA!

We can't wait for Emanuela Di Martino to start her research position with us in Oslo, starting Jan 2019, welcome home Emanuela!

Caroline Buttler - In September I was fortunate to be invited with Paul Taylor to Nanjing by Ma Junye to spend two weeks at the Institute of Geology and Palaeontology (NIGP). The purpose of our visit was to study some of their vast collection of Palaeozoic bryozoans in particular of the trepostome *Orbiramus*. We spent time looking at thin sections and investigating the palaeoecology of this early Ordovician genus. We also took the opportunity to look at other Palaeozoic bryozoans, including the last cryptostome *Tebitipora* and Devonian trepostomes which revealed unusual compound zoecia. Ma Junye was a great host and in our spare time took us to see some of the sights around Nanjing including the Ming Tombs and the Mausoleum of Sun Yat-sen. While in China I particularly liked the walk each morning from the hotel to the Institute around Xuanwu Lake.



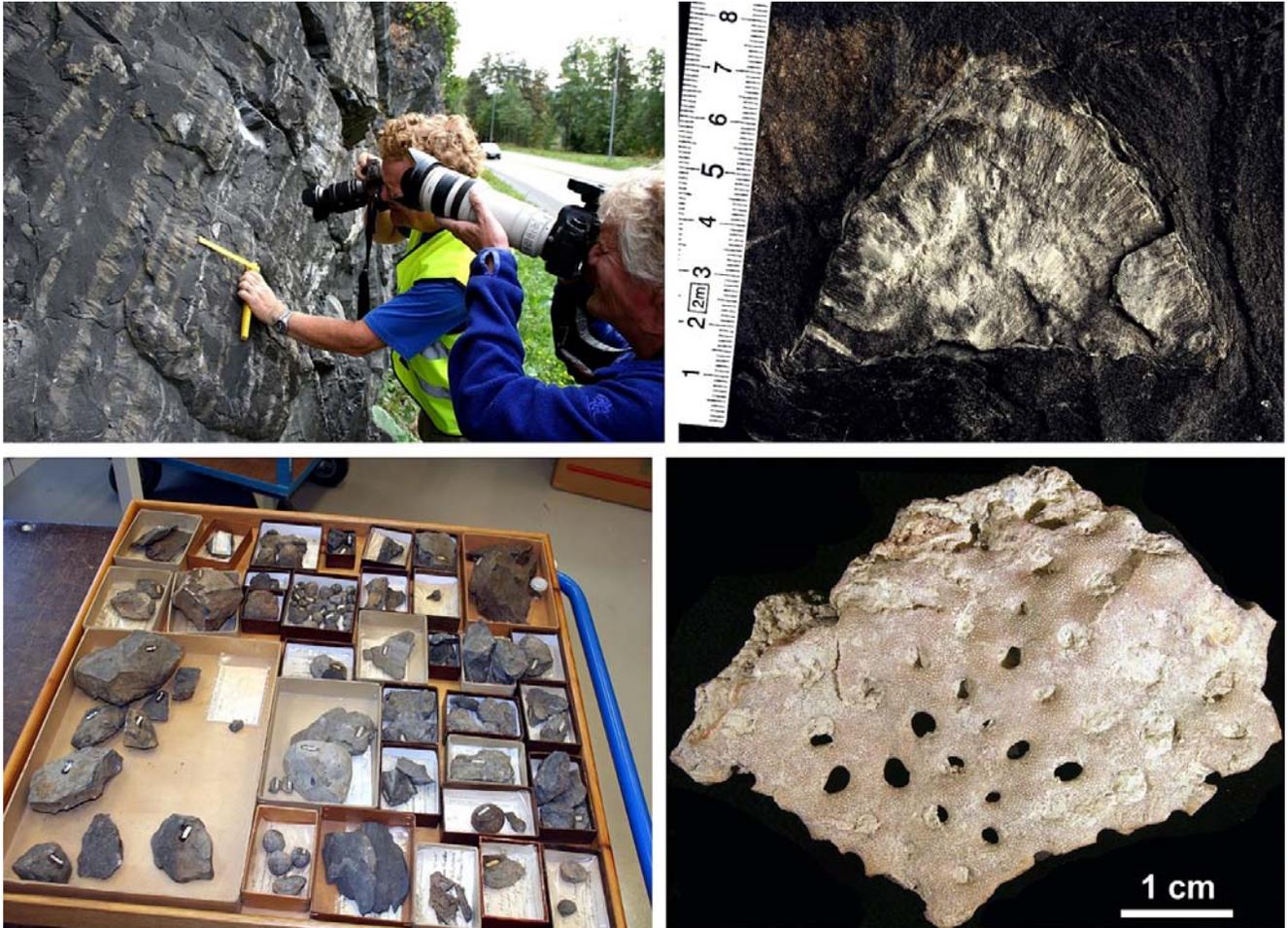
Left - Caroline Buttler, Paul Taylor, Ma Junye in the Palaeontology Museum. Right - Ma Junye with his fantastic microscope set up



The beautiful view on the morning walk to the Institute

Andrej Ernst – In October I started a new project "From high latitudes into the tropics: The role of palaeogeography for the biodiversification of Ordovician bryozoans of Baltoscandia", supported by DFG for the next two years. The project aims study of patterns of the spatial diversity of the Ordovician bryozoans of Baltoscandia. During the Ordovician, Baltica moved from lower latitudes towards the tropics, with consequences for the bryozoans occupying marine basins around this continent. It should be stated how such a change of the palaeobiogeographical situation influenced the bryozoan diversification. For this aim, bryozoan faunas from two temporal/spatial transects will be studied: 1) Darriwilian and 2) Katian of Norway, Sweden, Estonia, and NW Russia. Spatial diversity of bryozoans in these transects will be compared.

For the start of the project I visited Ordovician localities in Norway together with Hans Arne Nakrem. We collected promising material in the field and exploited the paleontological collection of the Natural History Museum in Oslo. Most of that material is in Hamburg now awaiting its description. Next year I am planning to visit Ordovician localities in Sweden and Estonia. Material from the Russian localities (Pechurki, Putilovo, Slantsy) has been collected during earlier visits and can be utilized in the course of the current study.



Top left – Hans Arne at the locality Steinberg (Steinvika Fm., early Katian); top right – massive bryozoan colony (Diplotrypa ? sp.) in the Steinvika Fm.; bottom left – Ordovician bryozoans in the collection of the Natural History Museum, Oslo; bottom right – cryptostome bryozoan, quarry Santsy, NW Russia.

Paul Taylor - As many IBA members will already know, I officially retire from my job at the NHM at the end of 2018 after 39 years. However, I will become a 'Scientific Associate' and continue to work on bryozoans, including finishing my book 'Bryozoan Palaeobiology' and collaborative projects with Andrea Waeschenbach and Lee Hsiang Liow in particular.

Best wishes, Paul

Björn Berning and Lara Baptista. After the French cruises in the late 19th (Hirondelle, Prince Albert) and 20th century (Biaçores Expedition) it was about time to set sails for another cruise to the Azores in order to sample fresh material of the archipelago's marine fauna and flora. Under the leadership of Kai-Horst George (Senckenberg am Meer, Wilhelmshaven), an international team of biologists and sedimentologists interested in the natural history of the Azores successfully applied for funding to make full use of the German RV METEOR for over 5 weeks in this year's late summer (leg M150, "Biodiversity of the Azores", 27.8.-3.10.2018). Besides measuring seawater properties, plankton was sampled and a variety of gears used to collect both meio- and epifauna in depths between 30 and 2550 m in the western (Flores), central (Princess Alice Bank, Terceira) and eastern (Santa Maria, Formigas) groups of islands. Much to our dismay, however, the terrain around the Azores proved to be too rough in many places: the epibenthic sledge and even the rock dredge were damaged beyond repair very early on. And while the Agassiz trawl could be repaired repeatedly (with a lot of help from the captain and boatswain, who knew how to patch fishing nets...!), the soft seafloor beyond 1000 m that was suitable for the trawl proved to be fairly devoid of bryozoans. Thus, of the c. 90 species we recovered (including some 10 new spp.), most were sampled by sediment grabs from relatively shallow waters. We nevertheless met the target of collecting a lot of living material, some of which is already on its way to London and Oslo, to help revising the Azorean bryofauna. Also, c. 50 living *Reteporella* colonies were pickled, so Lara can start with the sequencing for her population-genetic project right away!



*Fig. 1. One of the rare deep-sea bryozoans from soft sediments: an immature and therefore relatively small colony of *Columnella alicae* (height c. 7.5 cm).*

Fig. 2. More mass than class: another tedious trawl with loads of mud rich in sponge spicules but not in bryozoans.

Fig. 3. Lara pretending to enjoy looking for bryozoans on dead coral skeletons.

ARTICLES

15TH LARWOOD SYMPOSIUM

CARDIFF, WALES, UK, 6TH – 8TH JUNE - Report from Caroline Buttler

In June 2018, Amgueddfa Cymru – National Museum Wales hosted the 15th Larwood Symposium. There was a minor scare a couple of months before, when participants noticed that the cost of hotels in Cardiff had tripled in price for the days of the meeting. This was not the demand by bryozoologists pushing up the price but the announcement that Beyoncé and Jay-Z would be playing at the Principality Stadium in Cardiff on the first evening of the meeting. Luckily everyone managed to find somewhere to stay.



The meeting lasted three days, the first day and a half filled with scientific presentations and poster sessions. It began with Paul Taylor (NHM) looking at whether the greater thickness of the cuticle in cheilostome bryozoans was an advantage compared with cyclostome cuticles. This was followed by talks on the phylogeny of the ctenostomes (Andrea Waeschenbach, NHM with a large international group) and the evolutionary history of cheilostomes (Helen Jenkins & Silviu Martha, NHM). Bryozoans from the Ordovician to Pleistocene were examined including a presentation by Mark Wilson (Wooster College, Ohio) who proposed a new term 'Bryoimmuration' describing how encrusting bryozoans were very important in preserving Ordovician aragonitic faunas.

Abby Smith (Otago University) opened the second day of talks, discussing the effect of sample preparation and the storage of biomineral carbonate on geochemistry. Fresh water bryozoans were highlighted by Beth Okamura and Paolo Ruggeri (NHM), and the final talk of the meeting was by Lee Hsiang Liow, looking at competitive overgrowth outcomes for encrusting cheilostome bryozoan species.

The meeting was supported by a Palaeontological Association Grant-in Aid which enabled awards to be made for the best talk and poster by an early career bryozoologist. Arthur Porto (Oslo University) won the best talk award for his presentation on 'High-throughput phenotyping of Bryozoan specimens using machine learning: a Cheilostome case study' and the poster prize went to Mali Hamre Ramsfjell (Oslo University) for 'Cheilostome bryozoan diversity in the Pleistocene Tewkesbury Formation, New Zealand'.

On the afternoon of the second day, Lesley Cherns (Cardiff University) joined us to lead a fieldtrip to the Glamorgan coast, first to Ogmere-by-Sea to look at the Carboniferous-Triassic-Jurassic section. Bryozoans are not common in the Carboniferous Limestone at this locality but as you might have guessed, members of this group managed to find them. The second stop was at an Upper Triassic section along the coast at The Bendricks, where there were no bryozoans but participants got to see 220 million year old dinosaur footprints.

On the final day there were tours around the curatorial areas at Amgueddfa Cymru – National Museum Wales, looking at the palaeontological, marine and Mollusca collections. This was followed by a trip to Big Pit National Coal Museum. Located in Blaenafon, the museum still retains many features of its former life as a coal mine. Everyone took the underground tour and went 300ft down the mine, entertained by our former miner tour guide.

(A version of this article was originally printed in the Palaeontology Newsletter (99, 2018) and is reproduced here with kind permission of the Palaeontological Association)



ANOTHER BRYOZOAN BONANZA IN WESTERN AUSTRALIA

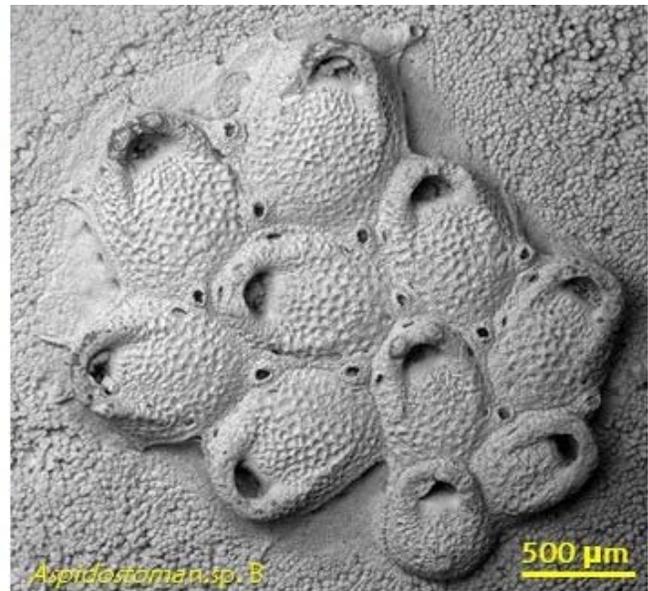
Eckart Håkansson, Lena Thrane & Dennis Gordon

The presence of bryozoans in Cretaceous strata of Australia has over the years reached a near mythical status. The only primary reference appears to be Rolf Schmidt's talk at the 14th IBA in Boone 2007, where he presented a bryozoan community on a single inoceramid fragment housed in the Western Australian Museum. That's about it – for a whole continent!

A dedicated effort to locate this elusive fauna in the field was finally successful in 2017, so this year a small, dedicated group of bryozoologists braved the elements and put up camp in the core of the Giralia Anticline in northern WA, adjacent to the best of the bryozoan localities found in 2017. The host rock is the Korojon Formation, a mainly Lower Maastrichtian muddy limestone, which is locally very rich in inoceramids, and it was realised already in 2017 that the bryozoans were almost exclusively associated with these inoceramids. The combined collecting effort in the Korojon limestones has now secured 100s of inoceramid fragments with 1000s of encrusting bryozoan colonies which are now under study.

Furthermore, the bryozoans turned out to be only part – albeit a significant part – of an inoceramid associated sclerobiont community, with a total diversity approaching 100 epi- and endolithic taxa. Australia is by no means unique outside Europe with respect to the seeming scarcity of Upper Cretaceous bryozoans. Until quite recently, less than a handful of faunas have been described from the Southern Hemisphere, but in the last decade or so this situation has shifted somewhat, with additional faunas being described from several continent fragments, providing rare glimpses into bryozoan life in the late stages of the prolonged Gondwana break-up history.

The preliminary investigations into the Korojon bryozoans are yielding very tantalizing results indeed, promising to add very significant insight into Late Cretaceous cheilostome evolution outside this group's traditional European centre. So, look forward to our revelations in Liberec!



Surface of inoceramid fragment with more than 20 tiny bryozoan colonies totally overshadowed by the broad ribbons of a colony of *Aspidostoman.sp. A*



CENOZOIC PHYLACTOLAEMATA FROM UPPER LIARD RIVER BASIN, YUKON, CANADA

Svetlana Kuzmina^a and Anatoly Vinogradov^b

a - Borissiak Paleontological Institute, Russian Academy of Sciences, Moscow;

b - Samara Regional Branch of Russian Ecological Academy

Fossil Phylactolaemata were found in four samples collected in 2017 by Alberto Reyes and Britta Jensen, University of Alberta, in two sites: Allan Creek (Mio-Pliocene) and Tom Creek (Late Pleistocene). Wet screening through mesh 0.1 mm allows to concentrate small invertebrates what provides good base for the further paleoenvironment reconstruction. The samples yield remains of various small invertebrates such as daphnia winter eggs, water beetles and Phylactolaemata.

Numerous statoblasts of *Fredericella* sp. (fig. 1: 3, 4) were recorded in Tom Creek site. These samples yield also elongate fragments (fig. 1: 1, 2) probably from zooid walls. Statoblasts of *Cristatella mucedo* Cuvier (fig. 1: 5) were found in both sites. Phylactolaemata remains of Tom Creek site were excavated from organic poor silt and clay deposit which origin was uncertain; at first sight such sort of sediment could be formed in a lifeless glacial lake covered by thick ice the whole year. We can undoubtedly confirm that the lake was habitable. Fossil invertebrates recorded in the sample are tolerant to low temperatures but need ice free water at least part of their life cycle.

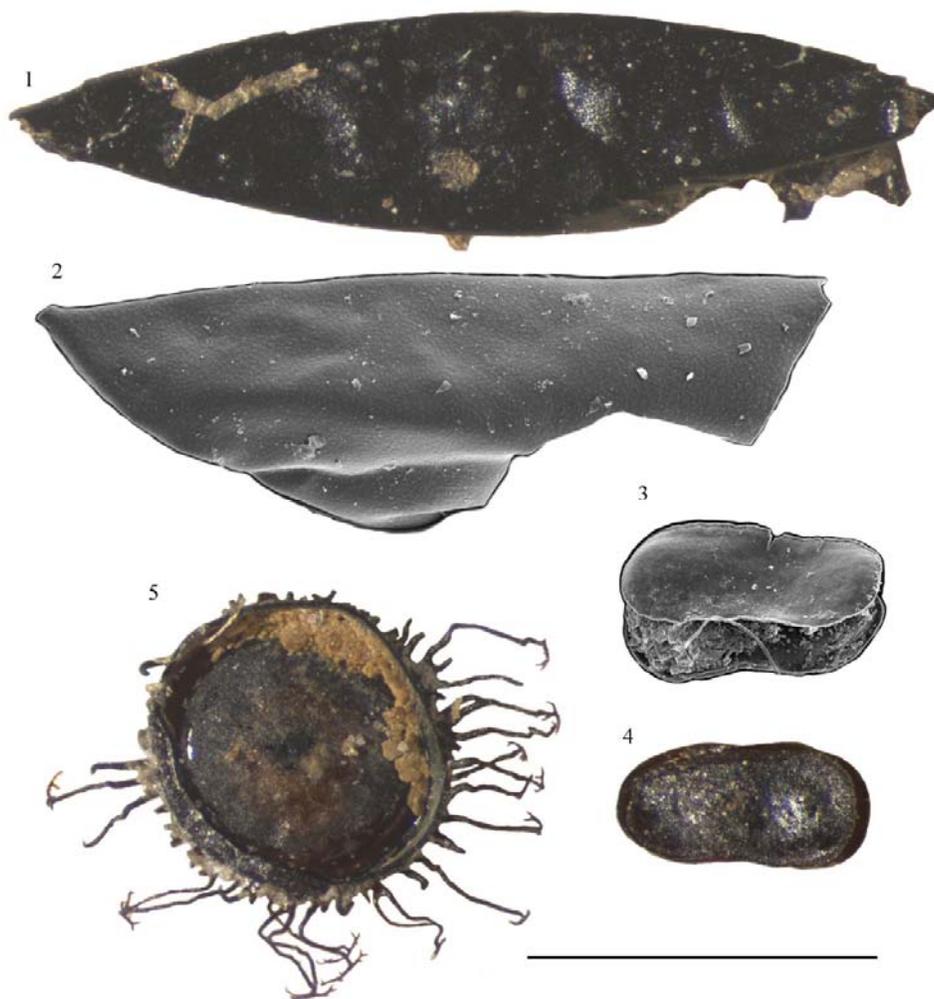


Fig. 1. Fossil Phylactolaemata from Upper Liard River basin: 1, 2 – fragment of zooid wall (probably); 3, 4 – *Fredericella* sp. statoblasts; 5 – *Cristatella mucedo* statoblast. 1, 4, 5 – Optical microscope, 2, 3 – SEM; 1 - 4 sample AVR-9a, Tom Creek, 5 – BJ21, Allan Creek. Scale bar 1 mm.

ANSWER TO CLAUS NIELSEN

Jean-Loup d'HONDT

In the last issue of the « International Bryozoology Association – Bulletin » (2018, n° 14/2, p. 13) , Claus Nielsen has judiciously recall the paper of Marcus (1938) joining together the ctenostomatous and cheilostomatous Bryozoa in a single taxon, Eurystomatoda, as opposed to the Cyclostomes. Personally, this proposal met my acceptance since about 35 years, legitimating and foundind my choise on biological, morphogenetical and morphogenetical arguments.

Originally, the larva of the eurystomatous bryozoans looks as a sort of spherule comprising permanently from the aboral to the oral pole a constant succession of 12 ring-like series of epidermic cells, more or pluristratified, each different by characteristic cytological and functional characters and their respective localizations. In some variants, the general morphology is modified and the larva is compressed laterally, with some events on the cytological structure, or the volume or some distorsions of the tissues, but none on their order of succession. This, according various modalities. For example, the palleal tissue, normally invaginated, acquired by anticipation in some families the capacities of devagination and - in some cases also - of secretion of the cystidial cuticle, organized in a bivalve shell, the secretion occurring normally only during the larval metamorphosis, the larva remaining bare. In the first case, the one with a bivalve shell, belong: 1°- in the cheilostomes the true Malacosteges (cyphonautes larvae, where some of the 12 annular series of cells are subdivided according cytological differences) and perhaps (the knowledges are still insufficient) the Scrupariines. 2°- In the Ctenostomes : the Flustrellidridae and Pherusellidae (pseudocyphonautes larvae), and the Alcyonidioidesida. The shell is doubtful or not displayed in the Hislopiidae, the Stoloniferida and the Victorellida.

The larva is unknown in various taxa with probably high phylogenical importance, particularly as in the Alcyonidiida: the Clavoporidae, the Pachyzoontidae and the Monobryooontidae, or in the boring families, or also in one of the cheilostomes: the Aeteidae. It is also unknown or very insufficiently studied the Scrupariidea or the Thalamoporellidae, and additional researches are necessary before to claim the precise place of these organisms in the systematics of the Eurystomes.

The bases de la classification funded on the diversity of the « spherular larvae », in fact an only morphological character, is itself rather complex, this term corresponding in fact to some anatomical, ontogenical and morphogenetical different models. The differences found expression in the biologies of the various larval types and their respective modalities of development, derived from a presumptive « archetype », and we can distinguish between the types Alcyonidiida, Vesiculariida and Pseudomalacostegina. This general scheme is submitted to some modulations, corresponding respectively to the main initial directions of the evolution in the Eurystomes from an initial pattern. They constitute the principles of the phylogenical systematics of the Eurystomatoda, a scheme resulting from about 40 years of observations and during this period by the publication of near 35 papers and books (the more recent works on the subject were published in 2011, 2012, 1015 and in press): a whole of publications synthetised as follow by d'Hondt (2016), in a paper intituled: Actualised systematics of the taxa of high rank in the Eurystomatous Bryozoa. Bulletin de la Société zoologique de France, 2016, 141 (1): 15-23.

(Class Eurystomatoda Marcus, 1938)

SUB-CLASS CTENOSTOMONA Busk, 1852

ORDERS :

Hislopiida, d'Hondt 2016

Protoctenostomatida Jebram, 1973

Alcyonidiida Johnston, 1847

Flustrellidrida d'Hondt, 1975

Alcyonidioidesida, d'Hondt, 2016

Victorellida Jebram, 1973

Vesiculariida Johnston, 1847

Stoloniferida Johnston, 1847

Penetrantiida, d'Hondt, 2006

SUB-CLASS CHEILOSTOMONA Busk, 1852

SUPER-ORDERS:

Inovicellatidea Jullien, 1888

Scrupariidea Silén, 1941

Malacostegidea Levinsen, 1902

Tendridea Ostrowsky, 2013

Belluloporidea Ostrowsky, 2013

Neocheilostomidea d'Hondt, 1985

ORDERS:

Flustrida Smitt, 1867

Sub-Order Pseudomalacostegina d'Hondt, 1977

Sub-Order Cellulariina Smitt, 1876

Sub-Order Cryptocystina Silén, 1942

Sub-Order Thalamoporellina Ostrowsky, 2013 (incertae sedis)

Ascophorida Levinsen, 1909

Sub-Order Acanthostegina Levinsen, 1902

Sub-Order Hippothooina Gordon, 1989

Sub-Order Umbonulina Gordon, 1989

Sub-Order Lepraliina Gordon, 1989

According to the phylogenetical lineages established on the Eurystomes larvae, the succession of the 12 cell larval categories can be modified; such and such of them can be lacking, degenerating immediately from the beginning of the embryonic development (microscopical observation of lots of necrotic cells, for example corresponding to the endodermic macromeres of the embryo of *Alcyonidium*, or of the internal sack of the *Bowerbankia*). Other degenerations are sometimes more precocious and not observable during the first stages of the embryological segmentation, as for the endoderm in the larvae of Pseudomalacostegina. The thing is then the phenomenon of apoptosis, the cellular fundamentally pre-programmed genetic degeneration of potential organs. In other phylogenetical lineages, some categories of cells could be assimilated to true stem-cells, because presenting, according to the families, different cytological and functional characters: absent (Flustrellidridae), differentiated to intervene during the development (Alcyoniidae) or only constituting a banal epithelium without ulterior function (Pseudomalacostegina).

In some cases, compensating features have been observed. When a group of « failing » cells is unable to execute his normal function during the metamorphosis, by apoptosis or by lack of its organogenetic capacities, could supply one other and different category of cells, situated at another place on the larva but presenting some of the same cytological differentiations (palleal tissue of the Vesiculariidae, infracoronal cells of the Alcyoniidae). This plasticity concerns only some lots of clearly defined categories of cells, accomplishing over and above their normal function the one of the « failing » tissue.

The development of the Bryozoa appears to be characterized by a mosaic of characters significant of an evolutive bush, sometimes independent each from others, sometimes linked or correlated (devagination of the palleal tissue correlated or not with the precocious secretion of the cuticle). The characters could be supervised by homeotic genes, regularizing the expression of other genes, this could explain the lack of intermediate form between some larval models.

This development differs highly for the larva and the metamorphosis of the Cyclostomes, both studied by Nielsen (1970) and by d'Hondt (1977). The larval nervous center is not differentiated, the number of the cell categories is reduced, the palleal tissue is atrophied, the corona high and multiserial; the larval locomotion is also distinct (rectilinear). To finish, the metamorphosis of the eurystomatous Bryozoa is much more complicated of the one of the cyclostomes, even if the Eurystomata have not as the cyclostomes the capacity of polyembryony. By other way, contrarily, the Entoprocta are devoid of mesoderm and of coelomic cavity; the Bryozoa, deuterostomians, are triploblastic organisms. In the Brachiopods and the Phoronida, other deuterostomians but belonging to a different

phylogenic direction, the coelom is archimeric, often trimeric, and recognizable already in the embryo; in the Bryozoa, the coelom is schizocoelic and appears only during the metamorphosis. In the Lophophorates (Brachiopods, Phoronidians), the metamorphosis is partial and not constitutes a true overturning of the structure of the animal. The bryozoans are embryologically deuterostomian organisms, the buccal orifice being excated (excavated? Eds note) near the part of the animal diametrically (diametrically? Eds note) opposed to the blastopore, often a little unwedged to the anterior, and this allow to suppose that it is hollow at the level of the larval cap.

The classification given here asks to be precised by data on the groups of which the larvae and the developpment has been badly or not studied, for example (see above) in some of the families of Alcyonidiida (Monobryozoontidae, Clavoporidae, Pachyzoontidae) and in the families of boring Ctenostomes. The systematics of the Pseudomalacostegina must be fundamentally established on the biology of the development, but in practice the characters of the exoskeleton are used: decoration and extension of the frontal surface (when is calcified), anatomy of ascus, morphology and formation of the ovicell, presence and diversity of the heterozoecia, variety of the avicularian types, and others). All of these diagnostical characters are also genetically pre-programed. But each of them is linked to the main « wholes » of patterns and structure clearly individualized and precise. It constitute an evolutive diversifications, zoidal or zoarial, from ontogenetical characters, and probably apomorphic in regard of the ontogenetical plesiomorphic characters. These morphological characters constitute the foundations of the nomenclatural subdivisions issued from mutations from an original and ancestral biological model, and are at the basis of the rational systematics of the Bryozoa.

In conclusion: Congratulations to Claus Nielsen to catch attention to a rightful taxon, Eurystomatoda.

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- Stratégies de reproduction chez les Bryozoaires : diversité morpho-anatomique et systématique, signification évolutive. Bull. Mus. reg. Sc. nat. Torino, 2018 : sous presse.
- Réflexions sur le diphyléisme originel plausible des Bryozolaires Cheilostomes. Bull. Soc. zool. Fr.. Sous presse.

Editor's note – some minor corrections to the original text supplied in English have been made, however where any correction was doubtful, or the original meaning of the text unclear, no correction has been made.

BOOKS

BRYOZOOLOGIST FEATURED IN INSPIRING BOOK CHAPTER

Marjorie McKinney has been featured in a recent book and associated journalism articles by Dr Jeanne Marie Laskas. The book, published in September, *To Obama: With Love, Joy, Hate and Despair* [alternatively subtitled *With Love, Joy, Anger and Hope* in the US edition], is a remarkable documentation of President Barack Obama's interaction at a personal level with Americans across the political spectrum.

A blurb on Laskas's website explains: "Every evening for eight years, at his request, President Obama was given ten handpicked letters written by ordinary American citizens—the unfiltered voice of a nation—from his Office of Presidential Correspondence. He was the first president to interact daily with constituent mail and to archive it in its entirety. The letters affected not only the president and his policies but also the deeply committed people who were tasked with opening and reading the millions of pleas, rants, thank-yous, and apologies that landed in the White House mailroom.

In *To Obama*, Jeanne Marie Laskas interviews President Obama, the letter writers themselves, and the White House staff who sifted through the powerful, moving, and incredibly intimate narrative of America during the Obama years. ... They wrote to Obama out of gratitude and desperation, in their darkest times of need, in search of connection. They wrote with anger, fear, and respect. ... *To Obama* is an intimate look at one man's relationship to the American people, and at a time when empathy intersected with politics in the White House."

In 2012, moved by both a personal incident, the shooting of African-American teen Trayvon Martin, and President Obama's response to that, Marjorie had written to Obama and was amazed to receive a short hand-written response: "Marjorie — Thanks for your thoughtful letter. Your story is an example of what makes me optimistic about this country. Barack Obama."

Laskas interviewed Marjorie, and her story appears in chapter 10 of the book, in which Ken, by then deceased, also gets a mention. In it, we learn how Marg responded to Obama's speech following Trayvon's death — "Convene a conversation about race ... families and churches and workplaces." Marg thought about this and other things. She collected signatures and was instrumental in starting a branch of the NAACP (National Association for the Advancement of Colored People) in her county. The branch held meetings, invited speakers from Appalachian State University, started an Unlearning Racism discussion group, a Coffee with a Cop seminar series and the Community Unity Picnic. The work of this branch has brought so many disparate people together in a beautiful way. Ken would have been massively proud of Marg.

Marg gets another mention in chapter 18. In March of this year, Laskas met with Obama and discussed the book and the people featured in it. Obama was shown a photo of Marg and he reminisced on her letter and was impressed by what she had achieved in establishing the NAACP chapter.

The book is moving, inspiring and compelling and would make a great gift. We can only say, Well done, Marg!

A review can be read on: <https://www.theguardian.com/books/2018/sep/16/to-obama-with-love-joy-hate-and-despair-jeanne-marie-laskas-review> Click on associated links (in which Marjorie is mentioned).

Dennis Gordon



BIOGEOGRAPHY OF THE CONTINENTAL WATER BODIES: REGIONAL ANALYSIS.

Vinogradov A.V.

ABSTRACT

The continental water bodies of the world biogeography study is continue. In this work author especially do the regional biogeographical comparative analysis. Biogeography continental water bodies scheme consists of 10 regia, 32 subregia, 225 provinces (3 subregia, 3 provinces, 11 subprovinces and 7 districts are new). The specificfl hydrobionts are shows, and Bryozoa and Phylactolaemata too. The first volume includes information about Euro-Siberian subregio of Palearctic regio water bodies, the second volume includes information about Europe (lake Ochrid), Asia, Africa, America, Australia, Oceania and Antarctica water bodies. The third volume is devoted to volumetric biogeography: deepest (233), largest (197), highest (134) and underground water bodies of planet, and their records. Changes and additions are possible. The underground water bodies need to be studied (inventarization, classification, regionalization). The continental water bodies toponymy, limnobiological secrets, Phylactolaemata and Bryozoa zoogeography are considered. Author made review of continental water bodies dramas and tragedies, said the need for their protection and study. Author hopes that his monography will be useful to limnologists, geographers and hydrobiologists. The book is devoted to great zoologist and zoogeographer Ph.D Ya.I.Starobogatov.

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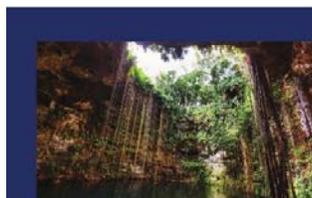
Volume 1) Виноградов А.В. Биogeография континентальных водоёмов: региональный анализ. – Deutschland, Saarbrucken, Lambert Academic Publishing (LAP), 2018, т.1. Палеарктическая область, Европейско-Сибирская подобласть: 700 с. Книга посвящена зоологу и зоогеографу Ph.D Я.И.Старобогатову. Из авторской серии «Затерянные миры», посвящённой 100-летию публикации книги А.Конан Дойла «Затерянный мир».

Vinogradov A.V. Biogeography of the continental water bodies: regional analysis. – Saarbrucken, Lambert Academic Publishing (LAP), 2018, т.1. Palearctic Region, Euro-Siberian Subregion: 700 p. The book is dedicated to zoologist and geographer Ya.I.Starobogatov. – In Russian.



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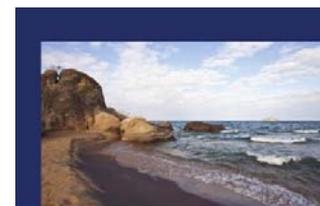
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Vinogradov A.V. Biogeography of the continental water bodies: regional analysis. – Saarbrucken, Lambert Academic Publishing (LAP), 2018, т.2. Europe (Ochrid), Asia, Africa, America, Australia, Oceania, Antarctica: 700 p. The book is dedicated to zoologist and geographer Ya.I.Starobogatov. – In Russian.

Volume 3) Виноградов А.В. Биogeография континентальных водоёмов: региональный анализ. – Deutschland, Saarbrucken, Lambert Academic Publishing (LAP), 2018, т.3. Рекордные континентальные водоёмы: 700 с. Книга посвящена зоологу и зоогеографу Ph.D Я.И.Старобогатову. Из авторской серии «Затерянные миры», посвящённой 100-летию публикации книги А.Конан Дойла «Затерянный мир».

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Автор: Валентин Виноградов
Биogeография континентальных водоёмов: региональный анализ
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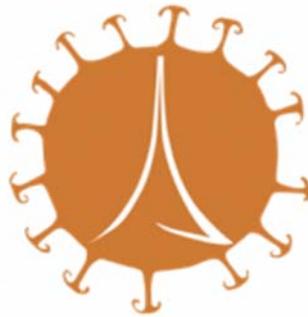
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MEETINGS AND CONFERENCES

18TH IBA CONFERENCE IN LIBEREC, CZECH REPUBLIC
Technical University in Liberec invites you to the 18th IBA Conference
16-22 June 2019



For the most up to date information visit the website <http://18iba.tul.cz/>

See you in Liberec in 2019!

Kamil Zágoršek and the Organizing Committee

PROCEEDINGS OF THE 17TH INTERNATIONAL BRYOZOLOGY ASSOCIATION CONFERENCE.

The IBA conference volume has been with the AAP publishers since 2017 and in the “queue” for printing. Delays with the editors and earlier volumes have meant that the IBA volume is not yet bound, but it is now assigned a volume number and with the printers. It will be out in early 2019. We sincerely apologise for this delay.

All papers are accepted and in press and your manuscripts can be referred to as

Author, 2018, title. IN *Bryozoan Studies 2016*. Proceedings of the Seventeenth International Bryozoology Association Conference, 10-15 April 2016, Melbourne, Australia. EDS Schmidt, R., Reid, C.M., Gordon, D.P., Walker-Smith, G., Martin, S. & Percival, I. *Memoirs of the Australasian Association of Palaeontologists* vol 52, pp. xx–xx. ISSN XXXX.

Rolf Schmidt, Catherine Reid, Dennis Gordon

IN MEMORIUM



MARIA ILLUMINATA TATICCHI

Università degli Studi di Perugia
Passed away 12th October 2018

From Tim Wood

Many years ago, as editor of the IBA Bulletin, I invited IBA members to submit a few paragraphs about how they became interested in bryozoans. The response was strong and it showed what I had suspected - that most of us came to bryozoology almost unintentionally - the result of some chance encounter or seemingly random event.

This was also the experience of Mina Taticchi. As she once told me, she was an undergraduate student taking an invertebrate zoology course when she fell in love with the graduate instructor, Antonio Viganó. At that time, Viganó was studying freshwater bryozoans for his PhD. He had published a fine article about *Plumatella casmiana*, and later presented some material from his thesis at the 3rd IBA Conference in Lyons. Mina and Antonio were married, but tragically he died only a few months later. Mina devoted her professional life to carrying on his work.

Her studies covered a broad range, including detoxification enzymes, taxonomy, and species range extensions. She was the first to discover that myxozoan parasites could lie dormant in plumatellid statoblasts and then emerge upon hatching. One of her final papers (not yet in print) was a very thorough investigation into feeding and energetics in a plumatellid bryozoan. A longtime goal was to find a species she could name in honor of her late husband, and that was achieved in 2010 with the description of *Plumatella viganoi*.

The following list of Taticchi's publications (not necessarily complete) attests to the wide breadth of her bryozoan interests:

- 1989 Taticchi, M.I., 1989. Some observations on the feeding of freshwater Bryozoa in nature (Lake Trasimeno–Perugia, Italy). Riv. Idrobiol, 28(3), pp.219-229.
- 1997 Ceccagnoli, D., Minelli, A., Moroni, M. and Taticchi, M.I., 1997. Monthly variations of 5'nucleotidase in Lophopus crystallinus, a freshwater bryozoan. Italian Journal of Zoology, 64(2), pp.131-134.
- 2001 EUA, A. and TATICCHI, M.S.A.L., 2001. Study of seasonal variations of glutathione and detoxification enzymes in Lophopus crystallinus PALLAS (Bryozoa) from Lake Piediluco (Umbria, Italy). Italian J. Zool, 68, pp.291-297.
- 2001 Elia, A.C., Ludovisi, A. and Taticchi, M.I., 2001. Study of seasonal variations of glutathione and detoxification enzymes in Lophopus crystallinus Pallas (Bryozoa) from Lake Piediluco (Umbria, Italy). Italian Journal of Zoology, 68(4), pp.291-297.
- 2002 CAFFARA, M., GUSTINELLI, A., PREARO, M. and TATICCHI, M., L. FIORAVANTI (2002): Studies on the presence of Tetracapsula bryosalmonae (Myxozoa, Saccosporidae) in Bryozoa and rainbow Trout (Oncorhynchus mykiss) in Italy. Parassitologia, 44(1), pp.1-39.

- 2004 TATICCHI, M., 2004. Freshwater bryozoa of Italy, a survey of the Italian bryozoan collection of A. Vigano.—Bol. Soc. Biol. Concepcion, Chile, 74, p.117.
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- 2004 TATICCHI, M., 2004. Freshwater bryozoa of Italy, a survey of the Italian bryozoan collection of A. Vigano.—Bol. Soc. Biol. Concepcion, Chile, 74, p.117.
- 2004 Taticchi, M.I., Gustinelli, A., Fioravanti, M.L., Caffara, M., Pieroni, G. and Prearo, M., 2004. Is the worm-like organism found in the statoblasts of *Plumatella fungosa* (Bryozoa, Phylactolaemata) the vermiform phase of *Tetracapsuloides bryosalmonae* (Myxozoa, Malacosporea)? Italian Journal of Zoology, 71(2), pp.143-146.
- 2005 Taticchi, M.I., Pieroni, G., Gustinelli, A. and Prearo, M., 2005. Aspects of freshwater bryozoan fauna in Italy. na.
- 2005 Taticchi, M.I. and Pieroni, G., 2005. Freshwater Bryozoa of Italy. A survey of some species from the Italian bryozoan collection of A. Viganò with new records. Bryozan studies 2004, pp.317-327.
- 2006 Taticchi, M.I., Pieroni, G. and Elia, A.C., 2006. A new species of the European freshwater bryozoan fauna: *Plumatella similirepens* Wood, 2001 (Bryozoa, Phylactolaemata). Linzer Bioogische Beitrage, 38(1), pp.47-54.
- 2006 Elia, A.C., Pieroni, G. and Taticchi, M.I., 2006. Evaluation of the antioxidant defense of the freshwater bryozoan *Cristatella mucedo* Cuvier, 1798 (Bryozoa, Phylactolaemata) of Lake Piediluco (Italy). Linzer biol Beitr, 38, pp.39-45.
- 2007 Elia, A.C., Galarini, R., Dörr, A.J.M. and Taticchi, M.I., 2007. Heavy metal contamination and antioxidant response of a freshwater bryozoan (*Lophopus crystallinus* Pall., Phylactolaemata). Ecotoxicology and environmental safety, 66(2), pp.188-194.
- 2008 Taticchi, M.I., Pieroni, G. and Elia, A.C., 2008. First finding of *Plumatella vaihiriae* (Hastings, 1929)(Bryozoa, Phylactolaemata) in Europe. Italian Journal of Zoology, 75(4), pp.411-416.
- 2009 Taticchi, M.I., Elia, A.C., Battoe, L. and Havens, K.E., 2009. First report about freshwater Bryozoa in Florida (lake Apopka). Italian Journal of Zoology, 76(2), pp.194-200.
- 2010 Taticchi, M.I., 2010. *Plumatella viganoi*, a new freshwater bryozoan species (Phylactolaemata) from Lake Trasimeno (Umbria, Italy). Italian Journal of Zoology, 77(3), pp.316-322.
- 2011 Taticchi, M.I., Battoe, L., Elia, A.C. and Havens, K.E., 2011. Freshwater Bryozoa (Phylactolaemata) from central Florida lakes. Florida Scientist, pp.238-252.
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- 2012 Taticchi, M.I., Elia, A.C., Todini, C. and Prearo, M., 2012. *Plumatella trasimenica* and *Plumatella timwoodi*, two new species belonging to the 'repens group' from central Italy (Bryozoa: Phylactolaemata: Plumatellidae). Invertebrate systematics, 25(5), pp.444-453.

From Aaron O'Dea

This is very sad news. Mina Taticchi hosted my visit to Perugia in December of 2001. She helped me prepare for my journey up to Lago di Piediluco where we had heard that the freshwater bryozoan *Lophopus crystallinus* was abundant during winter months. At the time, *Lophopus* had been classified as "rare" by the UK Species Action Plan and was included in the Red Data Book of 1991 because of a perceived decline in abundance and occurrences in Britain. I was contracted by the Royal Society of Birds to search for the delicate, small and beautiful gelatinous bryozoan across the UK. My searches suggested it had indeed been lost from several sites where it had historically been recorded, but that it was thriving at other sites. The plan in Italy was to gather conservation recommendations from the large population of *Lophopus* in Lago di Piediluco.

Before I headed up to the lake, which is located near Gubbio, Mina kindly invited me to stay at her "house" where we could discuss my field plans. When I arrived, what she had called her house turned out to be an extensive several century-old villa surrounded by vineyards. She put me up in the converted stables, which were luxurious, and for two days she welcomed me into her family's home. Meal times involved nine courses of the most delicious homemade food and homemade wines in front of a roaring log fire - the fireplace the size of my kitchen back in Bristol. Conversations led us deep into the icy nights.

Although I only knew Mina that one time, her incredible welcome, helpful orientation and kind hospitality really left an impression on me. My condolences to her family.

RECENT PUBLICATIONS

The following list includes bryozoan related works either published since the previous issue of the *IBA Bulletin* as sent in to the editor. As always, members are encouraged to support future compilations by continuing to send complete citations to the IBA secretary at any time. Accuracy of your citation is assured if sent in bibliographic format, if re-drafting is required by the editor accuracy is not guaranteed! Reprints will be gratefully received by the IBA archivist, Mary Spencer Jones.

- Aguilar R., Marín P., Gerovasileiou V. and Bakran-Petricioli T., Ballesteros E., Bazairi H., Bianchi C.N., Bussotti S., Canese S., Chevaldonné P., Evans D., Fourn M., Grinyó J., Harmelin J.-G., Alain de Grissac J., Mačić V., Orejas C., Otero M. del Mar, Pergent G., Petricioli D., Ramos Esplá A.A., Rosso A., Sanfilippo R., Taviani M., Tunesi L., Würtz M. 2017. Draft guidelines for inventorying and Monitoring of Dark Habitats. Agenda Item 4: Progress report on activities carried out by SPA/RAC since the twelfth meeting of Focal Points for SPAs. UNEP(DEPI)/MED WG. 431/Inf.12: 55 pp.
- Bock, P.E.; Cook, P.L.; Gordon, D.P. (2018) History of discovery in Australian waters. in Cook, P.J.; Bock, P.E.; Gordon, D.P.; Weaver, H.J. (Eds), *Bryozoa of Australia Volume 1. Bryozoa of Australia Volume 1. Biology, Ecology and Natural History*. CSIRO Publishing, Melbourne. Pp. 17–28, 94–95.
- Bock, P.E.; Cook, P.L.; Gordon, D.P. (2018) General morphology and terminology. *Ibid*. Pp. 29–54, 96–98.
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