



MONOCULUS Copepod Newsletter

The Newsletter of the World Association of Copepodologists

Number 62

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Message from the President

Tempus fugit – commonly translated as “time flies” is frequently used as an inscription on clocks and sundials. For me it best describes my sentiment when I reminisce about our triennial WAC conference in Mexico. The Eleventh International Conference on Copepoda in Mérida, July 10–15 2011 was a resounding success, and I know I speak for the entire Association in expressing our gratitude to Eduardo Suárez-Morales and his organizational team for putting this event together. For a number of reasons attendance was lower than expected, however the meeting still provided a great opportunity to network with colleagues, and to listen to some fascinating presentations. I have heard many comments on the quality of the talks, poster sessions, and the sheer fun that we experienced during the social events. For me personally, it was a great pleasure to be involved in the well-deserved tribute to the career and achievements of Ju-shey (Kai) Ho, and to see such a strong show of support from his friends, ex-students and family. Kai and Janet Reid, both of whom served the Association in an exceptional manner since its formative years, were both presented with the special Monoculus Award.

The World Association of Copepodologists has now existed for close to 28 years. We have much to be proud of and, thanks to Chad Walter’s unstinting work as treasurer of our Association and to several large donations by certain members, WAC is healthy financially and in a position to provide monetary support for a variety of activities. For example, last year WAC provided \$7,000 to the organizing committee in preparation for the 11th ICOC in Mérida and, just recently, financially supported the participation of two candidates in the DEST (Distributed European School of Taxonomy) training programme in “Crustacean systematics with specialisation in Cyclopidae” offered by Maria Holýnska (<http://www.taxonomytraining.eu/content/training-programme-crustacean-systematics-specialisation-cyclopidae-copepoda-2>).

However, in spite of this good news it is perhaps time to reflect on our Association and ask ourselves a few questions. Have we actually expanded in the course of nearly three decades of existence and how did WAC make a difference to the younger ones amongst us? How many graduate students have we produced and how many of them have become WAC members and, in turn, have passed on the torch? As of June 2002, WAC had 900 researchers in its list as possible members, and by the end of 2009 only 633 researchers remained in the database that could be members of which only 111 were paying dues for 2009. For 2011, dues were paid by 108 out of the 508 copepod researchers currently in our membership database. Why do we find that our numbers are not growing? Surely loss of members due to retirement or death should be outweighed by the increase in new members, particularly in eastern Asia and Latin/South America. Why is this not the case? I hope that we are all aware of the fact that survival of WAC and its supporting role in training the next generation of copepodologists is entirely dependent upon our ability to not only maintain current numbers but to expand. It is the members that make the Association meaningful, and we all need to make an effort to recruit new, young members, or bring back any that have dropped their membership. Lobbying our own colleagues who may not be members, or talking to students so they join and become involved is surely a strategy that

should lead to success. In addition, we should also have representatives at other large international meetings – volunteers who are willing to promote our Association, discuss with enthusiasm the fascinating field of copepod research and hand out membership forms to other biologists. Could that be you?

It is customary for the incoming President to thank the outgoing, now Past-President, and the rest of the Officers (both present and past) for their invaluable commitment and service to the Association. In particular I would like to thank Janet Bradford-Grieve for navigating the WAC ship during the last three years and for ensuring a smooth transition between presidential tenures; Victor Alekseev, Dagmar Frisch, Erica Goetze and La-orsri Sanoamuang for their past efforts as members of the Executive Council; and Janet Reid for her tireless efforts and incredible dedication to producing and editing the Monoculus newsletter. I welcome their successors, Anton Brancelj, Susan Dippenaar, Samuel Gómez, Adelaide Rhodes and Danny Tang who together with James Bron, our newly elected Vice-President, Jiang-Shiou Hwang, and our Past-President, Janet Bradford-Grieve, will ensure that your voice can be heard on every continent. I wish you all and your family a prosperous and successful 2012.

— Rony Huys, President
Natural History Museum, London



MERIDA, MEXICO 2011

11th International Conference on Copepoda

Thank you to Eduardo Suárez -Morales for a report on the activities of the 11th ICOC. The conference was attended by 134 participants and 17 accompanying persons. 66 oral presentations and 97 poster presentations were given, with a high level of student participation in both types of presentations. Awards were given for the top oral and poster presentations by the students. A special section of this newsletter is dedicated to highlighting the accomplishments of these young investigators. Several pictures have been provided by Eduardo from the conference, just a few of them will be posted in the newsletter. More pictures can be viewed at the Monoculus blog, and feel free to contribute your own from the conference.

The 11th ICOC proceedings will be published as a special volume of the Journal of Natural History and the editorial processing of the manuscripts is well underway. About thirty manuscripts have been submitted online at ScholarOne Manuscripts at <http://mc.manuscriptcentral.com/tnah> and all are currently being processed and sent out for review by a team of five co-editors.

Student Activities

In addition to the various conference activities, there was a pre-conference training workshop on copepod morphology and systematics held at El Colegio de la Frontera Sur (ECOSUR) in Chetumal. An international team of nine tutors taught 19 students and as usual the training course was unfortunately over-subscribed. There were a total of 34 applications for the original 20 places, coming from 17 countries including: Angola, Brazil, Colombia, Costa Rica, Cuba, India, Iran, Iraq, Korea, Malaysia, Mexico, Namibia, Russia, South Africa, Syria, Taiwan and USA. Although I am delighted to discover how many young copepodologists are out there needing training, it seems that this demand cannot be satisfied solely by the triennial pre-conference workshops.

One option is to provide courses between conferences on particular groups such as the successful International Workshop on Symbiotic Copepoda held at the Cabrillo Marine Aquarium in 2010 which hopefully will be continued in the future. Another option is tackling the problem at a more regional scale where a system for promoting training of taxonomists is already in place. For example, a recent report submitted to the Israel Academy of Sciences and Humanities demonstrated that within ten years, the average period required to train a young taxonomist, Israel would have no scientists in research or teaching positions who can train the next generation of taxonomists.

In order to ensure the continuation of taxonomic research and stop its decline a consortium of government ministries and agencies, research universities and higher education institutions was formed. One of the ways by which the Israel Taxonomy Initiative (ITI) is hoping to promote training of taxonomists and basic knowledge of Israel's biodiversity is inviting taxonomists from the international scientific community to teach short courses on local species groups. Since most ITI-funded courses offered so far were on terrestrial groups I volunteered last November to organize a 5-day training workshop on copepod morphology and systematics at Tel Aviv University. I was tempering my expectations and somehow hoping to attract the interest of about 3-5 students – an optimistic prospect given that no one in Israel has been actively involved in copepod taxonomy for almost two decades. However, to my surprise a group of 15 highly motivated students, young researchers and professionals from all over the country turned up (and the course was even oversubscribed!). Needless to say that a similar demand for these workshops is present in many other countries around the world and I can see WAC becoming increasingly instrumental in promoting and supporting similar training initiatives in the future.

– Rony Huys

12th International Conference on Copepoda, July 2014

Plans for the next International Conference on Copepoda, to be held in Seoul, Korea, in July of 2014, are already underway, and are being capably overseen by Prof. Wonchoel Lee (Hanyang University). After Karuizawa (Japan 1990), Keelung (Taiwan 2002) and Pattaya (Thailand 2008) it will be the fourth time that the Asian continent will host the copepod conference. Following the success of previous pre-conference training courses the organizers have also agreed to host a 5-day training workshop on morphology and systematics of copepods. The objective of the course will be to provide postgraduate students/postdoctoral fellows with a comprehensive and state-of-the-art introduction to the diversity, morphology,

systematics and biology of benthic, planktonic and symbiotic copepods, including training in technical skills. I visited both the conference venue at Hanyang University (Seoul) in the northwest, and the venue for the training workshop at Chonnam University (Yeosu) in the south and was impressed by the local facilities and infrastructure. Both meetings promise to be equally inspiring, and I would advise clearing your calendars well in advance and planning on being in Korea in 2014. The local organizing committee has recently launched an official conference website <http://envisci.hanyang.ac.kr:8001/12th/> which should be consulted at regular intervals.

– Rony Huys



Outgoing President Janet Bradford-Grieve and Past-President Shin-Uchi Uye



Conference Banquet and Maxilliped Lecture



Student Workshop Tutors and Friends



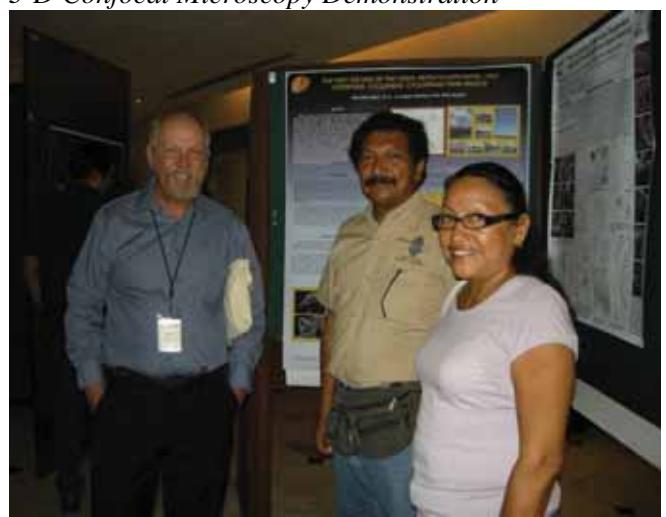
Awesome Field Trip to Chichen Itza, Cancun



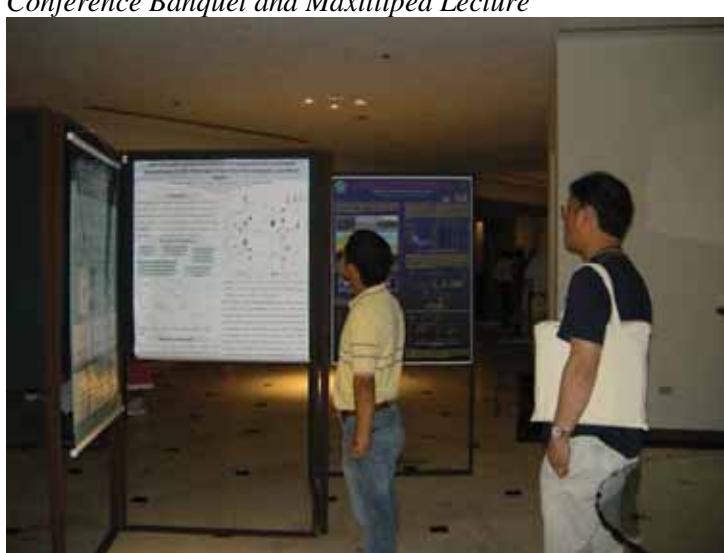
3-D Confocal Microscopy Demonstration



Conference Banquet and Maxilliped Lecture



Poster Sessions

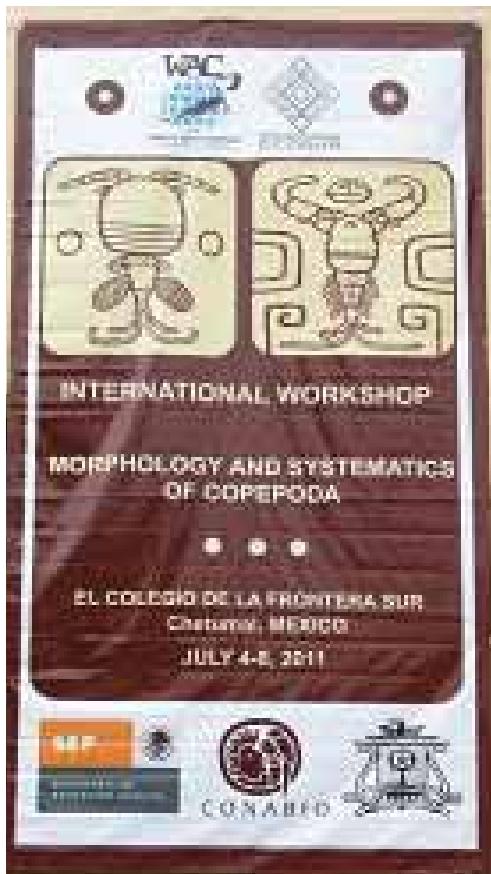


Poster Sessions

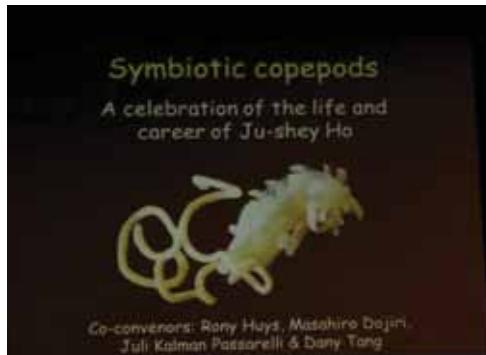
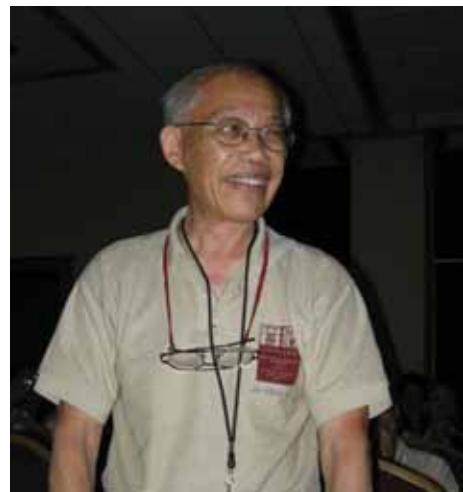
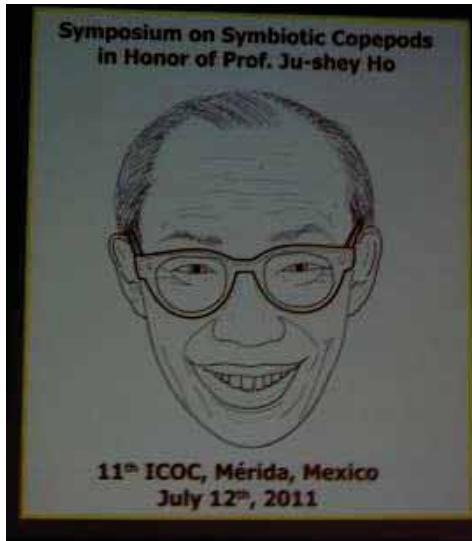


Oral Presentations

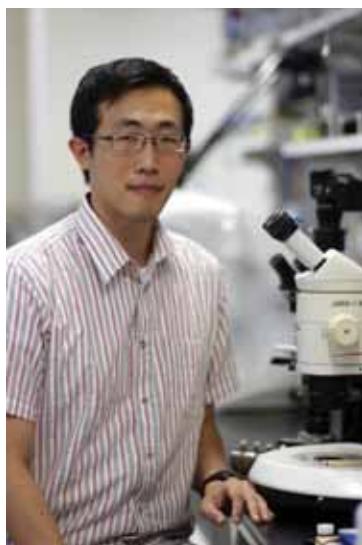
Student Workshop in Chetumal



Symposium in Honor of Ju-Shey Ho



Student Awardees at 11th ICOC



It was my great honor to receive a Student Presentation Award at the 11th International Conference on Copepoda held in Merida. I'm studying feeding habits of mesopelagic copepods focusing on their food-resource partitioning as a mechanism for the generation and maintenance of the high biodiversity in mesopelagic zone. I started the study as my undergraduate research program, where I

analyzed the feeding habits of two mesopelagic species with conventional methods, i.e. a microscopic analysis of gut contents and a morphological analysis of mouthparts. The results suggested that the copepods utilize diverse food resources more-or-less unselectively, as suggested by previous workers. However, these observations made me suspect that there may be differences in food habits and feeding strategies among mesopelagic copepods that are hard to detect. To answer this question, in my master's study, I examined the copepods' feeding habits in more quantitative manner by an integrative application of several qualitative and quantitative methods, which proved to be a powerful approach. I obtained a master's degree in 2010 on the basis of this study, a part of which was presented at the conference as summarized below.

I analyzed feeding habits of 8 species of mesopelagic detritivorous or omnivorous copepods with a carbon and nitrogen stable isotope ratio analysis, qualitative gut contents analyses with a light microscope, a scanning electron microscope and a fluorescence microscope, and a semi-quantitative elemental analysis of small particles of gut contents and sinking particles with electron probe micro analyzer (EPMA). The stable isotope ratio analysis indicated that many copepods mainly consumed those particles suspended in the epipelagic zone rather than those sinking in the epipelagic and mesopelagic zones, suggesting differences in food niche among the copepods. The microscopy also showed different compositions of gut contents among the copepods, most of which ingested sinking particles containing incompletely degraded phytoplankton and cyanobacteria. Meanwhile, the EPMA analysis suggested selective ingestion of sinking particles by the copepods. These observations give me an indication that the copepods selectively ingest sinking particles consisted mainly of fresh suspended particles, such as incompletely

degraded phytoplankton and these copepod species utilize food resources differently.

As an extension of the research, in the Ph.D. course I'm examining seasonal changes of feeding habits of mesopelagic copepods and comparing feeding habits of co-occurring related species, particularly those of the Scolecitrichidae.

I was very delighted to attend the conference and see many copepodologists of the world. I fully enjoyed various interesting presentations which gave me the incentive to study copepods more. I hope I can attend the next ICOC with a new interesting topic. I sincerely thank everyone who listened to my presentation and my supervisor, Shuhei Nishida, for giving me the opportunities for the study and the presentation at this conference.

Masayoshi Sano

Ph.D. student at Atmosphere and Ocean Research Institute,
The University of Tokyo



I studied biology at the Department of biology, Biotechnical faculty, University of Ljubljana. I have always been interested in freshwater and mountain ecology and therefore chose to complete my undergraduate studies with a thesis on sex-ratio of *Arctodiaptomus alpinus* in Alpine lakes. My work on *Arctodiaptomus* led to an invitation by Austrian colleagues to participate

in their research on a cestode epidemic in Arctic charr. The research was done as cooperation between the Paris-Lodron University Salzburg and the Institute of Freshwater Ecology, Fisheries Biology and Limnology in Scharfling, Austria. In 2008 I was accepted to the Young researcher program in Slovenia and enrolled in my PhD studies at the University of Nova Gorica. Currently I am employed at the National Institute of Biology where I am developing a new biotic index based on hyporheic fauna for water quality determination in lotic ecosystems. The topic is of great national interest and in 2009 I was awarded for my contribution to sustainable development of society, bestowed by the Slovene human resources development and scholarship fund.

In my talk at the 11th ICOC I presented the first part of my PhD thesis. So far there have been only a few studies of hyporheic communities in Slovenia, all of them limited to just one river or lake. I performed the first general survey of hyporheic communities of Slovene rivers. We gathered 273 samples from 26 rivers. Our results suggest that hyporheic

copepod assemblages do not conform to the recently developed river typology, which is used for water quality assessment, in accordance with the Water Framework Directive. Furthermore, hyporheic copepod assemblages change gradually from spring to outflow and changes are characterized by differences in abundances of the nine most common species. Interestingly, we also found one species, *Moraria radovnae*, which seems to be endemic in the Alps. I plan to use these data with data mining and neural network algorithms to develop water quality assessment models. The long-term goal of my research would be to include these models in national water quality assessment schemes.

Uroš Žibrat, Ph.D. Student
Department of freshwater and terrestrial ecosystems research
National Institute of Biology, Slovenia



My main research interests are Systematics, Evolution, and Biogeography of free-living freshwater Cyclopoida. I am currently working on my thesis: "Taxonomical revision of the genus *Eucyclops* in Mexico and evaluation of new morphological

characters for their identification". I previously received my Master of Science thesis on "Diversity and Distribution of Cyclopoida (Copepoda) from Central-North arid areas of Mexico" (ECOSUR-CONABIO 2009). I am currently collaborating on various projects: "Community structure and phylogeography of Zooplankton in Chihuahuan Desert Springs" (NSF, UTEP & Ripon College-2006), "Taxonomy and Distribution of Cladocerans in Aguascalientes State" (University of Aguascalientes (UAA), Mexico-2005); and "Copepods from Aguascalientes State" (UAA, 2006).

In addition to receiving the Student Presentation Award in the 11th International Conference on Copepoda held in Merida, Mexico with the work "Distributional patterns of the American species of the freshwater genus *Eucyclops* (Copepoda: Cyclopoida): a track analysis", I have also received the Best Student Award given by the Crustacean Society during the VII Reunión Alejandro Villalobos with the work "Diversity and Distribution of Cyclopoida (Copepoda) from Central-North arid areas of Mexico". I have been a member of WAC since 2009 and of The Crustacean Society since 2010. I also taught as an assistant professor of the postgraduate course of Biogeography at ECOSUR (2010, 2011). I have attended these workshops: "Training Workshop on Morphology and Systematics of Copepods" (2011), "Aspects of Crustacean Ecology and

Diversity" (2008), "International Workshop on Rotifer Taxonomy" (2006) and; "Taxonomy of freshwater copepods" (2005). I have completed five publications on the description of Copepoda species.

Nancy F. Mercado-Salas, Ph.D. Student
El Colegio de la Frontera Sur-Unidad Chetumal, Mexico



I am honored to have received one of the Student Oral Presentation Awards at the 11th International Conference on Copepoda held recently in Mérida, Mexico. I would like to thank all the members of the awards committee for evaluating the student oral presentations and posters. I would also like to thank the members of the copepod

community at large for their warm welcome at the conference and interest in my work. I look forward to future collaborations initiated with other conference participants as a result of the work I discussed in Mexico.

I presented portions of my doctoral work describing the nervous system of the harpacticoid copepod *Tigriopus californicus*. Comparative neuroanatomical studies on copepods are scarce despite the well-documented importance of copepods. This study describes and characterizes anatomical aspects of the brain and central nervous system in *Tigriopus* and compared described brain regions with those of other non-copepod crustacean and insect taxa. The results I presented indicate that the brain of *Tigriopus* is far more complex than initially anticipated and showed homologous brain structures common to copepods and other Pancrustacea. I used light and electron microscopy to visualize whole brain regions and neuropil ultrastructural elements. I presented 3-dimensional reconstructions of the entire brain with internal structures related to the olfactory system and higher brain centers. I also showed the existence of T-bars, a stereotypical arrangement of synaptic proteins found in other arthropod taxa, which suggests that this anatomical organization is more evolutionarily ancient than previously thought.

While at the conference I was able to meet many interested researchers with advice on which species to focus on for my future work. I appreciate this interest in my work and hope that I will be able to again discuss my research for this engaging community of scientist at the next International Conference on Copepoda. With fond memories and great appreciation,

David R. Andrew, Ph.D. Student
University of Arizona, USA



I began my scholarship in Mexico until the Master degree. I graduated from Metropolitan Autonomous University Xochimilco. My graduated thesis was about the freshwater rotifer *Brachionus angularis* and my master thesis aimed to bioremediation, i.e. the capacity of organisms to regenerating a contaminated ecosystem. Then I did a Master and a

PhD in Biology and Marine Ecology at the Centre d'Oceanologie de Marseille(COM), in the Aix-Marseilles II University, (France) completed by training stays at IRD in Dakar, Senegal.

My PhD work was focused on the study of the relationships between potentially toxic cyanobacteria (*Cylindrospermopsis raciborskii*, *Anabaena solitaria*, *Anabaena flos-aquae* and *Microcystis aeruginosa*) and zooplankton communities in the lower delta of the Senegal river. For this, I collaborated with Marc Pagano (IRD) and Corinne Cuoc (Aix-Marseille I University). This research was based on both in situ study and experimental approaches on the roles of grazing, predation and toxicity. The in situ survey explored the space-time distribution and dynamics of the phyto- and zooplankton communities. Grazing and toxicity experiments clearly indicated negative effects of the cyanobacteria on the survival and growth of cladocerans, rotifers and copepods. Variable responses were observed according to the zooplankton species. Muscular and intestinal degradation as well as modification of the acetylcholinesterase activity were highlighted for copepods incubated with *C. raciborskii* or *A. flos aquae*. However; several factors suggest that these effects are probably not related to classical cyanotoxins, but to secondary metabolites excreted. I would like to continue working on this topic for my postdoc to explore several complex aspects in more detail. Specifically, I would like to focus on the chemosensory mechanisms and the adaptative responses of zooplankton organisms faced with environmental changes: defence mechanisms, recovering capacity after cell damage (regeneration and repair). I would also like to identify and explore the mechanisms of secondary metabolites biosynthesis, etc. Currently, I am looking for a laboratory in which I could gain work experience in this field of investigation and broaden my horizon.

Juana Mireya Mendoza Vera
Campus de Luminyase 901, 13288 Marseille, Cedex 9
France



It was a great honor to receive the Student Poster Presentation Award in a very important and so well organized event as the 11th International Conference on Copepoda. For our entire research team, the recognition of this work through this award was very important.

I am a student of the doctorate course in Biological Oceanography and I work on the ecology of the zooplankton of estuarine and coastal areas with emphasis on studies related to the productivity

of the communities of Copepoda in coastal environments. My doctorate thesis has as one of the main objectives to estimate the production of Copepoda in coastal reefs located at the Northeast of Brazil.

In the 11th International Conference on Copepoda, I presented a work entitled 'Copepod production in a tropical impacted bay from Brazilian northwest'. The main objectives of this research were to estimate the values of biomass and the rates of secondary production of the community of pelagic Copepoda from a tropical, urbanized and highly impacted environment due to pollution. The values of production observed in this study were considered relatively low if compared with other regions that present similar characteristics to the studied environment, presenting values near to those found in oligotrophic oceanic environments.

I am sincerely thankful to all members of the organizer committee and I finish recognizing that this serves as a great stimulus for the development of my academic career.

Valdylene Tavares Pessoa Fidelis, Ph.D. Student
Universidade Federal de Pernambuco , Brazil



I currently live in the state of São Paulo (Brazil), where I am finishing a PhD in zoology. I started working with the ecology of planktonic copepods of reservoirs and rivers in 2003, and only after 2008 turned to the taxonomy, especially freshwater Calanoida and Cyclopoida. Since

then, I have been studying copepods of various types of habitats, including freshwater (lakes, reservoirs, rivers, swamps, pools of water from mountain, hydro rock environments) and estuarine environments.

The work awarded in the 11th ICOC in Mérida is a small part of a large project, unprecedented, which sampled the second largest river basin in South America, the tenth largest in the world. In these collections, so far, were found five new species of Calanoida, and two of them have been described and presented at the 11th ICOC in Mérida. The other species of Calanoida will be described in brief, and also new species of Cyclopoida.

Another abstract presented at the event referred to the spatial distribution of Cyclopoida in the basin, both presented on posters. Due to the large amount of material collected, the analysis is slow, also by the particular details of each species. Besides a few publications in 2012 and 2013 two identification guidebooks of Calanoida and Cyclopoida of the River Plate Basin will be released, with identification keys, diagnoses, illustrations, scanning electron microscopy (electron and confocal laser).

Gilmar Perbiche Neves
Departament of Zoology, IB,
University of State of São Paulo – UNESP, Brazil



I graduated from Moscow State University (Biological Department, Invertebrate Zoology chair) in 2008. My Master's thesis was on copepods associated with sea stars in Southern Vietnam. Some of our results were presented as a poster at 10th ICOC in Pattaya, Thailand.

Currently I am doing my Ph.D. on parasitic crustaceans of the class Tantulocarida. When my supervisor Prof. Gregory Kolbasov offered me this project for the thesis I immediately fell in love with these minute enigmatic creatures. Tantulocarida are one of the smallest crustaceans, they parasitize Amphipods, Isopods, Cumaceans, Tanaidaceans, Ostracods, and Copepods, which are known to be their favorite hosts. These miniature ectoparasites do not have typical crustacean molts, their life cycle is really complicated with both parthenogenetic and sexual phases. Tantulocarida also have unique morphological adaptations to their ectoparasitic mode of life.

The tantulus larva does not have any cephalic appendages, but in its anterior part it has an oral disk. The larva can attach itself to the host surface with a special substance, called cement, which is released under this disk.

The tantulus uses an unpaired stylet to puncture host cuticle, and through a tiny hole left from this puncture, a rootlet system is produced into the host tissues. Both the complexity of the life cycle, the minute size of most of the stages and difficulty in sampling live material makes this group unpopular among researchers.

We are lucky enough to have two species of Tantulocarida (out of 36 known to science) living in the vicinities of MSU White Sea Biological Station (<http://en.wsbs-msu.ru/>). We use a simple hyperbenthic dredge to collect the mud from the sea bottom, which is possible because the host crustaceans (harpacticoid copepod *Bradya typica* and a tanaid *Typhlotanais* sp.) live in a rather shallow silty bay. Using a bubbling method we get host specimens attached to the water surface, so that it is easier to collect them. Depending on the season we could get as many as one third of the host specimens infested with parasites. That is how we manage to get enough material for the first Transmission Electron Microscopy of Tantulocarida, and also for molecular analysis. So in my thesis I plan to cover internal anatomy, find out probable phylogenetic position of Tantulocarida on the tree of Arthropoda and to revise their systematics. We also described two species of Tantulocarida: one (*Serratotantulus chertoprudae*) from the abyssal depth of the Indian ocean, another one from the White Sea (*Microdajus tchesunovi*).

In 2008 at the WSBS first adult males of the two species of Tantulocarida (*Arcticotantulus pertzovi* and *M. tchesunovi*) were reared. Not only have we got first live photographs and videos of fully developed free swimming tantulocarid males, but this allowed us to study their external morphology using SEM as well as their internal anatomy using TEM.

In my talk at the 11th ICOC in Mérida I tried to give an account of what has been achieved by now. The phylogenetic position of Tantulocarida on the Arthropod tree is still doubtful, because of their highly modified morphology they yield only few characters for comparison with other crustaceans. However, until now no molecular analysis has been conducted. 18S rDNA sequences of two species of Tantulocarida (A. pertzovi and M. tchesunovi) were obtained for the first time. They appeared to be close relatives of Cirripedia, even though it was generally believed that Tantulocarida is a sister group of Thecostraca. Possible close relations of Tantulocarida and Cirripedia were discussed. In my presentation I also described some of the main structures inside the cephalon of the tantulus larva and gave a preliminary account of the internal anatomy of the adult male.

Finally, I would like to thank the organizers of the 11th ICOC for the award and for the excellent job they did in Chetumal and Merida.

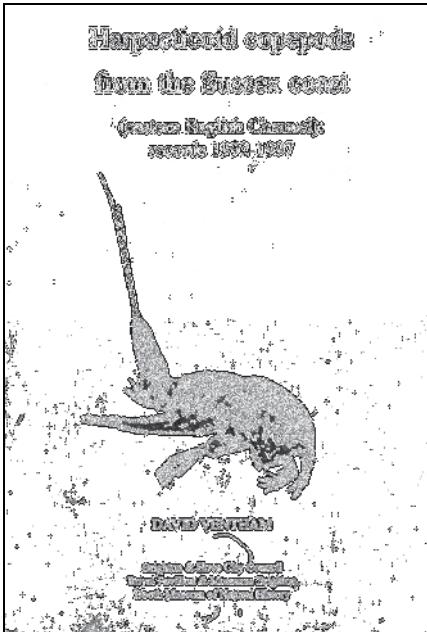
Alexandra Petrunina (maiden name Savchenko)
PhD student, Moscow State University

New Books and Websites

Harpacticoid copepods from the Sussex coast (eastern English Channel): records 1992–1997

By David Venthom
2011. The Booth Museum of Natural History, Brighton: 133 pp. ISBN 978-0-984723-75-9

This book presents a detailed account of the intertidal and subtidal (down to about 30 m depth) harpacticoid fauna of the Sussex coast of southern England. What initially started as a straight recording exercise undertaken by the author during the course of a 6-year period, eventually culminated in a very comprehensive picture of the fauna of this region. The book contains a wealth of information and for each species detailed distributional and environmental data is presented. A total of 273 putative species were recorded of which only 183 have been identified to species level. A significant number of the unidentified species are believed to be new to Science.



David has plenty of printed copies for distribution and can also supply the paper in PDF format. Anyone who is interested in this little gem can contact him at

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Did You See the Blog?

This year, we are trying something new with the website. Since many interesting notices about meetings, new publications, career changes and opportunities are submitted on a continuing basis by the members of the association, a new blog has been created on the monoculus.org website to keep members up to date. From now on, newsletter content will be posted on the blog in a searchable format, to allow easy reference to news items which may be of interest to the readers of the newsletter. Tell us what you think about the new format, and feel free to contribute by contacting the Monoculus editor, Adelaide Rhodes, at arhodes2@tamu.edu

<http://www.monoculus.org/blog/blog-singleview/article/welcome-to-the-monoculus-blog.html>

Passages

Richard Hamond 1930 – 2010

Richard Hamond died suddenly of heart failure on 22 July 2010 at his home, Scaldbeck House, Morston, Norfolk. His family has long been associated with the Norfolk and Norwich Naturalists' Society, and he was a greatly valued member, having joined in 1949 and being elected as President for 2001–2002.



Dick Hamond on his crab-boat, the Orion, named after a favourite constellation, a sketch of which, as seen from Melbourne, was found in Dick's papers (R.B. Williams, pers. Comm.) at Morston Quay.
Photo: Don Dorling.

Dick, as he was known to friends and scientific colleagues, was born in Norwich on 26 January 1930. His father was a distinguished soldier, Major Philip Hamond DSO, MC (1883–1953), who alongside a certain Major Dwight Eisenhower helped to train the American military in tank warfare during the First World War. Returning to Morston, in 1921 he bought the plot of land known as Scaldbeck where he built Scaldbeck House during 1924–1928. Scaldbeck House was to become hugely influential in Dick's life, being his first and last home. His mother Emily Diana (1899–1982) encouraged her elder son in his studies of marine life, which were commenced as a schoolboy in 1945 at the early age of 15 years, when Dick became the proud owner of his first monocular microscope. During the war he would journey by train with his mother to the marine biological station at Millport on the Isle of Cumbrae, and in the immediate post-war years, he travelled even more widely with his younger sister Mary, visiting the marine station in Roscoff and the Plymouth Laboratory of the Marine Biological Association of the United Kingdom. In 1946, the Director at Millport, Richard Elmhirst, recommended Dick's election to life membership of the Marine Biological Association.

After completing his National Service and commencing his private marine research project at Morston, Dick entered Queen Mary College as a mature student in 1955, joining the Quekett Microscopical Club in the same year, serving as secretary of the student Biological Society 1957–1958, and finally graduating in 1959 with an upper second class honours BSc in zoology. Dick immediately embarked on a PhD programme with Newcastle University's Dove Marine Laboratory at Cullercoats but due to personal conflicts with the Assistant Director, Dr H.O. Bull, he completed only the 1959–1960 academic year there. Needing an income, Dick started school-teaching at King's Lynn High School and Runton Hill School in Cromer while carrying out a study of the planktonic polychaete worms in Blakeney Harbour. In 1963 he registered as an external PhD student with London University to continue his research on polychaetes which was largely pursued from his home laboratory on Scaldbeck. After four years of strenuous work, Dick submitted his thesis, entitled "Aspects of the biology of autolytoids", and obtained his PhD degree in October 1967.

Soon after submitting his dissertation Dick decided it was time to leave Norfolk and seek employment with a respected institution. His opportunity to escape (as he saw it) the family home was presented by an opening for a Research Scientist in Australia with the Commonwealth Scientific and Industrial Organization (CSIRO) at Cronulla, New South Wales. Dick was interviewed in London by the Chief of Division early in February 1967, and was appointed in April, conditionally on approval of his PhD thesis, however his journey to Australia very nearly ended in demise. His ill-fated BOAC (British Overseas Airways Corporation) flight 712 from Heathrow on 9 April 1968 famously lasted only three and a half minutes due to a disastrous fire in a Rolls-

Royce Conway engine that exploded and broke off the wing of a Boeing 707. Dick serenely photographed the incident from his seat over the wing. Sadly, a stewardess and four passengers were killed in the inferno that totally destroyed the aircraft after an emergency landing. The stewardess, Barbara Jane Harrison, was awarded a posthumous George Cross for her part in helping passengers escape. Dick survived unscathed and had the presence of mind to rush two dazed women away from the burning plane to safety. Some of his photographs may be seen in the book *Fire over Heathrow: The Tragedy of Flight 712* by Susan Ottaway (2008).

After completing the first years in the service of CSIRO, Dick took up the position of Associate Research Fellow in the Zoology Department of the University of Melbourne in late 1973. Immediately after leaving the CSIRO in 1972, he began the enormous task of revising the taxonomy of marine and freshwater harpacticoids on a world-wide basis, beginning with New Zealand and Australia. He travelled widely, including the coasts and interiors of Victoria and Tasmania; the Great Barrier Reef; and New Zealand and the Chatham Islands. Colleagues also sent specimens from the UK, the USA, and various tropical islands around Australia and New Zealand. Dick described his residence in Melbourne as the best years of his life, and in 1979 he surprisingly became an Australian citizen.

He finally returned to Norfolk after seventeen years in Australia, moving into Scaldbeck House, his childhood home, in October 1985 (his mother having died in 1982). Dick continued his plankton-netting and dredging trips far out to sea from Morston in his crab-boat the Orion, and also hosted occasional visits of amateur naturalists to the rocky shore at West Runton. In addition, Dick could always be called upon to identify and record marine invertebrates and fish for naturalists in East Anglia and way beyond. However, his attention later turned more and more towards the development of low-cost techniques for improving the performance of microscopes and methods for the rapid production of accurate drawings of his favourite animals, the amazingly complex copepods.

I first met Richard Hamond in April 1987 the evening before an ad hoc meeting in Paisley in the west central Lowlands of Scotland. The meeting was hosted by David C. Geddes at the Paisley Campus of the University of the West of Scotland (then called the Paisley College of Technology) and our main goal was to discuss the agenda for the preparation of the Linnean Society Synopses of the British Fauna volumes on marine harpacticoid copepods. The meeting was attended by David Geddes, Mike Gee (Plymouth Marine Laboratory), Colin Moore (Heriot-Watt University, Edinburgh), Richard Hamond, and me. We all decided to gather in the local pub the night before. Nobody who met Dick Hamond ("It's Hamond with one 'm'!") could ever forget him. I felt slightly intimidated at first by his imposing frame about 5' 10" and 17 stone attired in a tattered Norfolk fisherman's smock and a worn out straw hat

mended with masking tape. Dick instantly broke the ice by his characteristically loud voice and resonant laugh, head thrown back to reveal a couple of impressive gold tooth-fillings. Over a few shots of Bénédictine liqueur we discussed the quality of scientific illustrations (the good, the bad and the ugly) and various methods and tricks to improve them until closing time.

There was never a dull moment with Dick – he could entertain a crowd like nobody else. He was a genuine enthusiast. I have always regarded him as the last remaining eccentric naturalist in Britain. His vast knowledge about marine animal life stretched far beyond his beloved Norfolk coast; however, Dick could swiftly change to non-scientific subjects. After ordering the last shot of Bénédictine he explained the history behind the French herbal liqueur. Apparently monks at the Benedictine Abbey of Fécamp in Normandy had developed the medicinal beverage (as they do) which was produced until the abbey was destroyed during the French Revolution. Based on the monks' recipe Alexandre Le Grand subsequently developed the formula now in use. The recipe is a closely guarded trade secret, ostensibly known to only three people at any given time. So many people have tried to reproduce it that the company maintains on its grounds in Fécamp a "Hall of Counterfeits" (Salle des Contrefaçons).

I got to know Dick a lot better during the Third International Copepod Conference organised a few months later at the Natural History Museum in London. Everyday he showed up with his ancient brown leather briefcase containing the two enormous typescripts on harpacticoids for his DSc submission. Part of the first monograph was eventually published the following year in *Invertebrate Taxonomy* and dealt with the non-marine harpacticoid copepods of Australia and New Caledonia. This was and still is a benchmark work for a group of copepods whose taxonomy has had a chequered history and is rife with inadequate descriptions. Unfortunately, Dick never succeeded in publishing the remaining parts of his canthocamptid monograph because he was always trying to solve his more pressing domestic problems, possibly. His second monograph on the family Harpacticidae was submitted to the journal *Marine Invertebrates of Scandinavia*. Dick's manuscript encompassed more than just the Scandinavian species – it was a genuine revision of all European species based on an impressive collection that he had gathered over a period of 20+ years. Regrettably, his manuscript was withdrawn after it transpired that it did not conform to the format of the journal. Dick never resubmitted his harpacticid monograph but the species descriptions that were relevant to northwestern Europe were subsequently incorporated in the first volume of the Linnean Society *Synopses of the British Fauna* on marine and brackish-water harpacticoids.

During the week leading up to Christmas in 1987 I visited Dick for a few days at his mansion Scaldbeck House in Morston. He showed me around his enormous copepod

collection which was partly stored in the bath of one of the several bathrooms, amongst other places. Many of the vials were not labelled but Dick assured me that all the information was kept in his head, especially the material that came from the Norfolk coast. His collection also contained a lot of international material because Dick was in the habit of writing to fellow copepodologists as soon as they had published new harpacticoid descriptions and asking for voucher specimens. Unfortunately, Dick did not have the time to curate such a large collection and after some time a significant proportion of the vials had dried up, rendering the specimens virtually useless for morphological observation. I persuaded Dick to donate material of some of the species he had collected to the Natural History Museum which he did. Thanks to him the NHM now holds a fine collection representative for the Norfolk harpacticoid fauna.

Dick had a healthy obsession for microscopical techniques and constantly tried to invent new methods for observing specimens. I was truly amazed when he showed me his office on the first floor – an enormous room which used to be his parents' bedroom, to which few were granted access. Tens of stereomicroscopes and compound microscopes were scattered around the place together with his vast reprint collection. I remember Dick showing me his last acquisition – an optical bridge – and explained how he had used it to build his own comparison microscope. A comparison microscope is a device used to analyze side-by-side specimens. It consists of two microscopes connected by an optical bridge, which results in a split view window enabling two separate individuals or dissected appendages to be viewed simultaneously. This avoids the observer having to rely on memory when comparing two objects under a conventional microscope. Dick claimed that the invention of the comparison microscope was a significant advance in the science of firearms identification in forensic ballistics in the late 1920s. The firearm from which a bullet has been fired is identified by the comparison of the unique striae left on it from the worn metal of the barrel in the gun. That day we sat down all afternoon comparing tens of specimens of various species until I was absolutely exhausted.

My stay at Scaldbeck House was also memorable for other reasons. After a long first day without a lunch-break I started to wonder what time we might be having dinner. Morston is quite isolated and at least at that time there were no restaurants in the area so going out for a meal was no option. Around nine o'clock I was absolutely starving and asked Dick diplomatically upon which he replied (knowing I had travelled all the way from Belgium) "Do you like Brussels sprouts?". I like my winter vegetables so I replied positively not knowing that that was all we were going to have that night. I always thought the most common method of preparing Brussels sprouts for cooking begins with removal of the buds from the stalk. Any surplus stem is cut away and the surface leaves that are loosened by this cutting are peeled and discarded. Dick did not like to waste anything – or time either – so he put the whole unwashed stalk into a

pan of boiling water and dinner was served after six minutes! We finished the evening with a cup of Hamond's home-made tea – I cannot give away the recipe but suffices to say that the main ingredient consisted of freshly hand-picked nettles from his back garden.

On one Sunday Dick introduced me to another unforgettable event. He told me that he and his friends went pheasant shooting on a regular basis between the beginning of October and the end of January. Because there are only so many Brussels sprouts you can consume in any given week I decided to accept his invitation and join him although I realized that for the lover of country sports, there must be more glorious pursuits than pheasant shooting. When we arrived at the meeting place there were about 50 people waiting for us, all of them wearing the right gear. I started to worry a little when I realized that we were the only two participants who did not wear waterproof leggings and rubber boots. The way pheasant shooting goes is that you need two teams, the shooters and the beaters. The job of a beater is basically tramping through the wild grass and forcing your way through brambles and shrubs with a group of like-minded enthusiasts, waiting for that thrilling moment when the pheasant brakes cover and the shooter can pull the trigger. Needless to say that by the end of the evening I was scratched from top to bottom. Returning in the evening to the parking lot every shooter was proudly showing their fresh game except for Dick who had not shot a single pheasant but managed to catch a hare. You must know that the European brown hare can run at speeds of up to 72 km/h (45 mph) but this poor individual did not stand a chance – it only had three legs left, having lost one in a previous encounter with a trap. We were all roaring in laughter...

Since then I routinely received one or two phone calls each month. Dick was always talking for about an hour about his next pet project on copepods but in reality he had started to lose enthusiasm for copepod research after his return from Australia (he only published seven papers in the last 25 years of his life). I often received letters as well which were typed on an ancient manual typewriter (which had travelled with him to Australia and back) on the back of previously used sheets, telephone bills or opened-up envelopes, typically leaving 3 mm margins (Dick was an expert at hyphenating) so that no space was wasted.

Richard Hamond has made a significant impact on harpacticoid systematics in general, and on our knowledge of the Australian fauna in particular. As his close friend Prof. Ray Williams put it: "He will be especially remembered, not only in Norfolk but all over the world, for his unstinting willingness to share his wide knowledge of marine life and microscope technology, and for his great sense of fun that made him the focus of attention at any gathering of scientists or friends." I personally hope some of his manuscripts that were ready to be submitted but never reached that stage will not go to waste and will be published posthumously one day. The high regard in which Dick will always be held by fellow zoologists is borne out by the

amphipod patronym *Ceradocopsis hamondi* Moore, 1988 and the many copepod taxa named in his honour, including one family (*Hamondiidae* Huys, 1990), one genus (*Hamondia* Huys, 1990) and nine species (*Entobius hamondi* Gotto, 1966; *Impexus hamondi* Kabata, 1972; *Heterolaophonte hamondi* Hicks, 1975; *Brianola hamondi* Wells & Rao, 1987; *Entomolepis hamondi* McKinnon, 1988; *Archesola hamondi* Huys & Lee, 2000; *Australocamptus hamondi* Karanovic, 2004; and *Inermiphonte hamondi* Huys & Lee, 2009).

A concise tribute to Dick Hamond was published by R.B. Williams in Transactions of the Norfolk and Norwich Naturalists' Society, vol. 43 (2010): 173-174 (actual publication date June 2011). A more detailed biographical memoir by the same author is currently in press in the Transactions – a riveting read!

-Rony Huys (with thanks to Ray Williams)

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Editor's Notes

Thanks are owed to Janet Reid, James Bron, Eduardo Suárez -Morales, Rony Huys, Hans Dahms, Mark Pottek and all the other contributors to this edition of the Monoculus. Dagmar Frisch was especially helpful in gathering the student award recipients' essays and photographs. Viola and Torsten from Pedro Martínez's lab were very helpful in setting up the Monoculus blog on the monoculus.org website. Thank you to Nikon Small World for allowing us permission to reprint the award winners related to copepods in our newsletter.

I could not fit all of the contributions into the newsletter, so please check the blog for more pictures.

I hope to keep improving on the content of the newsletter and the blog, so feel free to submit any news, pictures, journal articles, etc., that you feel may be of interest to the World Association of Copepodologists. Active research reports with interesting pictures would be much appreciated. Personal notes and accomplishments of note are also welcome. Please email them to: arhodes2@tamucc.edu.

— Adelaide Rhodes, Editor

Appendix : Publication List of Dr. Richard Hamond

Publications listed without authorship are by R. Hamond alone. Names of new taxa, together with the institutions in which type specimens (usually holotypes or allotypes) are deposited, are noted in bold type immediately after the relevant publications; most of the type specimens originally retained in RH's personal collection are paratypes and will ultimately be deposited with the Natural History Museum in London.

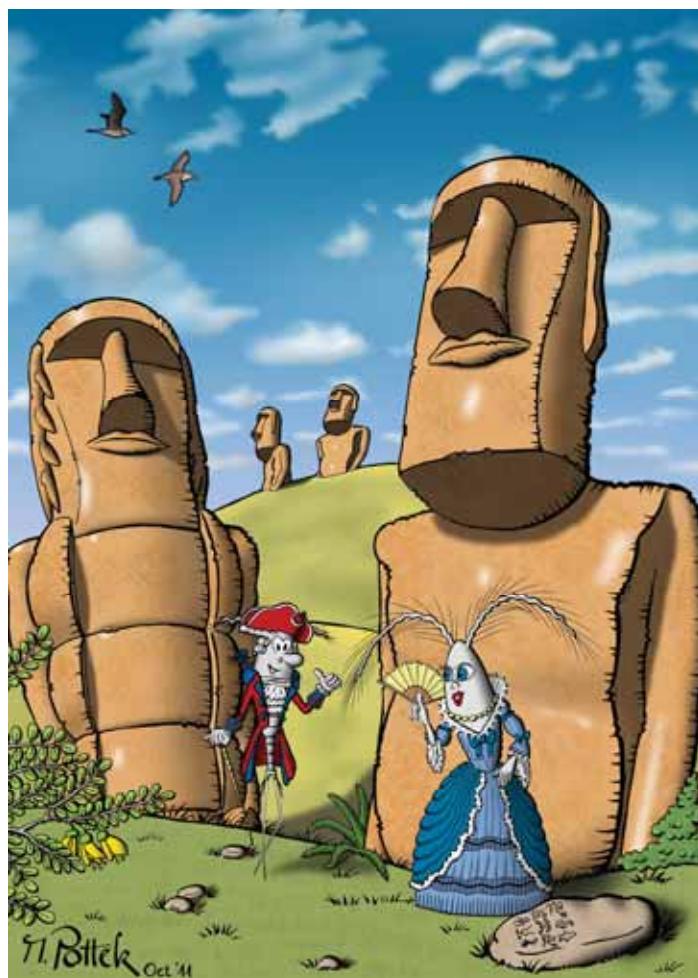
- Rony Huys

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"Copepod RapaNui" by Dr. Mark Pottek



9th Place, Nikon Small World 2011

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