



Bulletin

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Tim Wood, President

Catherine Reid, Secretary

Abigail Smith, Treasurer

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

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

PRESIDENTS PAGE

“Are you serious??”

That is the kind of reaction I often get at the mention of the IBA - an international organization of, by, and for people who study bryozoans. Even my own colleagues are surprised that such an obscure phylum as Bryozoa could attract more than a small handful of specialists.

But it is really not surprising. There are plenty of other organizations devoted to the study of particular invertebrate taxa. Malacologists are especially groupy, with at least 20 large national, regional, and international associations. There are also active organizations for corals, spiders, nematodes, and several individual orders of insects. Even tardigrades and tunicates have their own groups of researchers. Sadly, there seem to be no specific associations of poriferologists, cnidarologists, or of anyone studying annelids, rotifers, gastrotrichs, hemichordates, priapulids, or even nonparasitic flatworms.

I think one thing that makes the IBA unique is its historic role of encompassing and melding both paleontology and biology. Each of these disciplines brings its own tools and perspectives, and the two really do complement each other nicely. This is always evident in our meetings, publications, and professional interactions.

As for Bryozoa being an obscure phylum, I like what Thomas Huxley wrote in the preface to his book, *The Crayfish*: “I have desired...to show how the careful study of one of the commonest and most insignificant of animals, leads us, step by step, from every-day knowledge to the widest generalizations and the most difficult problems of zoology; and, indeed, of biological science in general.”

So yes, we're serious.

Tim Wood



FROM THE TREASURER

As you know, the IBA has no formal membership fees. We exist solely on the donations of those who appreciate what we do.

The vast majority (over 85%) of our budget is used for Travel Grants to IBA conferences; this year we were able to support five young scientists' travel to Melbourne, at a total cost of \$12,773 NZD. Please think about sending us some money so we can do the same in 2019!

At the Melbourne Conference, and subsequently in 2016, the IBA received 30 donations totaling \$3700 NZD (= E2462 = 2615 USD). If we were to get the same each year, we'd have plenty to offer in 2019.

To make a donation, go to our website: <http://bryozoa.net/iba/membership.html>, download the membership form, fill it in and send it to the Treasurer.

Alternatively, the Treasurer will be attending the Australarwood in February and the Larwood in May, so you could bring cash.

Many thanks and best wishes for a Happy Holiday,

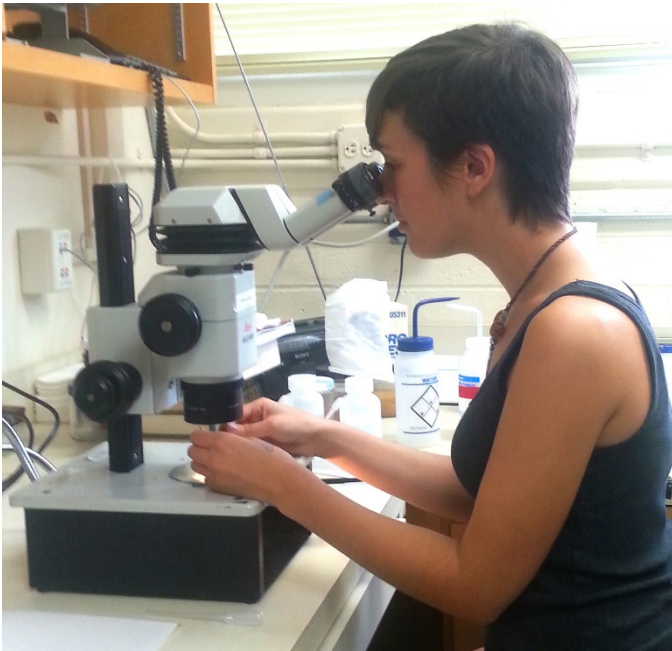
Abby Smith

IBA Treasurer

Abby.smith@otago.ac.nz

NEW MEMBERS

Carolann Schack – I graduated with a BS in marine and atmospheric science from the University of Miami (US) in 2015, and I am currently pursuing a PhD in marine biology at Victoria University of Wellington (NZ) under the supervision of Dr Dennis Gordon (NIWA) and Dr Ken Ryan (VUW). Although my previous work has been on copepod ecology in the Arabian Sea, my PhD will focus on New Zealand bryozoans. Specifically, I will examine changes in cheilostome



polymorphism, modular structure, and colony form along ecological gradients. I aim to: 1) create a classification system that encompasses the variation in autozooidal polymorphism, heterozooids, and cormidia; 2) detect which environmental gradients (if any) are most influential; 3) determine which traits are most sensitive to environmental gradients; and 4) determine whether trait changes are consistent across different taxa. Such research will provide insight into the potential functions of polymorphisms, how bryozoans adapt to environmental changes, and may allow researchers to estimate paleoenvironmental conditions based on the morphology of fossil bryozoans. My analysis will focus on polymorphic genera present in the NIWA bryozoan collection, which is well-suited to my research because of its wide taxonomic and environmental breadth. Broadly, my research interests include ecology, evolution, statistics and invertebrates. If anyone has any questions or suggestions regarding my work, please feel free to contact me. (Carolann.Schack@niwa.co.nz)

Meezan Ardhanu Asagabaldan - I am currently studying in a doctoral program at the University of Diponegoro, Indonesia, under the supervision of Prof. Agus Sabdono and Prof. Ocky Karna Radjasa and funded by PMDSU (Master of Education Program Graduates Towards Excellent Doctoral) scholarship from the Ministry of Research and Higher Education, Indonesia. My research topic for the dissertation is about the exploration of bioactive compounds in Bryozoans associated bacteria as antimicrobial activity.

Actually, there is still a lack of bryozoans research in Indonesia, hence I take the topic of bryozoans. First, I want to explore the bryozoan species in Indonesia, ranging from Karimunjawa islands are part of Central Java. Karimunjawa is one of the islands in Indonesia, which has a great biodiversity of marine organisms. So, I believe there are many species of bryozoan that I can find. In addition, I will identify bryozoan species and take samples from them (app 5 -. 10 cm) to isolate associated bacteria. Bacteria associated of bryozoan will be tested by human pathogenic bacteria. The final result is getting some novelties of bioactive compounds from Bryozoan associated bacteria that have antimicrobial activity, as well as the bryostatin compounds that produced by associated bacteria *Candidatus Endobugula Sertula* of *Bugula neritina*.

On the other hand, I would like to try to record the bryozoan species that exist in Indonesia and their use, because it was not really well studied. This data will be a novelty for future research of Bryozoan, moreover, bryozoan associated bacteria especially in Indonesia. Hence, my purposes of joining the International Bryozoan Association (IBA) are meet with other bryozoologists around the world and share some information about Bryozoan from my country. Please contact me if you any suggestions about this research at meezan.asagabaldan@gmail.com . Thank you very much in advance.



Luc Goffings - My name is Luc Goffings and I live in Mol (province of Antwerp), Belgium.

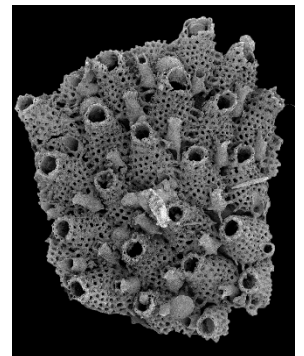
Many years ago, back in 1973, I graduated at the University of Leuven (Belgium) as bio-engineer. This study triggered already my curiosity for geology and ancient life. Soon after finishing the education at the university, I started my professional career working for major international oil companies, travelling to numerous countries. But since my retirement in 2010, I live permanently in Belgium close to the Chalk quarries of Belgium and the Netherlands, where the fossil rich Maastrichtian deposits are accessible. These were the perfect conditions to start my hobby as amateur palaeontologist with more recently special attention for the very well preserved and rich bryozoa fauna in the Late Maastrichtian layers.



Actually I am a member of the Nederlandse Geologische Vereniging (NGV, department Southern Limburg), the Belgische Palaeontologische Vereniging (BVP) and HONA (Homo et Natura), which gives me the opportunity to share information and knowledge about the fossil fauna and flora, collected in the neighbouring quarries.

With the membership of IBA I hope to get access to a worldwide network of bryozoölogists to exchange experiences, information and knowledge of this highly specialized field of the Bryozoa.

Oliver Kesselhut - I am an amateur paleontologist from Aachen in Germany. Since my childhood days I'm into collecting fossils of the regional Upper Cretaceous sediments. It was not very long after that I began to focus my interest on the rich bryozoan fauna of the neighboring Dutch and Belgian chalk-quarries around Maastricht (NL). Since 2012 I am a member of the Nederlandse Geologische Vereniging (NGV, department Southern-Limburg) that is closely related to the Natural History Museum in Maastricht.



Being a collector I started off to inventory the several hundreds of Maastrichtian bryozoan species previously described by Prof. E. Voigt, F. v. Hagenow, C. Ubaghs or E. Pergens, and soon came across several undescribed species (and probably even genera). This was the starting-point for a more intensive research that led to short publications and lectures in the context of the NGV.

My aim for the next years is to describe newly discovered Maastrichtian species and to revise established ones on the basis of newly found specimens that reveal anatomical details that were previously unknown. On this way I hope I can benefit from the knowledge and competence of the IBA-members and will surely offer mine to this community.

P.J MOHAMMED NAUFAL Feeling so merriment to re-introduce myself as a new member of IBA from Andaman Archipelago, a remote island territory of India which is about 648 NMi far away from the nearest mainland coast. Being an aspiring Marine Biologist, I am working as Ph.D. research scholar at Department of Ocean Studies and Marine Biology (DOSMB) under the guidance of Dr. K.A Jayaraj. For the fulfillment of my post-graduation in marine biology from PU, I have done a project dissertation over the topic distribution of 'Seagrass and associated meiofauna from South Andaman'. As a Ph.D. scholar I have got interest in bryozoan from Prof. NR Menon and Dr Soja Louis of CUSAT, Kochi. According to the available literature, the last reporting of marine bryozoan from Andaman water was carried out before nine decade. Taking the limitation and remoteness of this island group as a challenge, I have started the sampling from the intertidal water of South Andaman. Now I am going for an open water cruise conducted by Center for Marine Living Resource and Ecology (CMLRE) for the collection of off shore bryozoan from the Andaman Sea and Bay of Bengal. The extreme help from the IBA members and updates from our secretary is taking me away from a feeling of a seclusion in this field. I am very new to this exciting community and I feel best privilege for every suggestions and comments towards naufalpj@gmail.com regarding my Ph.D. work and also about the tourist hot spot Andaman Island.



NEWS FROM THE MEMBERSHIP

Oslo BLEED Lab – 2016 has been an exciting year for the Bryozoan Lab for Ecology, Evolution and Development (BLEED) at the University of Oslo. The year began with a bang with our evolutionary biologist Kjetil Voje receiving a Norwegian Research Council grant that plans to study population level morphological evolution using cheilostomes.

Then during late summer to the fall, Emily Enevoldsen defended her Masters thesis on the molecular phylogeny of Microporellidae with Piotr Kuklinski as her external examiner; Mali Ramsfjell defended her Masters thesis on zooid size effects on competitive outcomes with Joanne Porter as her external examiner; and last but not least, Jeroen Boeve likewise defended his Masters thesis on the molecular phylogeny of cheilostomes with Björn Berning as his external examiner. Congratulations Emily, Mali and Jeroen! You did the bryozoan community proud by contributing lots of new and highly valuable bryozoan data! We will soon be turning all that valuable data into publications!

BLEED then welcomed two new Masters students, Jonas Nærø and Marianne Haugen who will work with bryozoan growth rates (Piotr Kuklinski as external advisor) and adeonid evolution (Björn Berning as external advisor), respectively. Jonas visited Piotr at the Institute of Oceanology in Sopot in October to learn about the cheilostome species he will meet on Piotr's panels from Svalbard and has now lugged several tens of panels home to Oslo. Data collection is underway! Björn visited Marianne in Oslo and brought her some adeonids to kick start her sequencing project. Many thanks to several collaborators who have already contributed adeonid samples from their sampling sites! We look forward to more! Please get in touch if you have any adeonids in ethanol or even better, fresh!

Gosia (Malgorzata) Krzeminska is visiting BLEED from Oct 2016 to Feb 2017 to help us with our New Zealand fossil samples. We are so happy to have her with us and she will also be helping Jonas with his arctic samples. Lee Hsiang visited Paul Taylor, Andrea Waeschenbach and Emanuela Di Martino on a SYNTHESYS grant mid-November for three days. She got to stay in the Queens Lodge!

Last but not least, Lee Hsiang received a European Research Council Consolidator Grant that will give almost 2 million Euros over 5 years to bryozoan research. She thanks her named collaborators of IBA, namely Aaron O'Dea, Abby Smith, Andrea Waeschenbach, Antonietta Rosso, Dennis Gordon, Emanuela Di Martino, Joanne Porter, Mary Spencer Jones, Paul Taylor, Piotr Kuklinski for their support during the application process, but she looks forward to working with the larger IBA community in the next years to come.

Lee Hsiang Liow

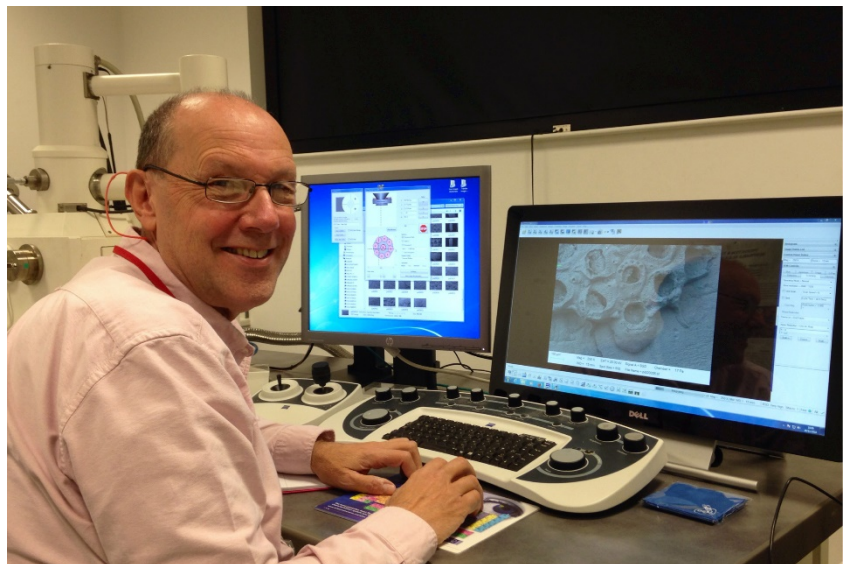


Happy BLEEDers: Jeroen, Kjetil, Gosia, Mali, Emily, Jonas (backrow left to right), Emanuela, Lee Hsiang, Marianne (front row left to right).



Celebrating Mali, Jeroen and Emily's defenses in a pub with Björn and Hans Arne.

Paul, very happy to scan some bryozoans for his SYNTHESYS visitor

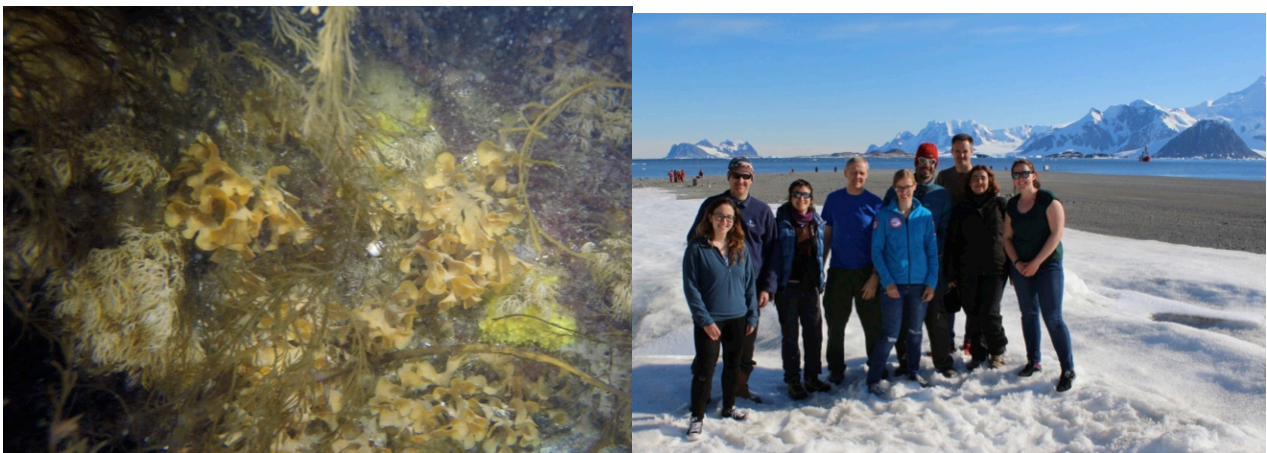


Lee Hsiang's accommodation for three days while visiting NHM London on her SYNTHESYS grant. Mary, Paul, Emanuela just could not resist coming in for a quick look!

Blanca Figuerola - In the framework of the DISTANTCOM project, led by Dr. Conxita Avila (University of Barcelona), I spent one fabulous month on board the oceanographic vessel *BIO Hespérides* (DISTANTCOM-1 campaign; February 2016). We collected samples by diving from different regions of the Antarctic Peninsula and adjacent islands. It was also great to meet with Dr. David Barnes in Rothera. The main objective of the project is to study marine invertebrate communities that compose the marine benthos and to identify the molecules that take part in ecological relationships and to assess their potential pharmacological effects (http://www.ub.edu/web/ub/en/menu_eines/noticies/2015/11/016.html?). Currently I am at the University of Barcelona studying the bryozoan samples I collected and preparing the next campaign (DISTANTCOM-2 campaign; January 2017). Apart from the Antarctic campaign, I will spend three months in Tasmania and Sydney thanks to the COMNAP fellowship (May-July 2017; <http://www.scar.org/2016/887-announcement-of-scar-and-comnap-2016-fellowship-awards>). There, I will identify Antarctic bryozoan samples in collaboration of Dr. Jonny Stark (Australian Antarctic Division) and I will do mineralogical analysis using a highly innovative NanoMin FEG-SEM system with Prof. Damian Gore (Macquarie University).



Left - Antarctic Peninsula (vessel *BIO Hespérides*; Photo: B. Figuerola). Right - Part of the DISTANTCOM team (J. Moles, C. Angulo-Preckler, C. Avila, B. Figuerola; Photo: O. Rodríguez)



Left - Colonies of *Nematoflustra flagellata* and other bryozoan species (Photo: J. Cristobo). Right - Marine biologists in Rothera base (Photo: P. Convey).

Moreover, thanks to the fellowship awarded by the Centre for Polar Studies, I had the opportunity to carry out a research stay from August to October in the laboratory of Dr Piotr Kuklinski at the Institute of Oceanology Polish Academy of Sciences (IOPAS), Sopot. The main reason for this stay was to gain experience in morphology and mineralogy of Antarctic bryozoans in collaboration with Dr. Paul D. Taylor. Moreover, I participated in the "9th European Conference on Echinoderms" organized by Tomasz Borszcz with the poster entitled "Chemical defenses against macro- and microorganisms in two Antarctic bryozoan species". During one month, it was also great to meet with Dr. Chiara Lombardi after five years! I would like to thank to Piotr (without whom this project would not have been possible) and my wonderful lab-mates, especially Ania Stepien (great flatmate too!), Gosia Krzeminska, Tomek Borszcz and Piotr Balazy, for their hospitality and for their help. Finally, I am also grateful to have the opportunity to meet great people from other parts of the world and to explore the region during the weekends: its beautiful coasts, its rich history, and its delicious food.

Tim Wood. It has been a busy summer at **Ji-Eun Seo's** research facilities at Woosuk University, Jincheon, South Korea. Ji-Eun had managed to secure funding to bring a diversity of bryozoologists to the campus for a few weeks to work with her students and pursue their own research interests. From August through November the parade of visitors included **Dennis Gordon, Emmy Wöss, Kamil Zágorček**, and myself. For me it was an intense and productive time. The living accommodations and research facilities at Woosuk University were outstanding. Ji-Eun's graduate students are an accomplished and enthusiastic group. While I didn't overlap with any of the other guests I am sure we all benefited greatly from this experience.

Natalia Shunatova, Andrew Ostrovsky, Olga Kotenko - We plan to organize the bryozoan summer school in Russia, based on the White Sea Marine Biological station of the St Petersburg State University in August 2018. Target group will be students and PhD-students who plan to focus on Bryozoa as a model group, but anyone is welcome. Summer school will include lectures on various aspects of bryozoan structure, reproduction, ecology, evolution and phylogeny as well as field excursions and laboratory works. Those international colleagues who want to help us with teaching are very welcome too. This preliminary announcement aims to see if there is an interest in such a school. Then we will start to search for funding.

Katerina Achilleos - I am very pleased to inform you that I started my PhD about a month ago at the University of Otago in New Zealand under the supervision of Abby Smith. Together we aim to investigate the growth and calcification in articulated bryozoans as a response to environmental conditions. More specifically we would like to investigate whether changes in environmental parameters (e.g. depth, temperature, pH, and salinity) are reflected in the growth rate, morphology, and skeletal mineralogy of *Cellaria* spp.. For this purpose *Cellaria* colonies (both living and dead) will be inspected for differences in morphology and skeletal composition. During further steps of the research, we would like to elucidate the biochemical processes involved in the formation of *Cellaria* skeleton, aiming to link phenotype with environment.

In case you don't already feel envious of our great new project, have a look at this spectacular view I have from my desk. Best view a PhD student can ask for!



View from Portobello Marine Lab (PML) during one of the rare days of good weather.

ARTICLES

WOOSUK UNIVERSITY HOSTS BRYOZOLOGY VISITS

By Ji Eun Seo, Emmy Wöss & Dennis Gordon

*Woosuk University, Jincheon, Korea; University of Vienna, Austria;
NIWA, Wellington, New Zealand*

During August and September, Emmy Wöss & Dennis Gordon enjoyed being hosted at Woosuk University, Jincheon, Korea. Jincheon is a small city about two hours south of Seoul, with the smaller of the university's two campuses, the other being at Jeonju, a further two hours south. For a month each, overlapping by 20 days, Emmy and Dennis worked in the Department of Eco-Biological Science with Ji Eun and four students. JUNG Kyoung Jin and CHAE Hyun Sook, both masters students, work on aspects of freshwater bryozoology, and MIN Bum Sik and YANG Ho Jin are doctoral students working on marine Bryozoa, mostly at the large southern island of Jeju, where bryozoans are quite diverse and well represented.

With their student guides, Emmy and Dennis sampled a number of freshwater localities, including rivers, lakes, ponds and reservoirs, resulting in an increase in the freshwater bryozoan fauna from 11 to 18 species. New records included several species of *Plumatella* and the ctenostome genera *Hislopia* and *Victorella*. Visits were also made to the East Sea and Yellow Sea coasts to collect marine bryozoans.

On the East Sea coast, two small fishing ports, Namae and Jumujin, were examined for alien species, while on the Yellow Sea coast, at Cheongpodae Beach, intertidal bryozoans were collected. The latter yielded new records of the ctenostome genera *Farrella*, *Immergentia* and *Spathipora*, the latter two as non-living borings in an oyster shell.

Dennis examined recently collected bryozoans from several stations among the islands of Korea's South Sea. These yielded several new generic and species records for Korea, including another shell-boring genus, *Penetrantia*, the cyclostome genus *Nevianipora*, and the cheilostome genera *Retevirgula*, *Figularia*, *Puellina*, *Bryopesanser*, *Phonicosia* and *Flabellopora*. Goals for writing several papers were established by Ji Eun in consultation with Emmy, Dennis and the students, and these papers are now completed or almost so. In the first instance there will be two covering the freshwater fauna and two more on aspects of the marine fauna, with more to follow next year. The first of the marine papers includes new records, a new species and a new bitectiporid genus from the intertidal of Baengnyeong Island. Constituting Korea's northwestern point, this was the location for intensive shore sampling by MIN Bum Sik and Andrei Grischenko in 2008. The new genus is based on an existing species. The second paper deals with some of the new records and new taxa from the southern samples. A second new genus (Lacernidae) was recognized from a previously known Asian species new to Korean waters. Dennis gave a lecture to undergraduate biology students on the importance of taxonomy to environmental science, and also showed a PowerPoint presentation on bryozoan biology and evolution to some graduate students.

But it wasn't all work and no play. Kyoung Jin and undergraduate student NOH Geon Woo kindly devoted three days to showing Emmy and Dennis around Seoul, with highlights including the Insadong tourist area, Gyeongbokgung Palace, the amazing panorama from the Seoul Tower on Namsan hill, Cheonggyecheon Stream, a twilight cruise on the Hangang River, and, en route back to Jincheon, a reconstructed Korean folk village at Joseon. A later day trip to the main campus at Jeonju allowed a visit to Jeonju Hanok Village and Geumsa Temple. That evening Ji Eun, Emmy and Dennis dined with Woosuk University chairman SUH Chang Hoon.

Emmy and Dennis enjoyed the novelty of Korean food, but the wilting heat was at times a challenge. Relationally and scientifically, the visit was immensely fruitful and Emmy and Dennis and Ji Eun are grateful for the opportunity afforded by a grant from the National Institute of Biological Resources (NIBR), funded by the Ministry of Environment (MOE) of the Republic of Korea (NIBR20151201), and the Marine Biotechnology Program funded by the Ministry of Oceans and Fisheries of Korean Government (Marine Bryozoans Resource Bank of Korea—MBRBK).



At a Korean restaurant with, from left, JUNG Kyoung Jin, YANG Ho Jin, CHAE Hyun Sook, Ji Eun, Dennis, Emmy and MIN Bum Sik.



Left - Bum Sik and Dennis conversing during port sampling. Right - Emmy and Kyoung Jin sampling at Hyangho Lake by the East Sea coast.



THE GENDER OF *CAULORAMPHUS* NORMAN, 1903

John Ryland

Norman (1903: 587) introduced the genus *Cauloramphus* for two species, *Membranipora cymbaeformis* Hincks and *Flustra spinifera* Johnston. Norman wrote that *Cauloramphus* was compounded from two classical Greek words, *καυλός* = *caulis*, stalk, and *ράμφος* = *ramphos*, beak, latinized as *ramphus* [more usually, since rho was aspirated, *ράμφος*, it would be latinized as *rhamphus*; as below]; it refers to the characteristic 'stalked' form of the avicularium. Following standard nomenclatural procedure (ICZN 1999, Art. 30.1.1) the gender of a compound word is determined by that of the final component, in this case *-ramphus*. That Norman regarded *Cauloramphus* as masculine is indicated by the suffixes of the two included species, *cymbaeformis* (not *cymbaeforme*) and *spinifer* (not *spiniferum*). Later, however, Hastings (1930) altered the gender to neuter (hence *C. spiniferum*), to accord with the fact that the Greek word *ράμφος*, *rhamphos*—unusually for a word ending *-os*—had neuter gender (written *το* in lexicons; also Brown 1956). Subsequently, this use of neuter gender became accepted in the European literature (Kluge 1962, 1975; Prenant & Bobin 1966, *cum syn.*; Ryland & Hayward 1977, and subsequent publications), though it should have stopped after 1961 (see below).

Why Hastings (1930) made the change is unclear since there is no article or recommendation codified in the then accepted International Rules (see Schenk & McMasters 1936) that states that the gender of an original Greek word overrides that of the latinized generic name. The first published edition of the Code (ICZN 1961) established the rules. Accordingly, had Norman transliterated the original spelling to *-ramphos*, the gender would indeed have been neuter as in the Greek original (ICZN 1961 Art 30, 1999 Art. 30.1.2); but he didn't. He latinized the word to *-ramphus* and, accordingly, Article 30.1.3 applies, viz. "A genus-group name that is a Greek word latinized with a change of ending, or with a Latin or latinized suffix, takes the gender normally appropriate to the changed ending or the Latin suffix." Unambiguously settling the argument for us, *-rhamphus* is actually among the examples given to illustrate this point (ICZN 1961:31; 1999:35).

The adjective *spinifer*, *-era*, *-erum* (*spina* + *fero*, spine-bearing) existed in classical Latin and was used by Cicero; it must agree in gender with the noun it qualifies. Of the 22 species of *Cauloramphus* listed in the World Register of Marine Species (WoRMS: <http://www.marine-species.org/aphia.php?p=taxdetails&id=110852>) only two, *C. spiniferum* and *C. neospiniferum* are erroneously neuter, all the rest of those with adjectival specific names have male suffixes.

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John Ryland

j.s.ryland@swansea.ac.uk

CURRENT PROJECTS ON BRYOZOA.NET

Phil Bock

Harmonising databases.

As I have mentioned previously, my activity started by working out a synonymy for Australian species. This expanded to include as many records as possible for all bryozoans, from my collection of photocopies. When I inherited the data from Alan Horowitz, there was a long project harmonising the two, and searching for names which might be considered as “current” from Alan’s (many) files. (This is **still** “in progress”.)

I am unhappy with the coverage of references: I had been hoping that the “bryozone” Scratchpad project would bring it all together, but there has not been much progress on this front.

Current activities:

1. One of the original plans in making information available was to keep the structure simple, so that the whole collection could be passed on to a successor, with minimal effort to understand the plan. There are many, many approaches to web content design, but I have avoided anything but simple HTML coding as far as possible. Of course, I had been hoping that the Scratchpads projects would take over everything, but I am still waiting! My data is on Filemaker Pro, and I am happy to provide the current files to anyone who would like them. I can also export the tables - as Excel, or comma-separated files
2. Data on accepted valid species update, One of the main aims is for a listing of all species names, with genus and family names in addition, but lower priority. My current total is 2263 genera considered “valid” (887 Recent), with 21921 species (6296 Recent).
3. **Synonyms.** It would be useful to search for synonyms (and homonyms). This is achieved by searching the database, but presenting the information on the website is low priority.
4. Arrangement of Stenolaemate taxa. I am acutely aware that the arrangement of families and orders for the Palaeozoic groups is inconsistent and out of date, but I have not been able to achieve a scheme which I am happy with. The alternative use of subfamilies and superfamilies in some versions varies considerably. I am here asking for the experts to suggest better version(s).
5. **Checklists.** I started some time ago to prepare a checklist for Australia, which became fixed in the Australian Faunal Directory version held at Canberra - for all Australia and its territories (<https://biodiversity.org.au/afd/taxa/BRYOZOA>). Checklist work can be seen at <http://bryozoa.net/checklists/> .I have not made this subdirectory public yet.
6. Recently I started work on a list of tropical bryozoans, and changed design of the listings to distinguish the original occurrence record from later identifications (coloured green and red respectively). The original database work left out much useful data, and I am slowly retrieving more occurrence data, but this is an immense job.
7. **Collection of PDF’s.** I have started on a collection of electronic files of past papers. Naming of these files varies, and I have adopted a conservative style, using lower-case names and date; using the underscore character instead of “&” or space, avoiding accent marks and other diacritics, and using dash for some double family names (although not consistently). This makes immediate duplication of the file name in some cases, so I have added a suffix “a” or “b”. I originally had the web pages served by a company called “Unlimited Space” which was convenient for storing everything. This company was acquired by another and then by a third, so that I now have a space limit, which means that another storage was needed.
8. In order to make the PDF’s available, I am using “Dropbox” for the present, as the method for file-sharing is workable, and the files are apparently not discovered by Google’s robots. This means that you will need an invitation to use this resource - but all you need to do is ask. The populating of these files is proceeding slowly. You should be able to download these files, and to upload additions. Please (!) let me know if this is working for you. Even better, if you know a better way for storage, let me know!
9. More on PDF’s. The Biodiversity Heritage Library is important, with the option of downloading entire volumes, or selecting pages. I am now downloading the entire volume, then constructing a file for single articles for the site. There is so much data that is held back by commercial organisations, and I have no access to a library, so it would

be great for others to help with this. If the DOI is known, then many articles can be retrieved by Sci-Hub. (Geobios - I am looking at you!).

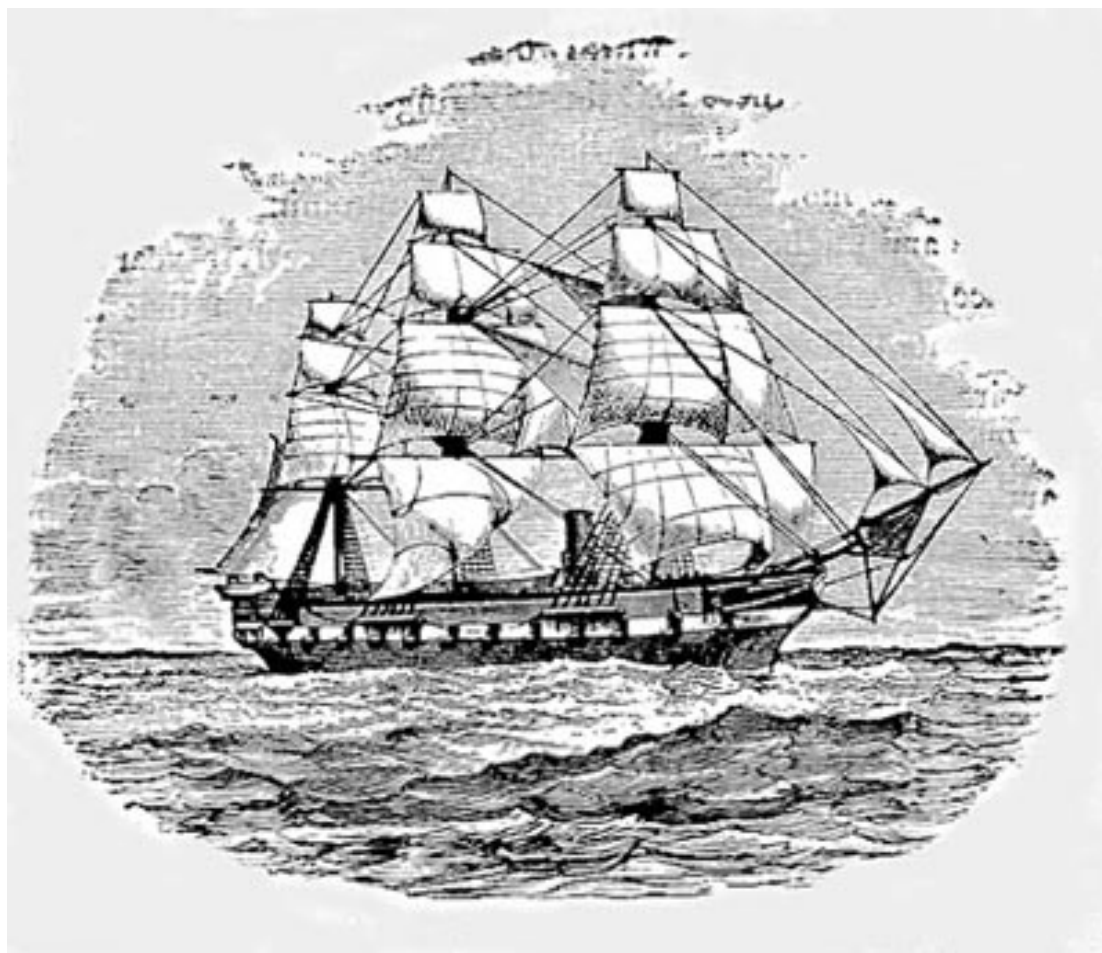
10. Links to other sites. This collection was started long ago, and many sites have disappeared, or redesigned using complex web content systems. Google has replaced much of this. Intermittently, I search for a particular species, and add a few links for the genus involved.

11. I am also asking all here for your assistance in collaboration - particularly in making corrections.

THE NHM *CHALLENGER* INVERTEBRATES PROJECT

Mary Spencer Jones

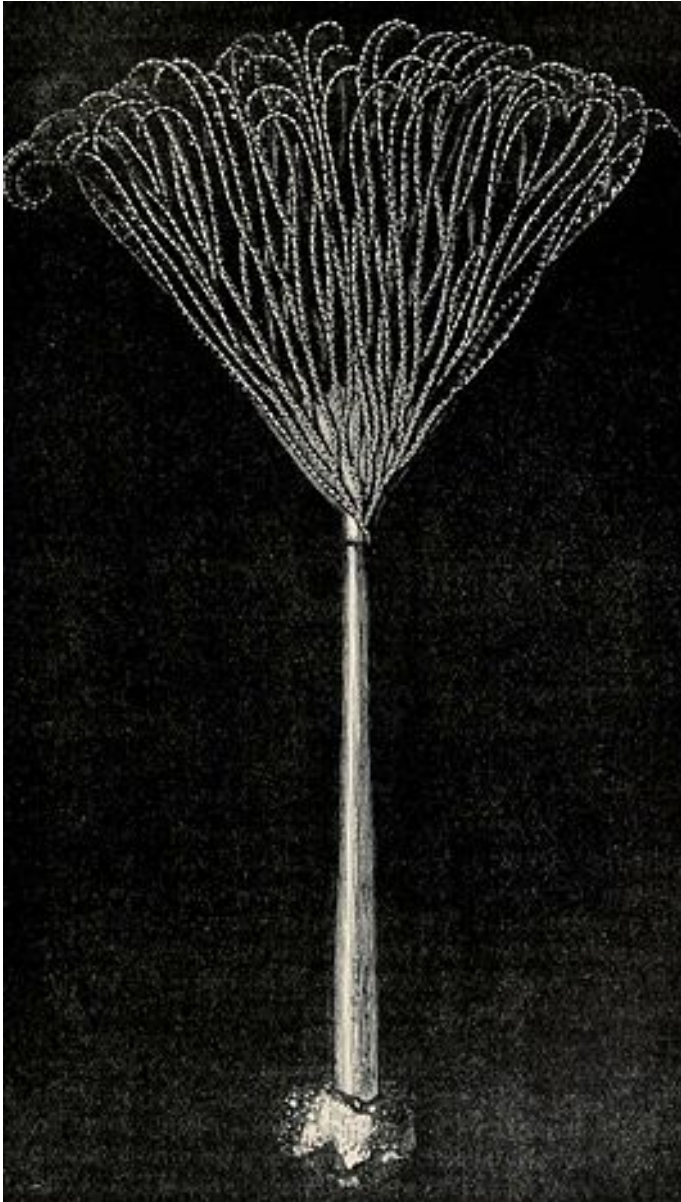
The last great frontier is said to be the depths of the oceans. Whilst new creatures continue to be discovered with every deep-sea exploration, the NHM Invertebrate division is preparing to mark the 150th anniversary of the first great expedition dedicated to discovering life at the ocean's depths.



The *Challenger Expedition*, 1872-1876, a collaboration between the Royal Navy and Royal Society of London, sailed nearly 127,580 km in the boldest pursuit to unlock answers about the world's oceans and deep sea habitats. The expedition's sizable findings became the backbone for Natural History Museum's marine collections.

The voyage itself proved only the beginning of the scientific discovery. A 50-volume "*Report Of The Scientific Results of the Exploring Voyage of H.M.S. Challenger during the years 1873-76*" took nearly 20 years to complete as each specimen was meticulously recorded and described, including over 4,700 new species.

One of the first discovered deep-sea specimens, *Kinetoskias cyathus*, was described by Sir Charles Wyville Thomson, *Challenger's* chief scientist, at a depth of 2,789 metres southwest of Cape St. Vincent, Portugal on 30th January, 1873. The scientist wrote, “the chief prize on this occasion was a Bryozoon of singular beauty, and differing very widely in structure and habitat from all previously discovered members of the class.” Wyville Thomson went on to characterise and illustrate the new species, which he named *Naresia cyathus*, in honour of Captain George Nares who led the expedition.



Now 120 years later, the NHM Invertebrate division is revisiting the world's first deep-sea findings. The volunteer project, led by Mary Spencer Jones, is now underway starting with bryozoans, which comprises approximately 1,500 specimens from the expedition. NHM volunteers, **Stephanie Mills and Katie McGlynn**, are cataloguing all the material and systematically scanning specimens using the NHM's LEO VP microscope. The pair will complete the data collection of NHM Bryozoa specimens in the New Year. The next steps include continuation of SEM photography and updates to NHM's data records. The long-term goal is to make all the photos and information easily accessible.

Stephanie Mills volunteers at Natural History Museum London with the Bryozoa collection. She participated in V-Factor, a citizen science project that examined and identified Bryozoa growing in different parts of British ecosystems. She has a Bachelor's of Arts in History, with a minor in environmental studies. Her professional background includes public relations and non-profit management. She has lived in London for the past 12 years and am originally from the USA.

Katie McGlynn has volunteered at the Natural History Museum since March, 2015. She has a Bachelor's degree in Biology and a Master's degree in Environmental Analysis. After working as an ecologist on coastal habitat protection and policy projects, Katie relocated from New York to London with her family. She enjoys the combination of science and history presented in the HMS *Challenger* project as well as the hands-on technical work that is rare to find in volunteering roles.

Although the type series of *Challenger* specimens has mainly been held at the Natural History Museum in London, material is known to have been distributed around the UK and Ireland to various researchers and other museums by Wyville Thomson. If anyone knows the location of other batches of *Challenger* material, especially in European museums or further afield, could they possibly get in contact with us, so we can add the data to the project.

Mary, Steph and Katie

m.spencer-jones@nhm.ac.uk

s.gainey-mills@nhm.ac.uk

k.mcglynn@nhm.ac.uk

SIX WEEKS IN KOREA: SEARCHING FOR FIRST KOREAN FOSSIL BRYOZOANS AND REVISING RECENT CYCLOSTOMES

Kamil Zágoršek & Ji Eun Seo

Thanks to a grant from the Marine Biotechnology Program funded by the Ministry of Ocean and Fisheries of the Korean government (Marine Bryozoans Resource Bank of Korea; MBRBK) I was able to study with Ji Eun Seo the Cyclostomata bryozoans from Korea.

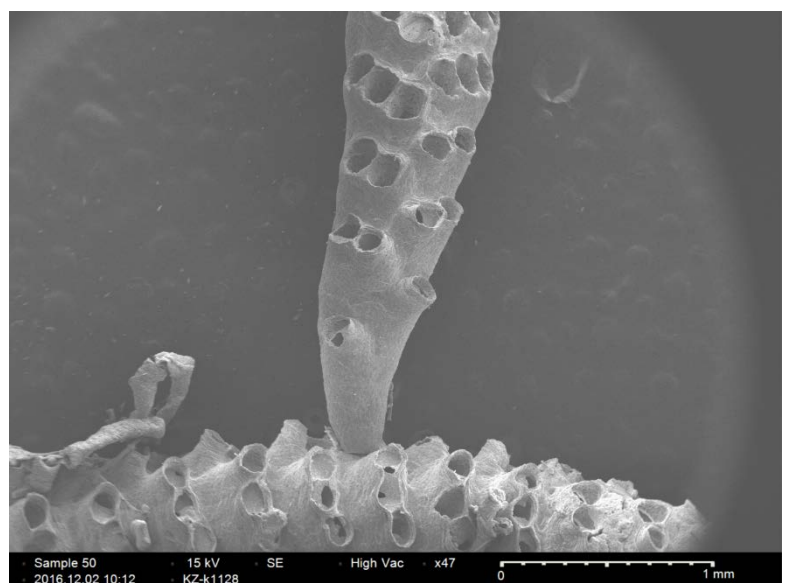
I have been working in excellent environment and facilities. Ji Eun has a new table SEM microscope Sec SNE 3200M, which provide fast and high quality pictures. Moreover, all students and members of Ji Eun team were helpful and kind in fulfilling many of my wishes most of them even not expressed 😊



Previous day, I spoke about my relish testing many local fruits. Next day morning, I got the box with local variety of persimmons, very delicious 😊

This unique working environment with fruitful discussions led to documentation and provisional determinations of all Stenolaemata bryozoans in her collection. Up to now, four species of cyclostomatous bryozoans have been reported from Korean waters. According to this preliminary investigation, about 27 species may have been identified among the cyclostomes. From them, probably 6 to 8 species might be new. The most diverse seems to be Crisiidae represented by 6 species and Tubuliporidae, where belong about 10 species. The one of the most exciting colony is closely related to *Exidmonea*, but it grown as flexible erect colonies and have very long gonozoecia.

Colony of Exidmonea type of branches but flexible erect colonies and very long gonozoecia.



Besides that, we are looking for the first fossil bryozoans from Korea. We undertook a two day field trip to Pohang basin, on the eastern side of the Korean peninsula. According to previous research and geological map, Tertiary sediments should occur here. We found plants remains, few nice pectinids, but not any bryozoans fragment yet!



Field picture from Pohang Basin – mainly plant remains of Miocene age. Ji Eun’s first fossil in her life 😊

However, the section in Gyeongju and around the city of Guryongso looks very promising. In the local museum, we found samples from Gyeongju section with many benthic organisms, mostly molluscs. Recently however, this area suffers from earthquake so we are unable to visit the locality.



Sample from Gyeongju deposited in the museum in Pohang. It shows big oyster with many benthic microfossils on sediment. Very promising sample to find fossil Bryozoa!

BOOK ANNOUNCEMENTS

BOUNTIFUL BRYOZOANS

Dennis Gordon and Sadie Mills

A new fully illustrated electronic identification guide, *Bountiful Bryozoans*, has just been released to help people identify this group of marine creatures in the wild.

Bryozoans – also known as moss animals or sea mats – are colonial animals that are abundant around New Zealand, but not widely recognised. Divers encounter them on underwater rock faces and they are common under rocks on the lower seashore or on wharf piles. Importantly, vessel owners who do not clean their boat hulls very often may discover them to be fouled by encrusting and turfing bryozoans. In fact, bryozoans are in the top five groups of hull-fouling marine invertebrates, hitchhiking around the world into alien environments. Some species foul cooling-water intake pipes of coastal, estuarine and freshwater power stations.

New Zealand is one of the world's hotspots for bryozoans and there are over 1000 species in our Exclusive Economic Zone, more than 300 of which have yet to be formally named. About 120 species are reasonably common in shallow-water environments and the goal of the e-guide is to include all of them eventually. The most important of the common species are those that 1) foul human structures, 2) form bottom habitat for other organisms, including juveniles of commercial fish, and 3) contain biochemicals, like potential anticancer, antibiotic and antifouling substances of interest to biotechnologists.

The e-guide starts with a simple introduction to the group, followed by a morphology (shape) index, species index, detailed individual species pages, and finally, icon explanations and a glossary of terms. The species pages have high-quality images and describe features that enable the user to tell them apart. As far as possible, characters are used that can be seen by eye or hand lens, and language that is non-technical. Bryozoans also have a lot of very small characteristics that can only be seen by microscope so we a 'microscopic characters' box has been included for users that wish to take their identification further in a laboratory.

BOUNTIFUL BRYOZOANS is just one of a series of e-guides on New Zealand marine invertebrates and seaweeds that NIWA's Coasts and Oceans group is presently developing. 'Awesome Ascidians' version 2.0 has also just been released and 'Extraordinary Echinoderms', 'Splendid Sponges', 'Coastal Crabs', 'Beautiful Browns' (seaweeds) and 'Amazing Antarctic Asteroids' are already available for download now and more e-guides are being developed.

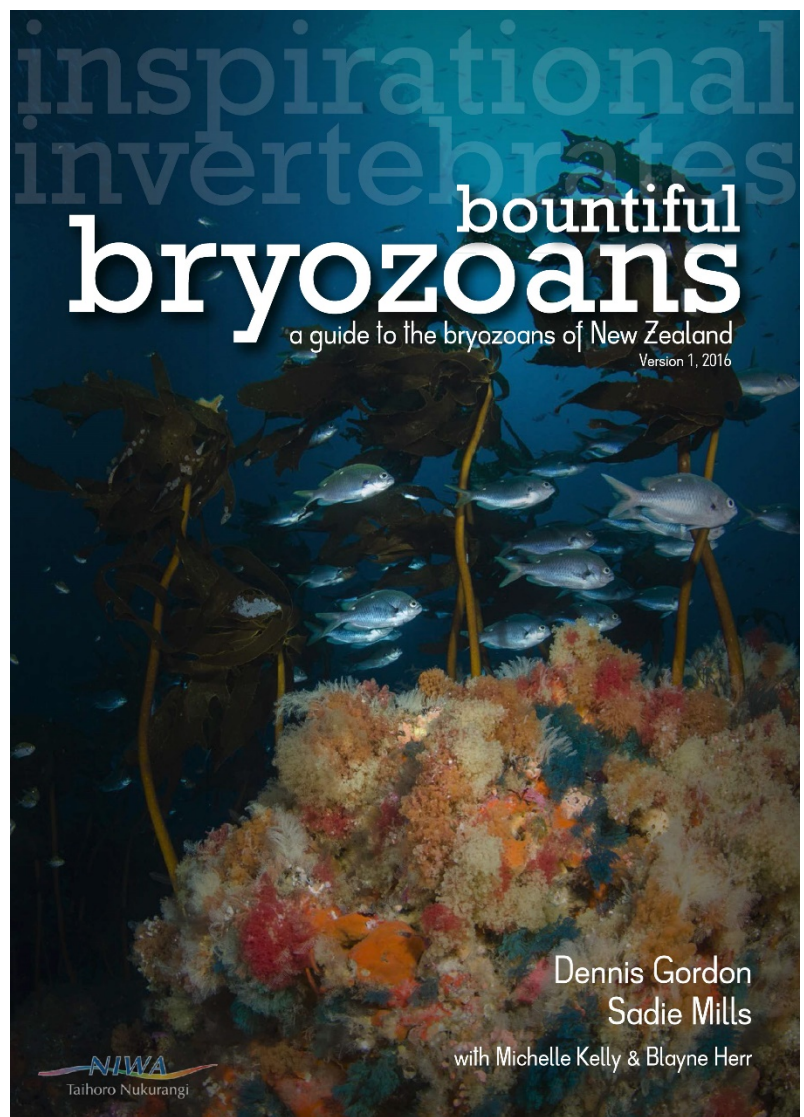
The guides are designed for New Zealanders who live near the sea, dive and snorkel, explore our coasts, make a living from it, and for those who educate and are charged with kaitiakitanga, conservation and management of our marine realm.

NIWA will be updating the existing e-guides online as new species are discovered and described.

Users can download 'Bountiful Bryozoans' and the other e-guides for free here:

<http://www.niwa.co.nz/coasts-and-oceans/marine-identification-guides-and-fact-sheets>

Front cover of *Bountiful Bryozoans*, the newly released guide to the bryozoans of New Zealand. Credit for background image: Crispin Middleton, NIWA.



Dennis Gordon
Sadie Mills

with Michelle Kelly & Blayne Herr

FAUNA IBERICA

Oscar Reverter-Gil and J. Souto

Dear all, after a very long period of preparation, the first volume of “Iberian Fauna” devoted to Bryozoans just came out. It includes a general introduction to the group, and a second part on some species of ctenostomata.

“Iberian Fauna” project pays special attention to the nomenclature, always encouraging authors to consult the original references of the species treated. Not only us themselves, but especially the editorial secretary (P. Fernández) and the advisor of nomenclature (M.A. Alonso-Zarazaga) have made a huge work... Buy anyway, mistakes may happen!: The “Proceedings of the Third Conference of the International Bryozoology Association” (Bryozoa 1974) were published in



two volumes, the first one during the fourth trimester of 1975, and the second volume during the second trimester of 1976 (thanks Dennis!). So all taxa described in the second volume may have 1976 as correct year of publication... not 1975, as stated by us!. More specifically, this mistake affects to the following taxa in the book: *Arachnoidella prenanti*, *Bathyalozoidae*, *Bathyalozoon*, *Bathyalozoon foresti*, *Franzenella monniotae*, *Metalcyonidium*, *Metalcyonidium gautieri*, *Neoflustrellidra*, *Pseudalcyonidium*, *Pseudalcyonidium bobinae* and *Victorella soulei*.

On the other hand, we have included in the monograph not only the species reported from Iberian waters, but also some other species collected in nearby waters, that could be also present. This is explained in the introduction to Iberian Ctenostomata (p. 68). However, the book is published in Spanish (logically, since is the Spanish Government which pays!). Therefore, for people that don't are readers in Spanish, some confusion may occur regarding the list of real Iberian species. Please note that all taxa in the book not yet recorded in Iberian waters are marked with an asterisk.

You can find more information about the book (and how to get it) in: <http://editorial.csic.es/publicaciones/libros/12627/0/fauna-iberica-vol-43-bryozoa-i-ctenostomata.html>.

The complete reference is:

Reverter-Gil O., Souto J. & Fernández-Pulpeiro E. (2016). Bryozoa I. Ctenostomata. In: Fauna Ibérica, vol. 43. Ramos, M.A. et al. (Eds.). Museo Nacional de Ciencias Naturales. CSIC. Madrid. 305 pp.



MARINE ECOSYSTEMS AFTER GREAT EAST JAPAN EARTHQUAKE IN 2011

Kazuhiro Kogure, Masato Hirose, Hiroshi Kitazato, Akihiro Kijima

Marine ecosystems after Great East Japan Earthquake in 2011

Our knowledge acquired by TEAMS

Edited by Kazuhiro Kogure, Masato Hirose, Hiroshi Kitazato and Akihiro Kijima



We published book of interim report of our project on the effect of the Great East Japan Earthquake and tsunami on March 11, 2011. The book gives an overview of the project followed by a lot of brief reports on various research fields. The following address is the direct link to the PDF.

https://webpark1662.sakura.ne.jp/symposium/TEAMS2016_book.pdf

MEETINGS AND CONFERENCES

2017 AUSTRALARWOOD VII

Bryozoan Meeting

Wellington, New Zealand

Thursday 9 February



Venue: National Institute of Water & Atmospheric Research, main conference room, Allen Building, from 9.15 am.

Field Trip

Friday 10 February — South Wairarapa

Weather permitting, potential attractions include:

- Putangirua Pinnacles (voodoo columns), featured in the Paths of the Dead in Lord of the Rings 3 (Rivendell an optional extra if enough interest)



- Picnic lunch at Cape Palliser (southeastern-most point of North Island), climb to light house if feeling fit



- Fur seals and beach-cast bryozoans, a Pleistocene bryozoan locality (ortwo)



- Early evening meal in the Martinborough wine district



Non-Australasian IBA members, please email dennis.gordon@niwa.co.nz if you plan to attend. All other attendees send talk titles to Dennis by 15 January 2017.

LARWOOD MEETING 2017

REMINDER: First registration deadline for the upcoming Larwood meeting is 24th December - so less than two weeks left.

The earlier I have the registration, the better I can plan the upcoming meeting. So far, less than 20 people have registered. Additional information on the meeting will be distributed via email and also on the homepage at the end of December.

Meeting details - Thomas Schwaha will host the next Larwood meeting in Vienna from 25th of May till the 28th.

Hope to see many of you here in Vienna next year!

Cheers

Thomas

thomas.schwaha@univie.ac.at



RECENT PUBLICATIONS

The following list includes 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.

- D'Hondt, J-L. 2016 Marine bryozoa of volcanic substrates off the island of Reunion (Indian Ocean) (Bryozoa). *Bull. Soc. Linn. Bordeaux*, 2016, 151, N. 5 44 (2/3), 205-223.
- Ernst, A., Seuss, B., Taylor, P.D. & Nützel, A. (2016): Bryozoan fauna of the Boggy Formation (Deese Group, Pennsylvanian) of the Buckhorn Asphalt Quarry, Oklahoma, USA. – *Palaeobiodiversity and Palaeoenvironments*, **96**: 517-540.
- Gerovasileiou V., Rosso A. 2016. Marine Bryozoa of Greece: an annotated checklist. *Biodiversity Data Journal* 4: e10672.
- Harmelin J.G., Bitar G., Zibrowius H., 2016. High xenodiversity versus low native diversity in the south-eastern Mediterranean: bryozoans from the coastal zone of Lebanon. *Mediterranean Marine Science*, 17, 2: 417-439. DOI: <http://dx.doi.org/10.12681/mms.1429>
- Hirose M. 2016 Diversity and distribution of adeonid bryozoans (Cheilostomata: Adeonidae) in Japanese waters. *European Journal of Taxonomy*, 203: 1–41.
- Hirose M. 2016 Diversity of Freshwater and Marine Bryozoans in Japan. In: Motokawa M. and Kajihara H. (Eds), *Species Diversity of Animals in Japan*. pp. 629–649. Springer, Japan.
- Key, M. M., Jr., P. N. Wyse Jackson, and S. H. Felton. 2016. Intracolony variation in colony morphology in reassembled fossil ramose stenolaemate bryozoans from the Upper Ordovician (Katian) of the Cincinnati Arch region, USA. *Journal of Paleontology*. 90: 400-412.
- Rebelo, Ana C., Rasser, Michael W., Kroh, Andreas, Johnson, Markes E., Ramalho, Ricardo S., Melo, Carlos, Uchman, Alfred, Berning, Björn, Silva, Luís, Zanon, Vittorio, Neto Ana I., Cachão, Mário & Ávila, Sérgio P., 2016. Rocking around a volcanic island shelf: Pliocene rhodolith beds from Malbusca, Santa Maria Island (Azores, NE Atlantic). *Facies*, 62(3): 22. doi:10.1007/s10347-016-0473-9
- Reverter-Gil O., Souto J. & Fernández-Pulpeiro E. (2016). Bryozoa I. Ctenostomata. In: *Fauna Ibérica*, vol. 43. Ramos, M.A. et al. (Eds.). Museo Nacional de Ciencias Naturales. CSIC. Madrid. 305 pp.
- Rosso A., Di Martino E., Pica D., Galanti L., Cerrano C., Novosel M. 2016. Non-indigenous bryozoan species from natural and artificial substrata of Mediterranean submarine caves. *Marine Biodiversity*. doi:10.1007/s12526-016-0602-2.
- Rosso A., Sciuto F. 2016. New occurrences of the bryozoan *Catenicella paradoxa* Rosso, 2009: is that the story of a NIB spreading? In Mytilineou Ch., Akel E.S.H.K., Babali N., Balistreri M., Bariche M., Boyaci Y.Ö., Cilenti L., Constantinou C., Crocetta F., Çelik M., Dereli H., Dounas F., Durucan A., Garrido A., Gerovasileiou V., Kapiris K., Kebapcioglu T., Kleitou P., Krystalas A., Lipej L., Maina I., Marakis P., Mavrič B., Moussa R., Peña-Rivas L., Poursanidis D., Renada W., Rizkalla S.I., Rosso A., Scirocco T., Sciuto F., Servello G., Tiralongo F., Yapici S., Zenetos A. 2016. *New Mediterranean Biodiversity Records (November 2016)*. *Mediterranean Marine Science*, DOI: 10.12681/mms.1976
- Rosso A., Sanfilippo R., Di Geronimo I., Bonfiglio L. 2016. Pleistocene occurrence of recently discovered cryptic vermetid species from the Mediterranean. *Bollettino della Società Paleontologica Italiana*, 55 (2): 105-109.
- Sanfilippo R., Giacobbe S., Rosso A., Battaglia G., Paladino R., Viola A., 2016. *Shell polymorphism in the bathyal Mediterranean top snail Clelandella myriamae* Gofas, 2005. *Journal of Conchology*, 42(4): 181-191.
- Vinn, O., Ernst, A., & Toom, T. (2016): Earliest symbiotic rugosans in cystoporate bryozoan *Ceramopora intercellata* Basler, 1911 from Late Ordovician of Estonia (Baltica). – *Palaeogeography, Palaeoclimatology, Palaeoecology*, **461**: 140–144.