

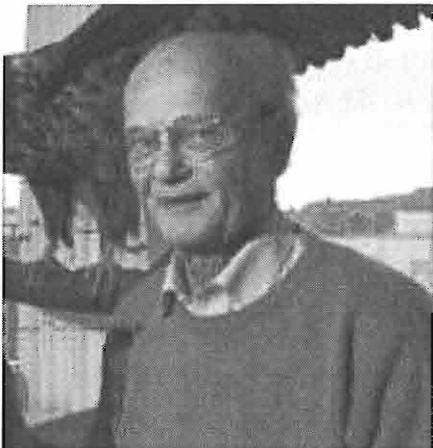
DEEP-SEA NEWSLETTER



No. 35 December 2005

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An open letter to Torben Wolff, editor emeritus of the Deep-Sea Newsletter

Torben,

This is the first Deep-Sea Newsletter (D-SN #35) for which you, Torben, are not the editor. Speaking for all our colleagues, we feel this moment should not pass without an expression of our gratitude for your splendid effort.

At a meeting in 1975, a few European deep-sea biologists met to discuss regular communication. Two of the resulting ideas have become major sources of cohesion for the entire community of deep-sea biologists: regular symposia, and most important in the present context, the publication of an informal newsletter. Subsequently, you enthusiastically offered to serve as editor. In 1978 the D-SN finally came to fruition, with the dissemination of the first issue that you introduced with the editorial "WHY A Deep-Sea NEWSLETTER?" The answer has become obvious, because of the excellent way you shaped the D-SN; we couldn't do without it.

Due to your dedicated activity, Torben, the D-SN survived and prospered for 27 years with 34 well-edited issues. We know that the articles, notes and news were not always contributed to you voluntarily; that they ultimately did appear is testimony to your dogged persistence – a sure sign of a good editor. The result has been a fine, informal newsletter, a place where we could learn about recent activities, gossip, useful information and future meetings. We believe that one of the major factors that has contributed to the phenomenal success of our international meetings has been announcements in the D-SN, which made it easy for the community to prepare to attend.

We should remind the younger investigators that in the early, pre-computer days, all communication was still by letter and fax. Editorial work meant cutting and gluing, rewriting and composing, copying and hand mailing.

In short, the worldwide community of deep-sea biologists and other readers are most grateful to you and honour the immense effort you have spent on the D-SN. You have set a wonderful example for future editors. Knowing you, we are sure that you are not entering retirement, and so we wish you equal success on all your future endeavours.

Hjalmar and Bob
(Thiel, Hamburg) (Hessler, San Diego)

Editorial

This is the first Newsletter not edited by Torben Wolff so we apologise for any shortcomings in advance. Torben has been a consistent and driving editor of the Newsletter since its inception and the letter printed above is a fitting tribute to his efforts over the years. In this edition we provide final details for the registration and abstract submission for the upcoming Deep-Sea Biology Symposium being held in Southampton from 9th to 14th July 2006. At the meeting we hope we will be on the receiving end of papers of the highest quality.

In this age of mass and rapid information transfer, deep-sea scientists have to decide how best to communicate. At the business meeting and in open session we have to agree, firstly on the venue for the 12th Deep Sea Symposium in 2009, and secondly the responsibility for editing and distributing the Deep-Sea Newsletter. Now is the time for anyone who wishes to host the 2009 Deep-Sea Symposium, and/or take on responsibility for the Newsletter, to let us know so a discussion can take place next July.

Also in this edition of the Newsletter we provide details for the deep-sea programmes being supported by the Census of Marine Life. Many of these arose from discussions just before the excellent meeting in Oregon and it is a pleasure to see those discussions now bearing fruit as funded programmes of the Census.

One of the saddest points for us personally, and for the community at large, was the premature death of John Gage on July 18th 2005. John was a deep-sea scholar of the highest order and we wish to dedicate a session at the 2006 Deep-Sea Symposium to his memory. We plan to

hold this session on the Monday afternoon asking for presentations that reflect John's scientific interests such as, *inter alia*, population growth or hypoxic environments, or those who had worked closely with him. For those wishing to contribute to this session please note on your abstract form '*dedicated to John Gage'. Further details of the meeting and a slightly modified programme structure will be found later in the Newsletter

Paul Tyler and David Billett

Professor John David Gage DSc FRSE 1939 – 2005: a personal tribute

Professor John Gage died on the 18th July 2005 after a short illness. To those of us in the deep-sea scientific community we lost not only an esteemed scientific colleague but a mentor and personal friend.

John Gage was born on November 14th 1939, a native of Salisbury, Wiltshire UK. His early interest in marine biology stemmed from diving along the south coast of England. When I moved to Fordingbridge in the 1980s he would regale me with stories of stopping in 'The George' (a pub) by Fordingbridge bridge and having a 'few beers'.

John went to the University of Southampton to study Zoology in 1958 and on graduating elected to pursue a PhD on the integrative behaviours and life history of marine commensal associations. On completion of his PhD he took a post-doc under the great Howard Sanders at Woods Hole returning to the UK to take up another postdoctoral position at the MBA, Plymouth.

In 1967 he was appointed to the Scottish Marine Biological Association, then in the process of moving from Millport to new premises at Dunstaffnage. Thus began the long association with SMBA, and latterly SAMS, that was to continue throughout his working career. During this long and industrious career he gained individual merit promotion in NERC, a DSc from the University of Southampton, became a FRSE and held Honorary Chairs at the Universities of Southampton and Aberdeen.

John's early years at SMBA were spent looking at the ecology and population biology of invertebrates in sea lochs. However, by the early 1970s his interest had been drawn to deep-sea biology in the Rockall Trough area of the NE Atlantic. In a brave, and ultimately successful, decision, he embarked on a study of temporal processes in the deep sea to determine if there was any annual variation. To do this, John established the 'Permanent Station' at 2900m depth in the southern Rockall Trough, which was supplemented later by a megabenthos-rich station (Station 'M') at 2200m at the base of the Hebridean Slope. By this time I was working regularly with John. In conjunction with the Physics group at SMBA, a series of cruises was made to these stations until the mid 1980s. The population analyses of invertebrates, particularly the echinoderms collected during these cruises, demonstrated unequivocally for the first time that there were seasonal (annual) variations in growth in the deep sea. John became deeply involved in the modelling of these populations, especially the ophiuroids and echinoids, starting with vintage BBC computers (and writing his own programs) and later switching to faster machines as they became available. Overnight model runs became a few minutes! This interest of John's in computers continued until his retirement.

John also painted on a broader canvas. He maintained his interest in the NE Atlantic through involvement in a series of EU-funded programmes. In addition, he developed interests in oxygen minimum environments, conducted cruises to the Oman margin, and later was involved in studies off the Pakistan Margin.

These scientific activities led to numerous publications, culminating in the first text on deep-sea biology for over 20 years. A less well known attribute of John's was his ability to bring young people into deep-sea biology. As a young academic, I was possibly one of the first to benefit from his scientific generosity. He invited me to sea, shared samples and showed me how to run cruises. Subsequently, many of my own graduate students benefited from participating on John's cruises and there are a number of young (and maybe not so young!) scientists, whose first experience of deep-sea biology was with John. Lastly, John had an international outlook. He worked with some of the best in the world, and was the first among equals.

On the 18th July, I lost a scientific colleague, a close personal friend and one of the great guides to my career. Although we worked 500 miles apart I always felt he was in the lab next door ready for discussion or advice should I need them. He will be sorely missed by all his scientific colleagues and friends.

Paul Tyler

11th International Deep-Sea Biology Symposium Southampton UK, 9 – 14 July 2006

The main details of the venue for the Symposium were published in Deep-Sea Newsletter No. 34. If you did not receive DSN 34 please contact me on pat8@noc.soton.ac.uk and I will send a copy. However, it is a large file (2.81 mb) so ensure your server can receive it. All the information is on the web site at http://www.noc.soton.ac.uk/GDD/DEEPSEAS/symp_pages/symphome.html

The updated provisional programme structure is:

Sunday 9 July, National Oceanography Centre

- 1800 Registration and ice breaker (BBQ on quayside)
New videos from recent expeditions
Underwater Image Competition exhibition

Monday 10 July, Southampton Solent University Conference Centre

- 0830 Registration and setting up of posters
- 0930 First science session
- 1030 Coffee
- 1100 Second science session
- 1230 Lunch
- 1400 Third science session: Dedicated to Professor John Gage
- 1530 Tea
- 1600 Fourth science session: Dedicated to Professor John Gage
- 1800 End
- Free evening

Tuesday 11 July, Southampton Solent University Conference Centre

- 0830 Fifth science session
- 1030 Coffee
- 1100 Sixth science session
- 1230 Lunch
- 1400 Seventh science session - ocean management

- 1530 Tea
- 1600 Eighth science session - ocean management
- 1800 End

National Oceanography Centre

- 1900 Showcase latest underwater science videos
BBC Planet Earth preview
Underwater Image Competition exhibition
Buffet supper

Wednesday 12 July, Southampton Solent University Conference Centre

- 0830 Ninth science session
- 1030 Coffee
- 1100 Tenth science session
- 1230 Lunch
- 1330 Excursion to Portsmouth Historic Dockyard
- 1600 Tour of the *Mary Rose* and/or HMS *Victory*
- 1730 Evening reception on the deck of HMS *Warrior*
- 1900 Conference Dinner aboard HMS *Warrior*
- 2300 Coach returns to Southampton

Thursday 13 July, Southampton Solent University Conference Centre

- 0830 Twelfth science session
- 1030 Coffee
- 1100 Thirteenth science session
- 1230 Lunch
- 1400 Fourteenth science session
- 1530 Tea
- 1600 Fifteenth science session
- 1800 Civic reception at Southampton Art Gallery and Civic Centre
- 1930 Evening free

Friday 14 July, Southampton Solent University Conference Centre

- 0830 Sixteenth science session with invited lecture
- 1030 Coffee
- 1100 Seventeenth science session with invited lecture
- 1230 Lunch
- 1400 Eighteenth science session with invited lecture
- 1530 Tea
- 1600 Business meeting
Selection of venue for 12th Deep-Sea Biology Symposium 2009
Presentation of Underwater Image Competition Prizes
Sir George Deacon Medal
Award of young scientist lecture and poster prizes
Selection of new Deep-Sea Newsletter Editor
- 1700 Formal end of Symposium

- 1900 Symposium survivors curry night (pay your own way. C. £20 per head)

Registration:

The registration form can be found at

http://www.noc.soton.ac.uk/GDD/DEEPSEAS/symp_pages/sympregist.html

Please ensure that when completed it is posted or FAXed back to the address/Fax number given. It cannot be submitted electronically with credit card details.

A hard copy of the registration document is at the end of the Newsletter.

Abstracts:

The Abstract form can be found at

http://www.noc.soton.ac.uk/GDD/DEEPSEAS/symp_pages/submit_abstract_form.php

Abstracts can be submitted electronically and when submitted will appear on

http://www.noc.soton.ac.uk/test/deepseas/list_entries.php?action=view_all_abstracts

Please note if you wish to contribute specifically to the session dedicated to John Gage or the session on Ocean management

Accommodation:

Details of the different types of accommodation will be found on:

http://www.noc.soton.ac.uk/GDD/DEEPSEAS/symp_pages/sympaccomm.html

Those wishing to stay in **hotels** should use the links to the **Jury's Inn** or the **Premier Travel Lodge** ensuring you tell them you are attending the Deep-Sea Biology Symposium

For those wishing to stay in the **Halls of Residence** of Solent University a booking form will be found on line at http://www.noc.soton.ac.uk/GDD/DEEPSEAS/symp_pages/sympaccomm.html and a hard copy will be found after the Registration form at the end of this Newsletter. To apply for accommodation in the Halls of Residence please return this booking form direct to Solent University as the address stated.

The Census of Marine Life: Censusing the Deep Sea

The deep sea is the most vast and unexplored environment on the planet. The average depth of the ocean is about 4000 meters, and most of the knowledge we have about what lives in the ocean is derived from the top 100 meters. Of the six million species records currently in the Ocean Biogeographic Information System (OBIS), only 1% is from below a depth of about 1000 meters. In addition to its large volume, the deep sea encompasses a variety of different habitats, from plains of mud, to rocky submarine mountainsides, to the frigid waters beneath the polar ice, to vents spewing superheated water. When one considers this in light of the lack of information we have on deep sea biology, it is clear why the Census of Marine Life (CoML) has so many field projects focused on exploring deep ocean biodiversity. CoML currently supports seven projects with, at least, a significant component of their research in the deep sea, including continental margins (CoMargE), abyssal plains (CeDAMar), seamounts (CenSeam), chemosynthetic ecosystems (ChEss), the Mid-Atlantic Ridge (MAR-ECO), the Arctic (ArcOD), and Antarctic (CAML). These projects, along with an additional seven in other ocean “realms,” contribute to the overall CoML goal to assess and explain the diversity, distribution and abundance of global marine life.

The CoML projects demonstrate the opportunity that research in the deep ocean presents in terms of significantly new information. The chances are better than 50% that exploration will yield a record of a species unknown from that region or an entirely new species altogether. In only a few years, scientists have made amazing discoveries about deep-sea life, including “donuts” of planktonic life tens of kilometers in diameter in the deep waters over the Mid-Atlantic Ridge, the first documented octopus in the icy Canada Basin, the first discovery of hydrothermal vent ecosystem south of the Atlantic equator, and more which is described in the pages ahead.

The Census of Marine Life is making great start toward building a global picture of life in the deep sea, but it’s only a dent in what we can learn. The CoML modelling component, the Future of Marine Animal Populations (FMAP), will assist with extrapolation of data to enable scientists to draw global conclusions, but partnership and collaboration are essential to achieving the necessary representative sampling of the global ocean by 2010. Many of the deep sea projects serve as “umbrella” programmes to coordinate ongoing efforts, to serve the data, and to help synthesize results for CoML’s major report in 2010. In addition to contributing to the first global assessment of marine biodiversity, partnership with CoML and its projects has many benefits, including increased visibility, access to cruise information and our international network of scientists and outreach specialists, and the potential to leverage resources.

CoML is encouraging the widespread use of the methodologies established by our projects on multidisciplinary cruises to the deep sea and the deposition of all marine biological data into OBIS. The current version of the field methodologies is available on the CoML portal (www.coml.org) and the Secretariat website (www.comlsecretariat.org). The availability of these protocols will facilitate organization of research teams and communication of goals and approaches in funding applications.

There is certainly increasing pressure to regulate activities in the open ocean, from continental margins to seamounts, and sound management requires quality scientific information. The legacies the first Census of Marine Life will include: 1) the recognition that biological research in the deep sea is important, 2) demonstrated, standardized methods to support the research community, and (3) the drive for governments to put resources into this kind of work.

Kristen Yarincik and Ron O’Dor

Mid-ocean ridge fauna studies by MAR-ECO: results from initial field efforts are emerging

Website: www.mar-eco.no

Recognizing that the current understanding of occurrence, distribution and ecology of animals and animal communities associated with the vast mid-ocean ridges of the world ocean is unsatisfactory, around 115 scientists and students from 16 nations contribute to MAR-ECO (www.mar-eco.no), one of the earliest field projects of the Census of Marine Life. The documented knowledge of the fauna and ecological significance of mid-ocean ridges, one of the major habitats of the globe, remains at most scattered and to a large extent based on observations made several decades ago with mostly inadequate technology. The Norwegian Institute of Marine Research and the University of Bergen co-ordinate MAR-ECO that started in 2001 and will contribute to the CoML synthesis in 2010. Extensive data and collections resulting from several cruises in 2003-2005 to the initial target area between Iceland and the Azores are now being analysed by the project's various components. A second field phase starts in 2007 when vessels from the US and UK will conduct further more process-orientated investigations in selected subareas. The UK NERC has funded the 4-year project ECOMAR and granted ship-time on the new vessel RRS James Cook.

MAR-ECO is primarily exploratory and aims to apply modern technology and platforms to describe and understand the patterns of distribution, abundance and trophic relationships of the organisms inhabiting the mid-oceanic North Atlantic, and further to identify and model ecological processes that cause variability in these patterns. The project activities are grouped accordingly:

- *Mapping of species composition and distribution patterns.*
- *Identification of trophic interrelationships and modeling of food web patterns.*
- *Analyses of life history strategies.*

While the waters associated with the mid-Atlantic Ridge between Iceland and the Azores is the target area, MAR-ECO aims to develop and demonstrate strategies and technology for use in other mid-ocean ridge areas and hence provide a basis for world-wide exploration of ridge-associated communities and ecosystems.

MAR-ECO leaves the chemosynthetic communities to the CoML project ChESS, and studies organisms that directly or indirectly utilizes photosynthetic production. The greatest focus is on mesopelagic and benthopelagic macro- and megafauna (nekton and macrozooplankton), and their trophic relationships. Benthic fauna is described in selected habitats based on by-catches in trawls and ROV-observations.

MAR-ECO adopts the most advanced technology and instruments for observing and sampling the animals and to tackle the challenge of working in the water column and near the seabed to 3500 m depth and in rugged terrain. An international multidisciplinary team of biologists, oceanographers, and engineers are engaged in the project. A number of countries have committed their best research vessels. A "backbone effort" was the 2004 two-month major international expedition on the Norwegian vessel RV *G.O. Sars*, but vessels from Iceland, Russia, Germany, the United Kingdom and Portugal has also contributed to the field work. In June 2003 a Russian-US cruise using the manned submersibles MIR-1 and -2 took scientists to areas never before visited by humans at 4500m in the Charlie-Gibbs Fracture Zone.

Results of MAR-ECO are emerging and a few publications have already appeared. Some highlights:

- A preliminary inventory of *demersal fishes* collected on 17 bottom trawl stations by the RV *G.O.Sars* show that 69 species occurred in the area. Some specimens still have to be identified by experts, and a sub-set may represent new species to science. However, the remarkable result is that about 22% of the identified species were new to this geographical area. This shows that the level of knowledge of mid-ocean fish fauna remains low, and that MAR-ECO will significantly enhance knowledge on occurrence and distribution.
- The *pelagic fish* fauna is more diverse. Thus far 209 species from 56 families have been recorded in the catches from midwater trawls. But again, some identification challenges remain and are currently dealt with by experts.
- Several descriptions of new species of *fish parasites* are being submitted. The knowledge of deep-sea fish parasites is very limited indeed, and parasite studies also form an element of food-web studies.
- The knowledge of the *mid-ocean cephalopod fauna* is being enhanced by the analysis of the extensive collections from the *G.O.Sars* cruise and the associated RV *Delaware II* cruises to the New England Seamounts. A total of 1261 specimens were recorded in the *G.O.Sars* midwater and bottom trawls, representing 25 families. At least two species new to science are being described, and for the more abundant species new community data and distribution pattern will be revealed.
- The analyses of the zooplankton samples from several cruises are time-consuming, hence mostly preliminary results have been presented. The *mesozooplankton* sampled by nets is dominated by copepods of which 145 species have been identified thus far. The *macrozooplankton* sampled by larger nets and midwater trawls was dominated by decapod shrimps, euphausiids, and lophogastrids, and the large cnidarians *Periphylla periphylla* and *Atolla* spp. However, there is also a wide range of gelatinous forms (medusae, ctenophores, siphonophores, pelagic tunicates) not sampled well by nets. These were primarily observed by ROVs, and several undescribed forms were recorded. New knowledge on the chaetognath fauna is also to be expected, based primarily on samples from special plankton nets mounted on the midwater trawl. Special efforts are also made to identify and study the distribution of fish eggs and larvae (collected on several cruises).
- About 150 species of benthic invertebrates were collected as by-catch in the bottom trawls of the RV *G.O.Sars* (depth range 826-3505m). Most groups have been re-examined by experts and new species will be described for groups such as holothurians and sponges. There is also extensive footage of benthic and benthopelagic invertebrates from ROV dives, and not least from the MIR dives in the Charlie-Gibbs Fracture Zone. One result will be inventories of occurrence of corals along the mid-Atlantic Ridge, i.e. new data of particular significance for management of habitats and fisheries.
- In a paper in *Nature* (Holland *et al.* 2005) data and images from both the MIR dives in 2003 and the *G.O.Sars* cruise in 2004 were used to document the discovery of a new family of deep-sea *Enteropneusta* (Hemichordata)(see below). This closed a lengthy discussion over the identity of these strange animals, seen from submersibles in many

locations. MAR-ECO scientists Michael Vecchione and Andrey Gebruk contributed to this paper.

- MAR-ECO offers a unique opportunity to study the occurrence and distribution of marine mammals (essentially cetaceans) and seabirds in a mid-ocean environment. Sighting data from several cruises have provided new distribution information for a range of small and large species. In April 2005, attempts during the *G.O.Sars* cruise to attach satellite tags on large baleen whales were followed up, and 3 sei whales (*Balaenoptera borealis*) and 1 blue whale (*Balaenoptera musculus*) were tagged. One of the sei whales was followed for a distance of 1920 nautical miles while migrating north to the Charlie-Gibbs Fracture Zone where it spent an extensive period of time before migrating westwards off the mid-Atlantic Ridge (see more information on www.mar-eco.no)

Many preliminary analyses confirm the early suggestion that distributions and ranges of many taxa are strongly related to the occurrence of the sub-polar frontal zone near the Charlie-Gibbs Fracture Zone. This is not unexpected, but documentation is now forthcoming for the first time. Process studies in the frontal zone are already being planned as follow-up activities of the larger-scale mapping efforts. The US and UK cruises in coming years will focus on processes in these waters.



References:

Holland, N.D., Clague, D.A.; Gordon, D.P., Gebruk, A., Pawson, D.L., Vecchione, M. 2005. 'Lophenteropneust' hypothesis refuted by collection and photos of new deep-sea hemichordates. *Nature* 434: 374-376.

CeDAMar – recent activities and accomplishments in the abyss

Website: www.cedamar.org

The year 2005 was marked by two major expeditions to the Southern Ocean (ANDEEP III) and the Atlantic basins off southern Africa (DIVA 2), as well as publication of two special volumes reporting first results of the expeditions ANDEEP I/II (Deep-Sea Research II 51, published in December 2004) and DIVA 1 (Organisms Diversity and Evolution 5 Suppl. 1, published in

February 2005). CeDAMar has thus taken a major step toward its goal of a census of benthic communities in deep-sea basins and abyssal plains of the eastern Atlantic from pole to pole.

CeDAMar taxonomists also have come closer to another major goal, the description of 500 key species. The count is now up to 186, including redescriptions of already known species. These redescriptions become necessary when museum material containing more than one species under the same name is examined.

The two expeditions were as enjoyable and exciting as they were scientifically successful and prolific. ANDEEP III took place from 21 January to 6 April, 2005 on board of the German icebreaker *Polarstern*. The cruise track started in Cape Town, South Africa and ended in Punta Arenas, Chile. The ship was shared by 30 ANDEEP participants and 25 oceanographers working on a different programme, providing many good opportunities for cross-discipline discussions. Biological stations were sampled with the standardised set of gear in the Cape and Agulhas Basins, the Weddell Sea Abyssal Plain, along downslope transects off Kapp Norvegia and in the Powell Basin, and in the Bellingshausen Sea off Anvers Island.

DIVA 2, an expedition to the Cape, Angola, and Guinea Basins off the west coast of Africa, took place from 25 February to 30 March aboard the RV "Meteor", involving 28 scientists from several nations. Day by day experiences of both expeditions could be followed through the CeDAMar cruise-log at www.deepsea-research.org, a very successful site with more than 370.000 visitors, including both scientists and the general public, by the end of both expeditions.

The role of phytoplankton blooms in the Southern Ocean with regard to global carbon cycling and climate change was investigated during two research expeditions to the uninhabited Crozet Islands (located in the Indian Ocean about 2500 km off South Africa) on RRS *Discovery* between November 2004 and January 2005. A third RRS *Discovery* cruise is now in the region (3 December 2005 to 15 January 2006) taking a comprehensive suite of benthic samples. Two deep-water (4200 m) sites, one ENE of the islands and one to the south, were also chosen to compare the effects of the seasonal phytoplankton (or the lack of it) on deep seabed communities.

Samples, both quantitative and qualitative, are being sorted and identified at present by a large international community of specialists, and still photographs and video footage of the seafloor are analysed for biological and non-biological parameters, such as sedimentary characteristics. First published results from the different CeDAMar projects indicate that:

- Distributional patterns vary among gross taxonomic groups, regarding both geographical and bathymetric ranges;
- Infaunal densities are low in all size groups analysed to date (little is known about microorganisms);
- Species richness is high compared to densities, with many taxa found at only one or very few stations (even though sample bias resulting from relatively few samples has to be considered);
- In the deep southern Atlantic, there seems to be no barrier to the deep Southern Ocean, allowing for faunal overlap to a much greater extent than on the shelf;
- About 50 to nearly 100%, depending on the gross taxonomic group, of all species are new to science.

CenSeam: Advancing our global understanding of seamounts

Website: www.censeam.niwa.co.nz

Seamounts have been commonly referred to as oases in the ocean and features where animals can live well away from land surrounded by very deep water – yet our knowledge of seamounts is such that these notions can neither be refuted nor accepted. Under the umbrella of the Census of Marine Life (CoML) the project CenSeam will conduct a global census of marine life on seamounts, and work towards quantifying what is known, unknown, and will never be known about life on seamounts.

CenSeam commenced at the start of 2005 and the secretariat is hosted by New Zealand's National Institute of Water and Atmospheric Research (NIWA). The Secretariat for CenSeam comprises Malcolm Clark (Principal Investigator, PI), Ashley Rowden (co-PI) and Mireille Consalvey (post-doctoral co-ordinator) from NIWA and Karen Stocks (co-PI) from the University of California San Diego, USA. CenSeam is currently in a planning and expansion phase to be followed by field expeditions (2006-2009) with all information being analysed and integrated to contribute to the final CoML report in 2010.

The known

Seamounts (or undersea hills and mountains) are found in every ocean of the world. Rising hundreds to thousands of metres above the seafloor seamounts are typically volcanic in origin with a distinctive cone shape and formed of hard substrate. There are potentially 100 000 seamounts greater than a km high and many more of smaller elevation yet less than 400 have been sampled, and of these, less than 100 in sufficient biological detail. Furthermore, the global sampling effort has been geographically biased - high latitude as well as equatorial seamounts are currently under sampled and the majority of sampled seamounts have summit depths of less than 500m, sampling being limited by practical and financial capabilities.

We know that seamounts can support high levels of biodiversity and endemism, that they can play an important role in patterns of marine biogeography, and that they can be highly productive ecosystems acting as feeding grounds for fishes, marine mammals and seabirds. However, our current state of knowledge is such that these observations cannot be taken as generalisations. As well as their potential ecological value seamounts have proven their economic worth for commercial fishing and are currently being explored as a resource for seabed mining. However, the long term impacts of such activities remain unknown.

Addressing the unknown

There is an active seamount research community and a key aim of CenSeam is to unite this effort, providing the necessary framework to progress a more globally-encompassing synoptic understanding of how seamount ecosystems are structured and function. Recognising that it is not feasible to sample all the world's seamounts, future sampling must be strategically guided to fill critical knowledge gaps and target understudied regions and types of seamounts.

CenSeam aims to establish the roles that seamounts play in the biogeography, biodiversity, productivity and evolution of marine organisms in order to determine the effect and contribution of seamounts to the global oceanic ecosystem. Three key questions will be addressed (1) What factors drive seamount community structure, diversity and endemism both at the scale of the

whole seamount and individual habitats within seamounts? (2) What key processes operate to cause differences in biodiversity between seamounts, and between seamount and non-seamount regions? (3) What are the impacts of fisheries on seamount community structure and function?

To this end CenSeam has identified 4 major goals: (1) to co-ordinate and expand both existing and planned seamount research (2) to foster new field expeditions to priority areas (3) to synthesize and analyze existing data and (4) to communicate the findings through public education and outreach. Mini-grants are currently being advertised (<http://censeam.niwa.co.nz>) to expand the scope of already funded research and to encourage data recovery and linkage.

In May 2005 a CenSeam community workshop was held (in the Azores) in conjunction with a planning meeting for the book "Seamounts: ecology, fisheries and conservation" (eds. T. Pitcher, P.J.B. Hart, T. Morato, M. Clark and R.S. Santos to be published by the Blackwell Science *Fish and Aquatic Resources Series* in 2006). The meeting provided the perfect platform to introduce the scientific community to CenSeam and enabled formal and informal discussions to begin the prioritization of regions and types of studies, identify proposal opportunities, and plan future seamount work.

Concurrently with the workshop two working groups, the Standardization and Data Analysis Working Groups (SWG and DAWG) were established and will be integral to CenSeam. The SWG will discuss methods already in existence and, where possible, will explore means of standardizing sampling gear and survey design as well as subsequent reporting in order to guide current, as well as new, sampling programmes. The potential uses and standardization of new technologies will also be investigated e.g. remote sensing, non-invasive observational methodologies such as submarine photography. Meanwhile DAWG will utilize the online databases SeamountsOnline (<http://seamounts.sdsc.edu/>) and OBIS (<http://www.iobis.org/>) to evaluate and review the data that are available, and consider the techniques to analyze these and other information. This process will additionally identify "missing" data and aid in the identification of priority regions for future study. On the basis of an initial assessment of data contained in SeamountsOnline, potential target areas for CenSeam include the Indian Ocean and the Mid/South Pacific. The DAWG will additionally hold a workshop at the start of 2006 to assess the biodiversity and vulnerability of deep-sea corals on seamounts beyond areas of national jurisdiction.

The Unknowable

There are, of course, clear limitations to what can be achieved by 2010 - but through enhanced networking CenSeam will seed new expeditions to study previously un-sampled areas, make significant progress on standardizing sampling gear/design, increase the scope of SeamountsOnline, improve our taxonomic knowledge of seamount fauna and hopefully energize the global seamount research effort.

ChEss – Biogeography of Deep-Water Chemosynthetic Ecosystems

Website: <http://www.noc.soton.ac.uk/chess>

Our understanding of the biogeography of chemosynthetic ecosystems is limited to detailed studies of only a small number of sites around the globe (Van Dover et al., 2002). Of these, hydrothermal vent systems are probably the best known. Deep-water hydrothermal ecosystems were discovered in 1977 in the Galápagos Rift (Corliss et al., 1979). The vent faunal communities are fuelled by chemical energy in the form of reduced inorganic compounds such as hydrogen

sulphide. Chemoautotrophic bacteria use these elements for primary production and are found both free living forming bacterial mats and in symbiosis with some of the major faunal groups. Vent systems have a linear (along-axis) and global-scale distribution, are dynamic and discrete in time and space, have specific physico-chemical parameters and their fauna is constrained to chemosynthetic-based food webs. This combination of properties makes these systems ideal for biogeographic studies (Tunnicliffe et al., 1998). Further exploration of new sections of ridge-crest at key locations will certainly provide crucial data leading towards a global understanding of vent species distribution and the processes driving these communities. The interest on chemosynthetic ecosystems was strengthened with the discovery of cold seep communities in the Gulf of Mexico in 1984 (Paull et al., 1984) and that of chemically-driven assemblages in other other reduced sediment habitats such as whale falls (Smith et al., 1989), sunken wood and areas of low oxygen intersecting with the margin. These systems are under study but much remains to be explored (Sibuet and Olu, 1998; Levin, 2003; Smith & Baco, 2003; Tunnicliffe et al., 2003). Studies on the functional diversity of species, nutritional pathways and evolutionary radiation are essential if we are to understand the relationships amongst all chemosynthetically driven communities.

The main goal of ChEss is to determine the biogeography of deep-water chemosynthetic ecosystems at a global scale and to understand the processes driving them. ChEss addresses the major CoML issues of diversity, abundance and distribution of marine species, focusing on deep-water chemically-fuelled (as opposed to purely photosynthetic) reducing environments. It is the aim of ChEss to promote international collaboration in order to fulfill our objectives in the three primary components, namely field projects, database and outreach.

The ChEss international coordination office was established at the National Oceanography Centre, Southampton between 2002 and 2005, and is now shared with a new office at the Marine Sciences Institute (CSIC) in Barcelona, Spain. ChEss has an international scientific steering committee that develop the specific science plan, selected the key target areas for exploration and investigation and plans for future research. The field program comprises a number of specific research projects in key locations. These projects address major scientific questions that will improve our knowledge and understanding of the biogeography, biodiversity and ecology of species from chemosynthetic ecosystems. The specific objectives of the ChEss field programme are:

- ➔ To locate and investigate novel chemosynthetic sites in key geographic locations.
- ➔ To describe the physical and geochemical parameters of the habitat and describe the fauna of the new sites.
- ➔ To use both morphological and molecular methods for taxonomic and population biology studies.
- ➔ To understand the dispersal mechanisms of larvae from and to hydrothermal vents, cold seeps and other reducing environments.
- ➔ To study the phylogenetic and evolutionary relationships of species amongst different chemosynthetic ecosystems.

A prioritised series of target areas for future investigation have been selected, worldwide, based upon our present knowledge on the geological, physical and chemical controls of the origin and functioning of deep-sea chemosynthetic ecosystems. Because the most urgent areas are typically located at the most remote and un-studied parts of the global deep-ocean, the location and detailed investigation of these sites and their associated fauna requires a high degree of international collaboration and co-ordination. Not least, amongst such issues is the requirement to arrange access to, and best practice for the use of state of the art technologies, including AUVs, ROVs,

submersibles, deep-towed vehicles, in situ sensors and state of the art biogeochemical and molecular techniques.

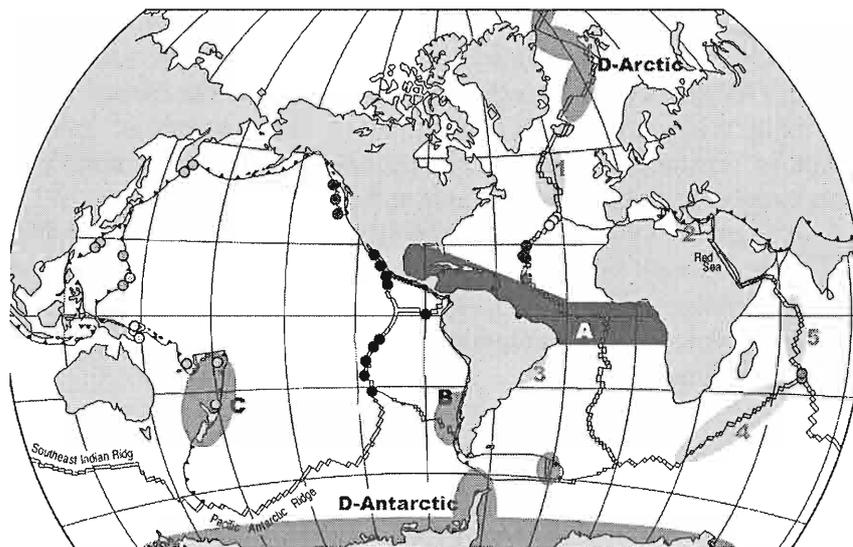


Figure 1. ChEss target areas. Pink and blue areas are primary field project sites where international concerted effort is required: A- Equatorial Belt; B- SE Pacific off Chile; C- NZ region; D- Polar regions. Yellow areas indicate sites for further work supported by ChEss: 1- northern MAR; 2- Eastern Mediterranean; 3- Brazilian margin; 4- SW Indian Ridge; 5- Central Indian Ridge. Map © Ifremer

In addition to our field programme, a dynamic relational web-based database (ChEssBase) (www.noc.soton.ac.uk/chess/database/database.html) is being developed to provide online taxonomical, biological, ecological and distributional data of all species described from deep-water chemosynthetic ecosystems, as well as images, bibliography and information on the habitat. This database is now integrated with OBIS (Ocean Biogeographic Information System).

Taking advantage of the particularly visually compelling nature of many chemosynthetic environments and the sophisticated deep submergence vehicles used to investigate them, ChEss is developing a strong outreach and education component. The main goal for the outreach program is to increase awareness of chemosynthetic ecosystems among the public, non-governmental organizations and decision makers. This is being achieved using diverse approaches including web-based information, audio-visual and printed material, exhibitions and collaboration with related outreach programs.

CoMarge: Continental Margin Ecosystems

Website: Under development but contact (lenaick.menot@ifremer.fr) for details

COMARGE was launched in 2005, is among the youngest of the 14 field projects of the Census of Marine Life. The project was formed because it was clear that the biodiversity of continental margins cannot be assessed nor understood without considering their structural and functional complexity. Indeed, during the past few decades, our understanding of deep continental margin

habitats has changed more than for any other large area of Earth. It is only in recent times, with higher resolution bathymetry and increased bottom sampling, that areas once envisioned as monotonous landscapes are now acknowledged to have a high degree of complexity and diversity. The great variety of geological and hydrological settings on continental slopes produces many different habitats. It is clear that continental margins are both very complex and active regions ecologically, geologically, chemically, and hydrodynamically. Fundamental patterns of species distribution first observed and explained in the context of monotonous slopes must now be re-evaluated in light of the newly recognized heterogeneity. The issues addressed by CoMargE concern two main scales of margin heterogeneity: the fragmented habitats of high biomass production and/or distinctive species composition collectively termed 'Hotspots' and the environmental variability found along latitude and depth gradients.

At the 'Hotspot' scale, COMARGE will benefit from deep-sea cruises within the framework of national and international initiatives, such as the integrated European-funded programme HERMES www.eu-hermes.net/. In association with other CoML field projects (ChEss, CenSeam), COMARGE's intent is to study the interaction between hotspots and the larger margin ecosystem. The main targeted habitats are:

Deep corals

Cold-water reefs can be several kilometers long and form carbonate reefs that provide distinct habitats for various communities such as sponges, clams, soft corals, echinoderms and crustaceans. Deep-corals locally enhanced the biodiversity of continental margin and may influence the surrounding benthic communities



Figure 1: Patches of deep-sea corals on the North-Eastern Atlantic margin at 2000 m depth (Caracole cruise, Atalante/ROV Victor, © Ifremer)

Canyons

Canyons contain complex ecosystems including hard substrata and mobile sediments on the canyon floor. Many endemic species may inhabit canyons. We do know that there is considerable inter-canyon variability in dominant species which may be related to particular environmental characteristic of each individual canyon. What is not known is the influence of canyons on the biodiversity of the wider continental slope.

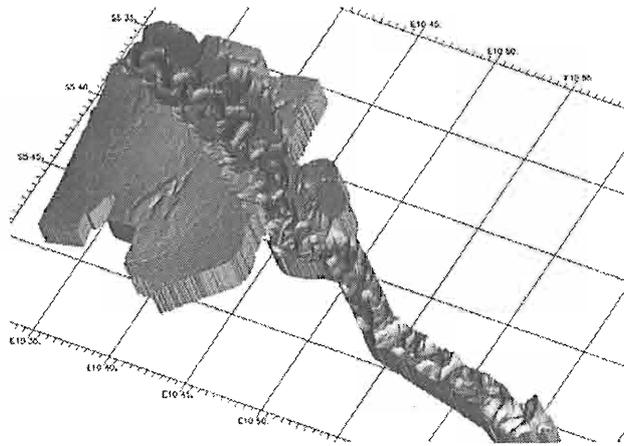


Figure 2: A 3D diagram of the Zaire deep-sea fan (Zaingo project, © Ifremer)



Figure 3: The Napoli mud volcano in Eastern Mediterranean Sea, 2000 m depth (Nautinil cruise, Atalante/Nautile, © Ifremer)

Cold seeps

Cold seep ecosystems have been recently discovered in a variety of geological settings. The presence of these unique ecosystems in regions of low animal density highlights the crucial role of local resource enrichment on benthic community composition and productivity. This aspect is complementary to that study of cold seeps in ChEss.

Oxygen Minimum Zones

OMZs are formed beneath highly productive, upwelled waters by degradation of organic matter. Where these low oxygen regions intercept the continental seabed, faunal densities and diversity are reduced and the taxonomic composition is modified. At the edge of OMZs, faunal densities are enhanced.



Figure 4: Shrimp and rattail fishes at the lower boundary of an Oxygen Minimum Zone on Volcano 7 off Mexico, 900 m (courtesy: L. Levin, Scripps)

At a global scale, CoMargE aims at verifying, refining, and gaining a better understanding of biological patterns already observed in well-studied regions such as (1) a sharp decrease in biomass with depth; (2) changes in species composition with depth, and (3) a maximum in species richness occurring at middle to lower slope depths. To achieve this goal, CoMargE will collect and synthesize existing data to provide general underlying principles of the processes regulating biodiversity and generate hypotheses to be tested at new localities. In order to study unexplored regions, CoMargE will gain from baseline surveys carried out by oil companies off the coasts of Africa and South-America for example. Latitudinal trends and especially poleward trends in biodiversity patterns along continental margins will benefit with two other CoML field projects ArcOD and CAML.

To achieve its goals, CoMargE intends to create a network of researchers to facilitate coordination among projects and cruises, to foster data sharing, to support data archiving and finally to assure the maximum synergistic value for continental margin studies. As a first step, the purpose and questions of the project will be disseminated to a wide community of scientists. A challenge of the Census of Marine Life - CoMargE will be to overcome taxonomic impediments in order to disseminate through OBIS comprehensive species lists for a wide range of habitats. COMARGE's intent, together with other deep-sea CoML field projects, is to foster the development of taxonomic expertise through workshops and exchange of taxonomists.

CAML: The Census of Antarctic Marine Life (CAML) - An Initiative for the International Polar Year 2007/08

Website: www.caml.aq

The Census of Antarctic Marine Life (CAML) is a 5-year international program to investigate the distribution and abundance of Antarctica's marine biodiversity. The aim is to study how biodiversity is affected by environmental change, and how change will alter the nature of the ecosystem services provided by the Southern Ocean.

In the collaborative ethos of the International Polar Year (IPY), the CAML has been endorsed as a major IPY initiative and adopted by the Scientific Committee on Antarctic Research (SCAR) as a central component of its program *Evolution and Biodiversity in Antarctica*. The Joint Committee of ICSU/WMO for the IPY has assessed the CAML and its 23 clustered projects as having the potential contribute to significant international scientific collaboration in the field of marine biodiversity.

SCAR has successfully obtained funds for the coordination of CAML from the Alfred P Sloan Foundation (USA) under the umbrella of the ten-year *Census of Marine Life* (www.coml.org). Funds are provided for project management, workshops and database, together with education and outreach activities.

In addition to traditional taxonomy, the use of powerful new genetic and molecular tools will determine the extent to which the Antarctic marine fauna and flora is responding to change. CAML will collaborate with oceanographers in its work, focussing on the integrated nature of environmental and biological change. Research will be conducted in the pelagic, sea-ice, and benthic realms in as many locations around Antarctica as the provision of research vessels will

set of traditional ice cores is currently being processed for algal and meiofaunal biomass and diversity.

At 12 stations, profiles of larger zooplankton were obtained using the HD camera on an ROV, while smaller zooplankton was assessed with using a multinet to 3000 m. More than 100 hours of HD video was collected, providing a record of these life forms undisturbed in their natural habitats. This expedition represents the first comprehensive look at composition and vertical zonation of the zooplankton in the Canada Basin, particularly so for the gelatinous forms, which were a major focus of this project.

Overall, the abundance of medusae and ctenophores was high considering the relatively low biomass of the mesozooplankton. Within the ctenophores, the number of species known to occur in the Arctic was doubled; at least 3 of these species are undescribed. The exploitation of a deep-sea epibenthic habitat by one of these new ctenophores represents a form of habitat utilization previously undocumented for this group. Within the medusae, more than 6 species can be added to those known to inhabit the Arctic. At least 1 new species was found in considerable abundance, and several others may also prove to be new species upon further examination. Two new deep-water larvacean species were also observed and collected during the expedition. Samples of at least 60 pelagic species are ready for molecular characterization to be undertaken by the CMarZ project.

Benthic sample collections included 39 box cores at 12 stations, HD video during 8 benthic ROV deployments, 10 camera platform deployments, 3 trawls and >1000 tissue samples for food web studies from all realms. At least three suspected new species of polychaetes were discovered during the Hidden Ocean expedition. Polychaete worms dominated the infauna, followed by mollusks and crustaceans. At least seven polychaete species and one ophiuroid species collected marked significant range extensions in geographical area and/or in depth. More range extensions and potentially new species are expected once the full set of samples is analyzed. Key findings also included higher than expected faunal densities in the megafauna, which was dominated by echinoderms, cnidarians and crustaceans. The first results on the benthic megafauna, obtained from deep-sea still imagery, will be presented at the December AGU Meeting in San Francisco, California.

Our findings are significant because they challenge the concept of latitudinal clines in biodiversity towards the poles and stress the poorly studied nature of the study area and the need for baselines before climate change affects it.

allow. The deep sea is a high priority; it has been less sampled than other realms. In particular, CAML is closely connected with the ANDEEP-SYSTCO project.

SCAR's Scientific Steering Committee for CAML held a planning workshop with about 20 invited experts in Brussels in May 2005 to prepare a comprehensive science plan for the CAML. This year, the CAML program been presented at scientific conferences in Brazil, Copenhagen, Sofia, Darwin, Cairns and Frankfurt. Details of the CAML program, its Science Statement and international Scientific Steering Committee are available at www.caml.aq.

The next meeting of CAML's Scientific Steering Committee will be held 6-8 June 2006, by kind invitation of the Alfred-Wegener-Institut in Bermerhaven, Germany. CAML is currently designing uniform sampling protocols across projects and locations, to maximise the opportunities for comparison of data and integrated research. A major focus at present is the coordination of research vessels in Antarctic waters during the IPY.

ArcOD: Arctic Ocean Biodiversity

Website:

The *Arctic Ocean Diversity* (ArcOD) project is one of the field projects of the Census of Marine Life. ArcOD is an international collaborative effort to inventory biodiversity in the Arctic sea ice, water column and sea floor from the shallow shelves to the deep basins using a three-step approach: compilation of existing data, taxonomic identification of existing samples, and new collections focusing on taxonomic and regional gaps. ArcOD began in 2004 and is led by researchers at the School of Fisheries and Ocean Sciences in Alaska Fairbanks and Russian scientists from the Russian Academy of Sciences in Moscow and St. Petersburg.

2005 has been a very intense and exciting year for ArcOD: ArcOD researchers organized and participated in an Arctic Ocean Exploration cruise to the Canada Basin June 26-July 26, 2005. The major focus of the expedition was on a census of the high Arctic deep-sea fauna and ice flora in the Canada Basin. All three major realms, the sea ice, water column and the sea floor, were sampled using both traditional techniques (nets and corers) and state-of-the-art optical tools including a Remotely Operated Vehicle (Global Explorer by Deep Sea Systems), SCUBA divers and a camera platform depth rated to 6000 m. Background essays, explorer bios, lesson plans and daily logs can be viewed at NOAA's Ocean Exploration web site at <http://www.oceanexplorer.noaa.gov/>.

The strength of ArcOD expeditions has been the collaborative effort between physical-chemical oceanographers, biological oceanographers, marine biologists, and seafloor mapping experts in investigating the three realms of the Arctic, the sea ice, the water column and the sea floor. Numerous collections were made at 14 stations during this multi-disciplinary 4-week expedition. To our knowledge, this sample set is the most comprehensive data set collected in the study region. Operational challenges in an ice covered area included deployments of an ROV down to 2850 m, camera platform down to 3850 m, SCUBA divers under pressure-ridges, and benthic trawling. Even deployment of traditional gears such as nets and corers is not trivial in this area.

The detailed under-ice SCUBA observations during the Hidden Ocean 2005 cruise provided us with very accurate estimates on abundance and diversity of under-ice fauna. Arctic cod and amphipods were observed at nearly all stations. Abundances varied from close to 0 to >100 amphipods/m². The changes in diversity and abundance will be related to environmental data. A

CONFERENCE REGISTRATION FORM

Your details

Name: _____ Title (Dr., Prof., Ms., Mr.): _____
Organisation: _____
Address: _____
Telephone: _____ Fax: _____ Email: _____
Name(s) of accompanying persons: _____

Please note the fees below include the conference banquet, to be held on the evening of the 12th July 2006. If you have any special dietary needs, please detail below.

- Vegetarian Vegan
 Other dietary requirements (please state): _____

Please also indicate whether you will attend the Survivors Supper on Friday 14th July
(cost not included in registration fee, estimated at C. £20 per head, pay your own way)

Payment

All prices quoted are per person.

Registration deadline: 01 April 2006

- Standard registration:** £195 Basic conference fee & banquet
 Student registration: £165 Basic conference fee & banquet
 Accompanying person: £50 Ice-breaker reception, excursion and conference banquet

Late registration: After 01 April 2006

- Standard registration:** £245 Basic conference fee & banquet
 Student registration: £215 Basic conference fee & banquet
 Accompanying person: £70 Ice-breaker reception, excursion and conference banquet

Please indicate below how you would like to pay:

Credit card Cheque (Cheques should be made payable to University of Southampton)

Credit card payment: VISA MasterCard Switch/Maestro

Cardholder's name: _____

Address where card is registered: _____

Card number: _____

Expiry date: _____

Issue No. _____

Invoices can be issued on request



HALLS OF RESIDENCE ACCOMMODATION BOOKING FORM

NAME		NAME OF ORGANISATION	
INVOICE ADDRESS		TELEPHONE NUMBER	
		FAX NUMBER	
COUNTRY		E:mail ADDRESS	

RESIDENTIAL ACCOMMODATION			
ARRIVAL DATE		NO. OF NIGHTS	
DEPARTURE DATE		NO. OF BEDROOM(S)	
ARRIVAL TIME		CONFERENCE TITLE	Deep Sea Biology Symposium 2006
DEPARTURE TIME		VENUE OF CONFERENCE	Southampton Solent University Conference Centre

ADDITIONAL INFORMATION	
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Full payment for your stay is required prior to arrival. To arrange payment for your stay or if you require any further information please contact the Commercial Operations Unit at:

Southampton Solent University, East Park Terrace, Southampton. SO14 0RN
 Tel: +44 (0)23 8031 9274 Fax +44 (0)23 8031 9620
 E:mail: conference.centre@solent.ac.uk



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Conference Centre

Terms & Conditions

1. Booking & Payment

1.1 Written acknowledgement or receipt by the University of a booking form completed by the organization of a conference / seminar shall be confirmation that the booking has been accepted by the University.

1.2 An alphabetical list of residents must be provided not less than 10 days before the start of the event. Final numbers must be provided not less than 10 days before the event or the start date of the booking. Failure to comply with notification of final numbers will result in the charge being based on the maximum numbers booked. Both these requirements will be rigorously enforced.

1.3 Value Added Tax: Tax at the appropriate rate, applying at the time of the conference will be added to all charges. The University is able to provide some services exempt of VAT to suitable qualified organizations / conferences. You are advised to consult your financial advisor to establish whether you might be eligible for such relief under the VAT (education) Order 1987. Further details may also be obtained from the University.

1.4 Confirmation of booking is issued upon receipt of a non-returnable deposit calculated at 10% of the estimated total cost established at the time of booking is made. A further instalment should be paid no less than 30 days before the first day of the period of letting calculated at 90% of the estimated total at that time. The final balancing payment of the charge for the use of the said accommodation, facilities and services shall be made to the University within 30 days after the termination date of such letting.

2. Cancellations

2.1 A percentage of the total conference / course charge including catering charges shall be payable in the event of cancellation of the booking as follows:

- 10% in the event of cancellation within 8-20 weeks of the date of the commencement of the conference / course
- 20% in the event of cancellation within 22/55 days of the date of the commencement of the conference / course
- 40% in the event of cancellation within 21 days of the date of the commencement of the conference / course

2.2 Money will not be refunded in the event that the accommodation, facilities or services booked by the hirer are not used on the day or days specified.

3. Short Fall to Numbers

3.1 In the event that the numbers attending any function or letting are significantly reduced below those stated on the application form, the University authorities may, at their discretion, impose either a surcharge on the charges previously stated or require the cancellation of the booking.

4. Termination of Letting

The following provision relating to the termination of the hiring shall apply:

4.1 The University reserves the right to terminate any letting at any time prior to the hiring where it is considered that the use of the premises is likely to occasion a very real risk of disorder or damage or injury to persons or property.

4.2 Should the University be required by prior arrangement or by law to provide accommodation for any person or purpose, the right is reserved to cancel at any time any conflicting arrangements for the hiring to the applicants of all or any of the accommodation, facilities or services even if the hiring has been previously confirmed.

4.3 The University reserves the right to terminate any letting without notice where serious complaints are received as to the use of the premises by the hirer.

4.4 In the event of termination of letting a proportionate part of any payment made by the application (or in cases of 4.1 and 4.2 above, the whole of such payment) representing the payment for the unexpired period of letting shall be refunded to the applicant and such refund shall be accepted by the applicant in full satisfaction of any loss or damage caused by the cancellation and the University shall have no further liability in that respect.

5. Organizer's Duties

The Organiser shall insure that:

5.1 The total number of persons using the accommodation shall not exceed the number for which it has been booked.

5.2 Contractors and other workers are not brought on to the University premises except by prior agreement with the University.

5.3 The residential group / conference / course and all functions relating to it are conducted in a lawful and orderly manner such that no nuisance or annoyance is caused to the University or other lawfully on the University premises and that the University name or standing is not brought into disrepute.

5.4 The University has legal responsibility to ensure the freedom of speech is maintained on its premises. To this end organizers are obliged to declare to the University any meeting where the topic or speaker may provoke a reaction which may threaten freedom of speech at least 21 days in advance of the booking.

5.5 They comply with the reasonable instructions of the University officers for the property and efficient management and protection of the University's facilities. The hirer shall not cause or permit any interference with the gas or electric lighting switches, pipes, wires or other installations on the premises nor fix or attach any decorations or erect any stands, platforms etc. without the written consent of the University.

5.6 It is the responsibility of the hirer to ensure that he/she complies with all requirements of law referring to copyright or intellectual property rights. In addition it is the responsibility of the hirer to ensure compliance with the law in respect of whichever of the under noted Acts is applicable (or any legislation amending them) Local Government (miscellaneous Provisions) Act 1982, Theatres Act 1968, Cinemas Act 1985.

5.7 It is the responsibility of the hirer to ensure that all electrical equipment and wiring which is used or installed for the purpose of the hiring (other than that which is used or installed by the University staff) must conform with the Electricity at Work Regulations 1989 and the 16th edition of the Institution of Electrical Engineers Regulation for Electrical Installations and the hirer will indemnify the University against any damage.

5.8 Certain facilities such as the Sports Hall and similar may be used only when a qualified instructor is present. It will be the responsibility of the hirer to agree such provision with the University authorities prior to any use of such facilities.

The University reserves that right to refuse any application.

5.9 It is the responsibility of the organiser of all residential bookings that they should instruct their members/delegates of the necessity to read and observe the Fire & Safety regulations posted in the University building.

6. Industrial and Other Disputes

6.1 In the event of any Industrial disputes affecting the provision of services in the University, the University cannot accept responsibility.

7. Liabilities

7.1 The University accepts no liability for loss arising from the failure of electricity, heating systems, water supplies, fire, flooding, or for any other cause beyond its reasonable control, which may cause the University premises, or part of them to be temporarily closed, or the booking to be interrupted, interfered with or cancelled.

7.2 The University accepts no responsibility for loss or damage to property brought on to University premises, howsoever caused.

7.3 The University accepts no liability for any consequential loss, or other loss, damage or injury howsoever caused which may arrive out of, or in connection with the use of the University premises by conference/course participants, the organiser, their agents, servants or contractors.

7.4 The organisers shall accept full responsibility for making good any damage caused to the premises, furniture, equipment or other property of the University, where such damage has been caused by the conference/course participants, the organizers, their agents/servant or contractors.

7.5 All lost keys will be subject to a replacement charge.

7.6 The organisers shall be liable for, and shall indemnify the University against, any claims against it of whatsoever nature including, but not limited to, claims in respect of death, injury, loss or damage; where such claims are caused by, or arise from reason of the acts, omission or negligence of conference/course participants, the organizers, their agents, servants or contractors.

8. Insurance

8.1 The organizers shall hold or take out public liability insurance and/or event insurance as appropriate. This should be for a minimum of £2 million, preferably £5 million. In any event the hirer should ensure that the insurance covering the above mentioned risks should be adequate to cover all circumstances for the benefits of the organiser and the University.

8.2 Whilst Southampton Solent University are not able to recommend or approve any particular insurer, the organiser may wish to approach the following insurance company for their specific insurance needs:

Insurex, Expo-Sure Group, The Pantiles House, 2 Neville-Stratt, Royal Tunbridge Wells, Kent. TN2 5TT. Tel: (01892) 511 500. An alternative to this is Event Insurance Services, 20A Headlands Business Park, Ringwood, Hants, BH24 3PB, Tel 01425 470360

