

7th Deep Sea Biology Symposium

KNOSSOS ROYAL VILLAGE HOTEL, CRETE Thursday Sep. 29 - Tuesday Oct. 4, 1994

THIRD ANNOUNCEMENT

Dear friends and colleagues,

The time for our Symposium is approaching, and here are the latest news. Part of the Symposium details given in the Second Announcement (D.-S.N. No. 21) are repeated below – otherwise we shall refer you to the Second Announcement.

It seems that the meeting will be ity well attended, since registration forms are being received every day. A total of 158 participants from 18 countries (see list below) have expressed their intention to participate in the event. The subjects to be presented touch upon all aspects of deep-sea biology. A fair number of young scientists have already registered, and we would like to encourage even more to do so.

Since our meeting takes place once every three years the organizing committee would like to stress the fact that it should not only be viewed upon as a major scientific event, but also as a major social occasion. We therefore urge all participants to enjoy their stay on the Island and grasp the opportunity to communicate with their fellow scientists, colleagues and friends.



The weather is already splendid with temperatures ranging between 25 and 35°C (the same temperatures prevail in September as well). The tourist invasion is reaching its peak and therefore all participants should arrange their accommodation as soon as possible. This could be done either through the symposium office (for the three designated hotels) or through Griffin Travel (if alternative arrangements are sought, see below). As indicated in the Second Announcement, you should take into consideration that the Symposium centre is 3 kilometres from Limin Hersonissos, and no public bus service is available. All the participants are urged to book into the designated hotels, because they have a lot to offer. Please note that all payments must be made by Visa card or cheque. In the latter case the amount in ECU should be converted into your own currency and this amount entered on the cheque.

Do not forget to bring your swimming suit and good spirit with you.

See you soon in sunny Crete! Yia sas!

Tassos Tselepides Tassos Eleftheriou

Secretary

For all mail, abstracts, registration and hotel reservation forms, contact: The organising secretariat 7th Deep-Sea Biology Symposium Institute of Marine Biology of Crete P.O.Box 2214, Iraklion 71003, Crete, Greece Tel: + 30 - 81 - 242022 & 246647 Fax: + 30 - 81 - 241882 e-mail: imbc@imbc.gr or ttse@imbc.gr (for your abstracts)

Organising Committee

Prof. Anastasios Eleftheriou Dr. Anastasios Tselepides Dr. Chris Smith Mrs. K. Papadopoulou

Accommodation

There are three designated Symposium Hotels: the Knossos Royal Village which is the Symposium Centre (see photos in D.-S.N. No. 21) and 2 adjacent hotels.



CRETAN VILLAGE

All prices are quoted in ECU per person, per day, on half board basis (bed, breakfast and dinner) and include taxes and service charge.



CHRISSI AMOUDIA

Alternative accommodation

For those seeking alternative accommodation arrangements or even interested in extending their stay or acquiring additional information concerning various excursions to museums, archaeological sites, mountain tops and scenic gorges, please contact:

Griffin Travel

Platia Kornarou 30 Iraklion, Crete, Greece Fax: - 30 - 81 - 288068 Tel: + 30 - 81 - 283848 & 288016

Deadlines

The deadline (15 June) for advance registration and payment has now been passed. Registration is, however, still possible, although you will now have to pay the late registration fee (175 ECU, Students 90 ECU).

- August 15, 1994 Registration cancellation: upon written request received no later than August 15, 50% of the registration fee will be refunded after the Symposium. After August 15, no refund is possible.
- August 15, 1994 The total amount due for accommodation should be paid by August 15, 1994. No reservation can be confirmed until the Organising Committee has received your payment.
- August 15, 1994 Accommodation cancellation: upon written request no later than August 15, 1994, 90% of the hotel deposit will be refunded after the Symposium.

Upon arrival in Iraklion

You are recommended to take a taxi to Limin Hersonissos, which is 25 km to the east of Iraklion (20 min drive). The cost is relatively modest, 5.800 drs for 1 person, 3.500 drs for 2 and 3.000 drs for 3 persons. For those arriving with charter flights, the travel agency involved usually arranges this transportation as well. For those arriving on the 28th, a symposium bus will be waiting at the airport terminal in order to take them to Limin Her-

sonissos. It will be available at 3 hour intervals (possibly at 09.00, 12.00, 15.00 and 18.00 hours). Therefore, please notify the organizing secretariat concerning your exact flight and arrival time.

If any of the participants wish to rent a car they should contact Griffin Travel. Car rental rates, depending on the model, range between 10.000 to 20.000 drs per day (full insurance included).





OF CRETE

1. INSTITUTE OF MARINE BIOLOGY 2. R/V PHILIA 3. HARBOUR AUTHORITY 4. FERRY TERMINAL 5. BUS STATION

Papers and Posters

All contributions dealing with the biology and ecology of the deep sea are welcome. The time allocated for each oral presentation will be 20 minutes (discussion included). Short communications should not exceed 10 minutes. Posters may be up to 1 m wide and 2 m high. Those presenting posters should also send their abstract. In order to facilitate the task of publishing the abstract volume in due time, please send your one-page abstract both printed and in a floppy disc (use Word if possible) or use e-mail (ttse@imbc.gr) if available. Make sure that your abstracts are informative and try to avoid generalities. Since many of the participants have not met the abstract deadline (June 15), we urge them to send them in as soon as possible.

Films and Videos

Please let us know in advance if you intend to show a film or video. A special room will be available for purpose. this As mentioned in the second announcement all the other necessary projection facilities (slide projectors and overheads) will be available.

Publications

The only publication will be the symposium booklet with the abstracts.



The building with the encircled A is the Institute of Marine Biology of Crete

Special Scientific Session

An afternoon session will be devoted to the biology and ecology of the deep Mediterranean. If any of the participants wish to have a special session on a specific subject they should let us know in advance.

Symposium Schedule

| Wed. 2S Sep. | \overline{a} | Arrival and registration (until 20.00) of participants at the symposium centre (Knossos Royal |
|---------------|----------------|---|
| | | Village Hotel Conference Centre). |
| Thur. 29 Sep. | - | Oral presentations and posters. |
| Fri. 30 Sep. | _ | Oral presentations and posters. Cretan Taverna in the evening. |
| Sat. 1 Oct. | - | Oral presentations and posters. Only a morning session will take place. |
| Sun. 2 Oct. | \geq | Mid-symposium excursion (guided tour) to GORTYS, PHAESTOS, and MATALA. Lunch will |
| | | be served at the small traditional village of Zaros, on the south slope of Mount Psiloritis. |
| Mon. 3 Oct. | | Oral presentations and posters. Symposium dinner in the evening. |
| Tues. 4 Oct. | - | Oral presentations and posters during the morning session. Round table discussion during the |
| | | afternoon session. Departure of participants. |
| Wed. 5 Oct. | - | Departure of participants. |
| | | N N |

There will be a coffee break within each session.

Meals

Lunch will be served at the pool restaurant of the symposium hotel. On the other hand, a number of seaside tavernas and bars are located within walking distance (20 min) from the symposium centre. For those staying in the three designated hotels, dinner will be provided every evening except for the night of the symposium dinner. During that day lunch will be provided instead.

Recreation facilities

Numerous options are offered by the three designated hotels (Knossos Royal Village, Cretan Village and Chrissi Amoudia). Some of these are as follows:

- various size swimming pools
- tennis and squash courts
- gymnasium with sauna and jacuzzi
- SCUBA diving equipment
- water skiing, etc.

The most important thing that one should keep in mind is that Limin Hersonissos is a beautiful seaside resort, urrounded by spectacular landscape and small traditional Cretan villages embedded in the neighbouring mountain slopes. These are certainly the places that one should find the time to visit or simply stroll through.

Sea water temperatures, during the time of the symposium, will be between 22-24°C, and therefore swimming in the beaches or SCUBA diving will be more than pleasant.



LIMIN HERSONISSOS

LIST OF POTENTIAL PARTICIPANTS (registered and others)

Australia

Dr. J. Anthony Koslow Dr. Gary C.B. Poore Dr. George D.F. Wilson

Belgium

Dr. Ann Vanreusel

Canada

Prof. Derek Ellis Dr. Kim Juniper Dr. Verena Tunnicliffe

Denmark

Dr. Claus Hedegaard Dr. Jørgen B. Kirkegaard Dr. Ole Tendal ? Prof. Torben Wolff

France

Mr. David Augustin Dr. Nicole Boury-Esnault Mr. Pierre Chevaldonne Dr. Guy Fauque Prof. Aline Fiala-Medioni Dr. J. Galeron Dr. Danièle Gaspard Dr. Anne Godfrov Dr. Alexis Khripounoff Dr. François H. Lallier Mrs. Karine Olu Dr. J.C. Relexans Prof. Michel Roux Dr. Gerd Schriever Dr. Myriam Sibuet ? Mr. Frank Zal Dr. Helmut Zibrowius

Germany

Dr. Hartmut Bluhm Mrs. Antje Boëtius Mr. Christian Borowski Dr. Angelika Brandt Dr. Bernd Christiansen Dr. Hans-Uwe Dahms Dr. Dieter Fiege Mr. Onno Grosz Prof. Klaus Hausmann Dr. Norbert Hülsman Dr. Karin Juterzenka Dr. Karin Lochte Mrs. Claudia Luth Mr. Ulf Luth Mrs. Bettina Martin Dr. Carl Ossletzky Dr. Olaf Pfannkuche Mrs. Elisabeth Schein Dr. Knut Poremba Dr. Thomas Soltwedel Mrs. Carola Steudel Prof. Hjalmar Thiel Dr. Michael Türkay Dr. Ursula Witte Dr. Andreas P.A. Wöhrmann

Greece

Dr. Epaminondas Christou Prof. Anastasios Eleftheriou Mrs. K.N. Papadopoulou Dr. Ioanna Siokou Dr. Chris Smith Dr. Anastasios Tselepides

Iceland Dr. Gudmundur Gudmundsson Dr. Jörundur Svavarsson

Ireland Mr. Donal Eardly Dr. John W. Patching

Israel Dr. M. Nechama Ben-Eliahu Dr. Bella Galil

Italy Dr. Giulio Brizzi Dr. Roberto Danovaro Prof. N. Della Croce

Japan

Dr. Tomohiko Fukushima Dr. Tomomi Sato Dr. Yoshihisa Shirayama Dr. Akira Taniguchi

Mexico

Dr. Elva Escobar Briones Dr. Vivianne Solis-Weiss

Norway

Dr. Torleiv Brattegard Dr. Jon Bent Kristofferson Mrs. Kristin Miskov Larsen Dr. Pal B. Mortensen Assoc. Prof. Jon-Arne Sneli

Russia

Dr. N.V. Belyaeva Dr. I.I. Burmistrova Dr. Natalia N. Detinova Dr. S.V. Galkin Dr. Andrey V. Gebruk Dr. O.E. Kamenskava Dr. N.B. Keller Dr. T.A. Khusid Dr. E.M. Krilova Dr. Alex.P. Kuznetsov Dr. V.J. Lus Dr. T.A. Pasternak Dr. I.S. Roginskaya Dr. M.N. Sokolova Dr. Nina G. Vinogradova Dr. O.N. Zezina

pain

Mr. Joan E. Cartes Mr. Luis Dantart Mrs. B. Morales-Nin Dr. Francesc Sardà

U.K.

Mr. Steven Addison Dr. Stuart Anderson Dr. Phil Bagley Dr. Roger Bamber Dr. Brian Bett Dr. David Billett Miss Sarah Brondson Mr. Jeremy Brooks Mrs. Antje Brigitte Dolle Dr. T.J. Ferrero Dr. Andy Gooday ∩r. John D.M. Gordon r. John Hartley Dr. Lawrence E. Hawkins Dr. Stephen Hutchinson Mr. Magnus Johnson Dr. P.J.D. Lambshead Mr. Grant Lawson Mr. Brendan Manship Miss Heather Moors Dr. Imants G. Priede Dr. Anthony Rice Dr. David Roberts Mr. Stephan Scheibe Mr. Alastair Smith Dr. Michael Thurston Dr. George Wolff

Symposium excursion to Phaestos, Gortyn and Matala (this photo) Ukraine Dr. Murina Galena-Vanzetti Vasilyevna

U.S.A. Dr. Josephine Aller Dr. Robert Aller Dr. James Barry Mr. Michael Black Dr. Wesley M. Brown Dr. Gregor M. Cailiet Prof. Andrew G. Carev, Jr. Dr. Craig Cary Dr. Horst Felbeck Mrs. Lara Ferny Dr. Scott France Dr. Robert Y. George Prof. Frederick J. Grassle Dr. M.G. Harasewych Prof. John L. Howland Dr. Lisa Levin Mr. Panagiotis Michalopoulos Dr. Michael Rex Dr. Bruce Robison Dr. Rudolph S. Scheltema Mr. Tim Shank Dr. Craig Smith Dr. P.V.R. Snelgrove Dr. Joseph L. Staton Dr. Carol Stuart Dr. David Thistle Dr. Dwight D. Trueblood Dr. Cindv Lee Van Dover Dr. Robert C. Vrijenhoek Dr. Karen Wishner Dr. Craig M. Young Dr. Marsh J. Youngbluth



Application & Registration Form 7th Deep Sea Biology Symposium 29 September - 4 October 1994, IMBC, Crete, Greece

Participant : M 🗌 F 🗌

| Family Name: | First Name: |
|--|---------------------------------------|
| Title: | |
| Institution: | |
| Address: | |
| Postal code: City: | |
| Telephone: | · · · · · · · · · · · · · · · · · · · |
| Telex : E-mail : | |
| Accompanying person : M G F Family name: |] First name: |
| Arrival Date: Depar | ture Date: |

| Personal Fees | ECU | ECU |
|---|--|--|
| Participant before June 15, 1994 | 130 | |
| Participant after June 15, 1994 | 175 | |
| Student before June 15, 1994 | 65 | |
| Student after June 15, 1994 | 90 | |
| Accomodation Total (by August 15, 1994) | | |
| Accompanying person (s) | 0 | 0 |
| Accomodation Total (by August 15, 1994) | | |
| Social Events | | |
| Symposium dinner X No of Persons | 45 X 1 | |
| Mid-Symposium Excursion X No of Persons | 35 X 1 | |
| | Personal FeesParticipant before June 15, 1994Participant after June 15, 1994Student before June 15, 1994Student after June 15, 1994Accomodation Total (by August 15, 1994)Accompanying person (s)Accomodation Total (by August 15, 1994)Social EventsSymposium dinner X No of PersonsMid-Symposium Excursion X No of Persons | Personal FeesECUParticipant before June 15, 1994130Participant after June 15, 1994175Student before June 15, 199465Student after June 15, 199490Accomodation Total (by August 15, 1994)0Accompanying person (s)0Accomodation Total (by August 15, 1994)0Social Events45 X 1Mid-Symposium Excursion X No of Persons35 X 1 |

I wish to present a : paper □ short communication □ poster □ with the following title :
I intend to arrange my own accommodation in Hersonissos: □
For Symposium Hotel Reservation please turn over and fill in the form.

Total :

(The approximate rate for ECU, which is liable to small fluctuations only, is presently : 1 ECU= 1.1 US, 1,9 DM, 6.6 FF, 0.8 £ PS, 7.6 DKK, 1876 Itl, 270 Greek drachma)

Hotel Reservation Form 7th Deep Sea Biology Symposium 29 September - 4 October 1994, IMBC, Crete, Greece

| Participant : M 🔲 F 🗌 | |
|---------------------------|-----------------|
| Family Name: | First Name: |
| Accompanying person : M 🗌 | F 🗌 |
| Family Name: | First Name: |
| Dates : | |
| Arrival Date: | Departure Date: |

| Hotel | Single | No. of Rooms | No. of Nights | Double per person | No. of Rooms | No. of Nights |
|-----------|--------|-----------------|------------------|----------------------|-----------------|------------------|
| KRV ***** | 85 | | | 60 | | |
| CV **** | 73 | | | 55 | | |
| CA *** | 51 | | | 40 | | |

If Double room please indicate if :

| • you are sharing with Mr/Ms (accomp. person) | |
|--|--|
| • you want to share with Mr/Ms (a participant) | |

Total (No of Nights X No of Persons X Room Price per person X No of Rooms)

| Total = | ECU |
|-----------------------|-----|
| No of Rooms | |
| Room Price per person | |
| No of Persons | |
| No of Nights | |

 Please return this Application & Registration Form together with payment to : The Organising Secretariat, 7th Deep-Sea Biology Symposium Institute of Marine Biology of Crete, P.O. Box 2214, Iraklion 71003, Crete, GREECE.
 Tel. + 30 81 242022 / 246647 / 241992, Fax. + 30 81 241882

Date: Signature :

• To avoid delays please send this form also by fax with a copy of proof of payment.

THE PLANKTON NEWSLETTER

P.O.Box 16915 1001 RK Amsterdam The Netherlands

Fax: +31.20.5257238

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Dear plankton worker,

The Plankton Newsletter is a biannual appearing journal focussing on the study of marine plankton. Each volume is dedicated to a selected group of planktonic organisms and publishes a directory of scientists working on that group and a list of recent literature references.

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- PN 7: ostracods PN 8: hydromedusae PN 9: foraminifers PN 10: dinoflagellates PN 11: polycheats, nemertines PN 12: marine fishlarvae
- PN 13: other pelagic larvae PN 14: siphonophores PN 15: amphipods PN16: pelagic cephalopods PN 17: marine bacteria PN 18: marine decapods

PN Rep.Ser.1: Contributions to pelagic zoogeography of the Mid North Atlantic Ocean part 1: distributions of pteropods, heteropods and silver hatchet fishes part 2: faunal patterns and boundaries between 25 and 55°N

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The Plankton Newsletter p.e. box 16915, 1001 RK Amsterdam The Netherlands Signature

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The spring issue 1994 is dealing with deep-sea plankton.

The newsletter contains short communications on recent research (picpublications), theories and ideas, sampling equipment, information on conferences and workshops, and letters to the editors on subjects in planktonology.



Eurory halas hesty



Russian Journal of AQUATIC ECOLOGY

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CHAETOZONE

C(|||||||||(CHAETOZONE (Polychaete Research News))))))))))))))>-

A new E-newsletter for Annelida:Polychaeta Subscriptions by Internet e-mail to <gread@actrix.gen.nz>

Deep-sea researchers with e-mail access may be interested in CHAETOZONE, a FREE electronic newsletter for all polychaetologists and those whose work touches on any aspect of polychaete biology. CHAETOZONE, which currently is published at about two-month intervals, is already proving to be a convenient network "rallying point" for the polychaete research community as e-mail rapidly becomes commonplace. Earlier issues will be e-mailed on request or can be seen on the gopher server at gopher.ucsc.edu. For further information please contact the editor, Dr Geoffrey Read at <gread@actrix.gen.nz>.

AMPHIPACIFICA

AMPHIPACIFICA is a new international journal of invertebrate systematics, aimed primarily at the publication of monographic treatments that are too large or bulky (35 -100+ printed pages) for acceptance by regular taxonomic journals such as the Journal of Crustacean Biology. Initially, the contents feature monographic studies on crustaceans of the faunistically rich and geologically ancient North Pacific coastal marine region. The scope of this new journal also extends geographically to other Pacific regions, and faunistically to other arthropods, mollusks, annelids. and to other regional invertebrate taxa. both aquatic and terrestrial. including parasites, and to aspects of vertebrate animals that may involve invertebrates.

The journal appears quarterly, with a run of 300-400 copies per issue, each of 200-225 pages, and a Volume (yearly) total of 1100 pages (approx.) Printed page size is 8.5 X 11 inches (22 X 27.5 cm). Paper quality will accommodate line cuts and half tones at 400-600 d.p.i., and a limited number of colour plates at author cost. Manuscripts are to be submitted in "camera-ready" computerized format (IBM- or MAC-compatible diskettes), and hard copy, that have previ-



content and adherence to submission regulations, will be decided by the Advisory Board of the new journal.

The cost of printing and mailing of each issue is defrayed by institutional and individual subscriptions to the journal of \$50.00 Canadian funds (\$40.00 US) per annum, and by page charges to the authors of \$15.00 per printed page (including plates).

For detailed information, and a subscription form, please contact: Dr. E. L. Bousfield, Managing Editor, AM-PHIPACIFICA, Royal B. C. Museum, Victoria, CANADA V8V 1X4. (604) 380-3787 FAX (604) 387-5360.

DEEPSEA ELECTRONIC FORUM

Dear fellow marine scientists,

I am the manager of the Deep-Sea and Hydrothermal Vent electronic forum available, using electronic mail (email) from any country. DEEPSEA's purpose is to allow communication between deep-sea, seep, and vent biologists from around the world. Currently, DEEPSEA has 200 marine scientists subscribed from 18 countries representing Australia/New Zealand, Europe, North and South America, Hong Kong, South Africa, Turkey, and Israel. In the last year these scientists have used DEEPSEA to request specimens, to exchange biogeographic

data, to discuss marine technology and techniques, to find rare or specialist literature, and to discuss molecular biology in relation to marine questions. Disciplines covered included paleontology, microbiology, molecular biology, systematics, ecology, evolution, biogeography, physical oceanography, and marine geology. In summer 1994 we plan to hold the first international electronic symposium dedicated to deep-sea marine biology using both text and image.

I started DEEPSEA under a year ago and it has grown rapidly. The forum is working smoothly and I now wish to form relationships with marine societies and periodicals. For example, the journal *Veliger* uses the electronic forum MOLLUSCA to announce changes in deadlines, staff changes, special publications, submission guidelines, and calls for papers. Similarly, the American Malacological Union and Unitas Malacologia (international) both use MOLLUSCA to stay in contact with their membership, elicit opinion, and make announcements. Some talks presented at the recent Centenary Symposium of the Malacological Society of London are being discussed by the members of MOLLUSCA and thus are having broader impact. I would like DEEPSEA to perform the same service for the deep-sea and hydrothermal vent and seep community of researchers, societies, and periodicals.

If you are interested in using DEEPSEA, please contact me and I will be happy to help you get organized. All you need is electronic mail.



Andrew G. McArthur Manager, DEEPSEA Electronic Forum Dep. of Biology, University of Victoria P.O.Box 1700 Victoria, B.C., Canada V85 2Y2

EMAIL: AMCARTHU@UVVM.BITNET

FUTURE DEVELOPMENT OF DEEP-SEA RESEARCH FUNDED BY THE EUROPEAN UNION

(EU, i.e. the former EEC) - some notes for potential participants

Within Europe we have experienced a significant change in funding policies concerning marine research during the last few years. More national research funds have been transferred to the EU and researchers have conseruently been stimulated to apply for research funds from its General Directorate XII (DG XII, Research). This required the cooperation of research groups from two or more European countries and the acceptance of increased administration efforts for an often rather limited funding.

The earlier marine science programmes were restricted to shallow (shelf) European regions and deep-sea research was not funded. However, the General Directorate III (Economics) raised the question of environmental risk studies for manganese nodule mining and stimulated discussions on ecological deep-sea research funded by the EU. These resulted finally in two deep-sea biology projects within the EU Marine Science and Technology (MAST) programmes:

MAST I: Natural variability and the prediction of change in marine benthic ecosystems (01.08.1990-31.08.1992)

MAST II: Community structure and processes in the deep-sea benthos (01.01.1993-31.12.1995).

Tony Rice coordinates these projects. Both have involved partners from 6 European countries, the MAST I project having 11 partners and the MAST II 15 partners. Despite the bureaucracy most partners believe that the projects have been worthwhile and hope to be involved in the next phase (MAST III, see below). However, both previous projects have been dominated, both financially and numerically, by UK partners, coming close to breaking the EU rules on these matters. For any future EU-funded projects this imbalance will have to be redressed.

The future of deep-sea research in Europe has already begun. In 1990 DG XII and the European Science Foundation (ESF) established ECOPS, the European Committee on Ocean and Polar Sciences, to discuss, propose and promote future research topics of relevance for European cooperation. This group proposed several "Grand Challenges" for ocean and polar research, and one of these was formulated as "Variability of the deep seafloor". The result of the early ECOPS discussions are published in the brochure "The Ocean and the Poles. European Co-operation in Ocean and Polar Research" which may be ordered from EU Directorate XII, Brussels, or from ESF, Strasbourg). Additionally, ECOPS proposed discussions on the Grand Challenges in European Research Conferences and in three of which, held earlier this year, we participated.

The European Research Conference on "Variability of the deep-sea floor" recommended three research fields which may be outlined as

Studies on the 1 Geologically induced flow through the seabed,

- 2 Ultra-high resolution of sedimentation rates and instability potentials,
- 3 High resolution of benthic research processes.

Ecological research is included in studies 1 and 3, but studies 2 and 3 may partially work on a common station or area. Regions proposed for these studies are generally situated close to Europe like the Mediterranean Sea, the continental slope off Portugal, the Iberian deep-sea plain, the Northeast Atlantic south of Iceland and the Norwegian Sea.

A further European Research Conference on "Diversity and Production in the Oceans" in May 1994 includ discussions on deep-sea problems, particularly emphasizing the need for improved knowledge on the taxonon, of deep-sea organisms, focussing on the smaller size groups. The application of molecular approaches to genetic diversity was pointed out to supplement the evaluation of taxonomic levels and species relationships.

The participants from both these conferences realized the need to increase our knowledge on the structures of and functions in deep-sea communities. The expected results are not only meant to augment the basic understanding of the ecosystem but also to help evaluate risks from mining metalliferous resources in the deep sea or from using this remote space as a waste repository.

A third European Research Conference in March 1994 considered the development of new techniques for the Grand Challenge investigations. For deep-sea research several coring devices for sedimentological studies were proposed, and for a broader use by all oceanographic disciplines the further and/or new development of sophisticated equipment was emphasized, consisting of

Lander Systems Benthic Laboratories (ROV types) for on-line observations and experimentation, and Benthic Stations for long-term (1 year or more) measurements.

The results from all Grand Challenge discussions will be presented to politicians, funding agencies, and the scientific community during the Final European Research Conference which will be held in Bremen, Septem 12-16, 1994. This conference will decide on priority funding for specific Grand Challenges. Information on this Conference is available from

Conference Office: The Ocean and the Poles Alfred-Wegener Institut für Polar- und Meeresforschung Columbusstraße, D-27568 Bremerhaven, GERMANY

Parallel to the discussions on the Grand Challenges the future funding programme for marine science by the EU (MAST III) has been developed and published in its preliminary stage: "Proposal for a Council Decision adopting a specific research and technological development programme in the field of marine sciences and technologies (1994-1998)".

The new programme will cover deep-sea research characterized by inter alia

- * deep-sea basins of the North Atlantic and the Mediterranean Sea: Interdisciplinary research at the base of the water column, the boundary layer water/bottom, and below. Quantificative and long-term studies of variabilities in space and time and of fluxes, including hydrothermalism.
- * research of ocean dynamics under the aspects of using the sea and its environment as a resource, effects of socio-political factors on the marine environment:

Description, evaluation and prediction of risks and negative effects on the marine environment by using existing and future technologies in research (not in commercial actions).

* development of new technologies for working at the deep-sea floor.

There is a wide range of problems for which proposals may be sent to DG XII. Final dates are not yet known but the programme will be finalized and published during autumn/early winter 1994, and a deadline for application is expected to be set for spring 1995. The information on this should be available from the national representatives of each country.

Hjalmar Thiel Anthony L. Rice

THE "ABYSSAL DANCER"

n 1979 I described Segonzactis platypus, a new sea anemone genus and species of the family Condylanthidae collected at abyssal soft bottom stations in the Bay of Biscay during the French BIOGAS programme. Besides its taxonomical and phylogenetical relevant features this species is notable for its peculiar disc-like body shape even in preserved condition. I then speculated that this body shape is probably a suitable adaptation to the semi-fluid sediment surface in this near-coastal deep-sea locality.

During the Benthic Biological Survey of the Porcupine Seabight Region of the IOS (Institute of Oceanographic Sciences, Wormley, U.K.) quite a number of additional specimens of Segonzactis platypus were collected at 18 stations in front of the Seabight in depths between 4265 and 4860 m. One of these animals displayed a body shape that surpassed ly earlier speculations by far with its extremely extended and undulated pedal disc. This specimen does not only confirm my assumptions, but it may also display a body shape used in emergency situations, where a large jelly-like body which is swept away by the faintest water movement may be helpful. How the IOS specimen retained its extreme shape during the process of collecting and preserving, however, remains a mystery.



The "Abyssal Dancer": Segonzactis platypus Riemann-Zürneck, 1979. Specimens from Discovery Station No. 11908#38. The diameter of the much extended pedal disc is 4 cm.

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EURYTHENES GRYLLUS HATCHLINGS

The amphipod *E. gryllus* is a large and spectacular species abundant in catches of baited traps set on and above the deep-sea floor. Thousands of specimens from the North Atlantic and Pacific Oceans have been analysed to provide information on vertical distribution, population structure, biology and behaviour (Baldwin & Smith, 1957; Ingram & Hessler, 1987; Christiansen *et al.*, 1990). Despite the large numbers of specimens examined. no large brooding females have been reported (Ingram & Hessler, 1987; Christiansen *et al.*, 1997; Christiansen *et al.*, 1990), and size at hatching remains unknown.

An insight into the early biology of *E. gryllus* is possible following the capture of a female with hatchlings in a midwater trawl haul taken at 3500-3700 m, at least 1200 m above the floor of the Iberian Abyssal Plain. The 120 mm female has a brood pouch formed of five pairs of oostegites which contained 237 hatchlings. The brood appeared to be complete, and had a volume equivalent to about 19% of that of the female. Based on 100 specimens, hatchlings measure 9.26-12.25 mm in length (mean 11.13 mm). Despite the wide length range, there is no evidence to suggest that more than one moult class is present.



Eurythenes gryllus ?Female, 75 mm. Southwest Indian Ocean, 5110 m. (From The Galathea Deep Sea Expedition 1950-52, 1956)

There is some indication that *E. gryllus* attains a greater length in the Pacific Ocean than in the Atlantic. However, the difference between hatchling length (mean 11.13 mm) and the length of specimens identified as instar 1 by Ingram & Hessler (1987) is too large to be accounted for by inter-ocean size variation. The hatchlings represent an earlier instar than the smallest recorded free-living specimens. The mean length of 35 specimens assigned to instar 1 by Ingram & Hessler (1987) is 18.2 mm. The mean length of the 65 specimens in the 14-21 mm size range of material analysed by Baldwin & Smith (1987) is 16.9 mm, the same as for the 20 specimens measured by Thurston (1979). To bridge the size gap between hatchlings and the smallest class identified by Ingram & Hessler (1987) requires a growth factor of 1.51-1.65 if a single moult occurs, or c. 1.2-1.3 if there are two. The data sets of Thurston (1979), Baldwin & Smith (1987) and Ingram & Hessler (1987) show clear moult class mean lengths at 17-18 mm, 23-25 mm and 30-32 mm, implying growth increments of 1.36-1.41 and 1.25-1.32 respectively. These decreasing growth increments, together with the apparent absence of a smaller free-living size class and the likelihood that the first growth increment is fuelled by stored yolk make it probable that only a single moult is required to reach a length of 17-18 mm.

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Ingram, C.L. & R.R. Hessler, 1987: Population biology of the deep-sea amphipod *Eurythenes gryllus*. inferences from instar analyses. - Deep-Sea Res. 34A: 1889-1910.

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Mike Thurston IOSDL

THE FORAMINIFERA OF EXPLORERS COVE, ANTARCTICA: A DEEP-SEA ASSEMBLAGE IN SHALLOW WATER?

Dramatic environmental and biological differences exist between the eastern and western sides of McMurdo Sound, Antarctica (Dayton & Oliver, 1977; Barry & Dayton, 1988; Barry, 1988). The eastern side, for example the area around McMurdo Station, is predictably ice-free during the late austral summer and is bathed by south trending currents from the Ross Sea. There is a strong phytoplankton bloom and therefore plenty of food available to support some of the densest macrofaunal communities anywhere in the world. The western side is much more oligotrophic as a result of being semipermanently ice-covered and bathed by nutrient-depleted currents originating from under the Ross Ice Shelf. It is characterised by low macrofaunal densities which are comparable 5 those in the bathyal deep sea.

Explorers Cove. situated in the oligotrophic western Sound, has been a focus for studies on benthic foraminifera (for example, DeLaca, 1986; DeLaca *et al.*, 1980, 1981; Alexander & DeLaca, 1987; Bernhard, 1987, 1989; Bowser & Bernhard, 1993). Among other things, these studies have shown that large, agglutinated foraminifera, which resemble bathyal taxa, are abundant at depths accessible for SCUBA divers. This is, therefore, a site of prime interest for deep-sea foraminiferal workers. For some years, two of us (SB, JB) have been sampling in Explorers Cove in collaboration with other foraminiferal specialists (principally Drs Ted DeLaca and Steve Alexander). Last year AG joined the team for part of the 1993 field season with the main aim of gaining an overview of the foraminiferal community at our 25-27 m deep study site, recognising new taxa, and comparing this shallow, cold-water oligotrophic community to those from bathyal and abyssal depths in the NE Atlantic and elsewhere.

The foraminifera were obtained by SCUBA divers using two methods: an air-lift suction system which provided semi-quantitative samples of foraminifera >1 mm from approximately 1 m² of the seafloor, and by coring which provided smaller, quantitative samples. More work needs to be done on the material we collected during 1993 but some preliminary observations and conclusions can be suggested.

1) As previous studies have indicated, large, "primitive" (i.e. single chambered) agglutinated foraminifera are very abundant. The six most abundant species in >1 mm residues collected using both methods are all of this type: Astammina rara, Astrorhiza sp., Crithionina sp. 1, Crithionina sp. 2, Psammosphaera sp., and undescribed

"quartz balls". Most of these species live at or near the sediment surface. Some of them are probably suspension feeders, others are believed to be carnivorous while still others take up dissolved organic matter (DeLaca *et al.*, 1981).

2) Komokiaceans and xenophyophores (large, agglutinated rhizopod taxa which are typical of the deep sea) were not observed in our samples. However, solid, mudball-like structures containing narrow, branching strands of naked protoplasm are fairly common. These organisms clearly are not true komokiaceans since the protoplasm is not contained within a branching system of test tubules, as described by Tendal & Hessler (1977). However, they may represent shallow-water komoki analogues.

3) As already shown by Bernhard (1987, 1989), smaller foraminifera occur in the finer sieve residues (>63 μ m) of cores. Their abundance is less than in bathyal NE Atlantic samples (Gooday, 1986) but is comparable to values from the abyssal N. Pacific (Snider *et al.*, 1984; Bernhard, 1992). In addition to "conventional" calcareous taxa, our new samples have yielded a variety of soft-bodied allogromiids, including several long, vermiform species which live mainly in the deeper sediment layers.

4) The finest sive residues examined $(31-63 \mu m)$ contained a surprising assortment of tiny, flask-shaped taxa. Some of these are clearly allogromiids but others resemble the testate amoebae described from sublittoral sands off the coast of France by Golemansky (1991).

So what about the question posed in the title of this contribution? The foraminifera living at our study site are clearly different from most abyssal and lower bathyal assemblages in several respects. For example, true komokiaceans and related delicate, tubular and chain-like taxa (Gooday, 1990) appear to be absent while large suspension feeders are visually conspicuous above the sediment surface. In part, these differences must reflect the more oligotrophic nature of the deep ocean floor and the relatively coarser sediments (silty sand) in Explorers Cove. On the other hand, there do seem to be close parallels between our sublittoral (25-27 m) Antarctic assemblage and those recorded from depths >100 m, sometimes considerably deeper, at certain high latitude, northern hemisphere sites. For example, communities dominated by large, mainly agglutinated foraminifera have been recognised between 100 m and >500 m in Greenland fjords and the norther North Sea (Stephens, 1923; Spärck, 1933; Thorson, 1933; McIntyre, 1961). Crithionina granum, a species which closely resembles our Crithionina sp. 1, is the numerically dominant organism in samples (>1.3 mm) from 50-60 fathoms (91-110 m) in Loch Nevis, Scotland. Another Crithionina species is extremely abundant at much greater depths (1400-1500 m, 2000-3200 m) in the Greenland-Norwegian Sea (Thies, 1990). Finally, the conspicuous occurrence of suspension feeding foraminifera in Explorers Cove invites a comparison with bathyal (600-800 m) biotopes on the Norwegian continental margin (Lutze & Altenbach, 1988; Linke & Lutze, 1993). The accessibility of our study site in Explorers Cove to SCUBA divers provides a valuable, perhaps unique, opportunity to conduct experimental studies on these large foraminiferal species and to observe them directly in their natural habitat.

Anyone interested in obtaining live or preserved specimens of foraminifera from Explorers Cove may contact SB at address below, by telephone (518) 473-3856, or internet (BOWSER @thethys.ph.albany.edu).

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Astrorhiza

(from the Challenger Report)

Psammosphaera

MICROBIAL ACTIVITY IN DEEP-SEA WATERS

The role of hydrostatic pressure on phenotype and enzymatic activities of bacteria has been clearly demonstrated in pure culture experiments. But not all the authors are in agreement concerning pressure effects on metabolic activities of bacterial consortium in natural deep-sea environments. Deep-sea technologies had a considerable development during the seventies, but in spite of, or owing to, the great diversity of applied technologies and the diversity of studied samples including deep-sea waters, sediments and content of digestive tracts of deep-sea fauna, one finds in the literature results concerning both adverse and stimulatory pressure effects on microbial activity measurements (Jannasch & Wirsen, 1973; Jannasch *et al.*, 1976; Schwarz *et al.*, 1976; Deming *et al.*, 1981; Yayanos *et al.*, 1982; Cahet & Sibuet, 1986: De Angelis *et al.*, 1991).

We thought that hydrological conditions could explain some of these discrepancies. Thus, we developed a research program in order to compare the microbial activity data obtained with undecompressed and decompressed samples collected in diverse hydrological conditions, in the same area and at the same depth.

Samples were collected using a pressure-retaining sampler and a Niskin bottle. The pressure-retaining equipment and the sample processing methodology have already been described (Bianchi & Garcin, 1993a). To measure the glucose uptake we used $D-(U-l^4C)$ glucose, specific activity 10.6 GBq mmol⁻¹ (Amersham Corp.). For both decompressed and undecompressed samples, the final concentration was 5.8 nmole glucose 1^{-1} . Inc bation was at 13°C for 3 hours.

Using this equipment we collected 17 seawater samples at 1100 m depth in two areas in the Northwestern Mediterranean Sea (Bianchi & Garcin, 1993b). The first area was in the Cassidagne Trench, 30 miles SE of Marseilles, in stratified water conditions. The second was in the Ligurian Sea, 30 miles SE of Nice. We sampled this area during both stratified-water period and mixed-water period. At this sampling depth in the two areas the seawater temperature is always near 13°C.

In stratified-water conditions, carbon uptake appeared higher in the undecompressed samples than in the decompressed ones (78.5±24 pg C 1^{-1} h⁻¹ and 30.7±10 pg C 1^{-1} h⁻¹ in the Cassidagne Trench; 59.5±11 pg C 1^{-1} h⁻¹ and 23.6±14 pg C 1^{-1} h⁻¹ in the Ligurian Sea). Bacteria collected at 1100 m depth in stratified conditions appeared well adapted to the high-pressure conditions (Bianchi & Garcin 1993a).

In mixed-water conditions in the Ligurian Sea, microflora answered in an opposite way as observed in stratified-water conditions. Bacterial decompressed during retrieval and incubated at the atmospheric pressure were more active $(421.2\pm43 \text{ pg C } 1^{-1} \text{ h}^{-1})$ than the undecompressed cells $(14.5\pm6 \text{ pg C } 1^{-1} \text{ h}^{-1})$. Bacteria collected at 1100 m depth in mixed-water conditions were mostly surface originating micro-organisms, unadapted to high hydrostatic pressure conditions (Bianchi & Garcin, in press).

In conclusion, hydrostatic pressure appears as an important parameter acting in the regulation of microbial conditions. Using conventionally collected samples (decompressed during retrieval), microbial activity results were increased or lowered referring to the rates actually exercised in the *in situ* pressure conditions. These pressure effects appear even on shallow (1100 m deep) water masses. As a matter of fact, it appears that hydrostatic pressure must be preserved during microbial activity measurement.

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