

EIGHTH DEEP-SEA BIOLOGY SYMPOSIUM Monterey, California, September 22 - 26, 1997

THIRD ANNOUNCEMENT

The 8th Deep-Sea Biology Symposium was announced in previous issues of the Deep-Sea Newsletter, and resulted in responses from over 200 scientists from 18 countries who expressed interest in attending the conference. The geographic distribution of participants includes Asia (7), Australia (3), Europe (56), North America (127), and Other (9). Although the deadline for submission of abstracts (June 15, 1997) has passed, we continued to consider abstracts from potential presenters through mid-July. A tentative schedule of presentations for the symposium has now (July 15, 1997) been created, including 90 oral presentations and 60 posters. The schedule of sessions spans four days of presentations concerning a variety of topics in deep-sea biology and ecology (see below), followed by an excursion day.

The venue for the symposium is the Monterey Bay Aquarium (MBA) in Monterey, California, U.S.A.. The Monterey Bay Aquarium is a wonderful setting for the meeting, where we will have access to the aquarium displays throughout the symposium, including a 'strolling' symposium banquet' one evening. The scenic central California coastline and history of local fisheries and culture add to the charm of the site. September is often one of the most pleasant months of the year in Monterey. The weather this year may be even more interesting due to the tropical El Niño / Southern Oscillation Event that can result in anomalous weather in the region.

The format for the Deep Sea Biology Symposium will be similar to earlier symposia, including both oral and poster presentations concerning deep-sea organisms and ecosystems. Oral presentations are scheduled for Monday, September 22 through Thursday, September 25. Oral presentations will be held in the Main Auditorium and the Ocean View Conference Room at MBA. There will be one or two sessions per day, with two concurrent sessions on at least three days. Posters will be viewed during the afternoon and early evening of one or two days. Friday, September 26 is scheduled as the 'excursion day', and offers the opportunity to visit nearby scenic coastal areas (17 Mile / Pt. Lobos Excursion, Elkhorn Slough Nature Tours), local wineries (Wine Tasting Excursion), and MBARI's R/V Western Flyer and the ROV Tiburon. In addition to the symposium banquet at Monterey Bay Aquarium, a late afternoon / evening reception will be held at MBARI.

Registration for the 8th Deep-Sea Biology Symposium continues for individuals interested in attending, but space is limited and registration should be completed as soon as possible. Because the main auditorium holds a maximum of just over 260 people, we can accommodate only this number of participants, even though dual sessions will be held during part of the symposium. Over 170 have already registered for the meeting and another 30 to 50 have expressed interest in attending. If you wish to attend, be sure to register while space is available.

Symposium Hosts

Monterey Bay Aquarium Research Institute (MBARI) Monterey Bay Aquarium (MBA)

Symposium Organizing Committee

Jim Barry, Bruce Robison, Kurt Buck (MBARI) Randy Kochevar, Chris Harrold (MBA)

Symposium Office

Mailing Address:

8th Deep-Sea Biology Symposium Monterey Bay Aquarium Research Institute Box 628 Moss Landing, California 95039-0628 U.S.A.

Email : Phone : Fax Contacts:

Annette Gough (goan@mbari.org: 408-775-1701) Kelly Burgess (kellyb@mbari.org: 408-775-1803) 408-775-1620 (fax)

World Wide Web Site: http://www.mbari.org

The Latest DSBS 97 Information

Information from all newsletter announcements, and *DSBS '97 UPDATE INFORMATION* is posted on the MBARI World Wide Web Site (http://www.mbari.org). Check there for the most recent information.





List of Participants for the 8th Deep-Sea Biology Symposium (* registered)

Australia

- * Tony Koslow
- * Justin Marshall
- * George D.F. (Buz) Wilson

Belgium

* Bernadette Janssens

* J.F. Rees

Canada

- * Sally P. Leys * George Mackie
- * Anja Schulze

Denmark

Jørgen B. Kirkegaard * Torben Wolff

France

Bruce Shillito

Germany ·

- * Lothar A. Beck Hartmut Bluhm
- * Antje Boetius
- * Christian Borowski
- * Angelika Brandt
 * Shaun P. Collin Hans-U. Dahms
- * Eleonore Frohlich
- * Onno Gross
- Norbert Huelsmann
- * Rolf Koppelman
- * Frank Kurbjeweit
- * Peter Linke
- * Ralf Looser
- * Olaf Pfannkuche
- * Wolfgang Riess
- * Heiko Sahling* Till Scherzinger
- * Gerd Schriever
- * Kathrin Sobjinski
- * Thomas Coltured al
- * Thomas Soltwedel

* Hjalmar Thiel Laurenz Thomsen Nikolaus von Mirbach
* Kay Vopel
* Hans-Joachim Wagner
* Ursula Witte

Greece * Anastasios Tselepides

India

Usha Goswami

Japan

- Katsunori Fujikura Yoshihiro Fujiwara Jun Hashimoto James Hunt
- * Tomohiko Kikuchi
 * Shigeaki Kojima Yoshihisa Shirayama
- * Tatsuki Toda
- * Eiji Tsuchida

Mexico

* Elva G. Escobar Briones

Netherlands

- G. Duineveld
- * M. Lavaleye

New Zealand

* Carol Diebel * J. C. Montgomery

Poland

* Teresa Radziejewska

Portugal

* Helen R. Martins

Russia Andrey Azovsky

- * S.V. Galkin Andrey V. Gebruk Vadim Mokievsky * A. L. Vereshchaka
- * Dmitry G. Zhadan

Sweden

* Jarl Strömberg

United Kingdom

- * Simon Creasey
- * Ron Douglas
- * John D. Gage Peter Heinez
- * Peter J. Herring * Emma G. Jones
- Jeremy Kent
- * John D. Lambshead Peter Lamont Neil McAleece L. Mitchell
- P. Graham Oliver
- Peter Parks
- * Julian C. Partridge
- * I.G. (Monty) Priede
- * David Roberts Murray Roberts
- * Alex Rogers
- * Paulo-Y.G. Sumida
- * Paul Tyler

USA

- * Allen Andrews
- * Pamela Arnofsky
- * Amy Baco
- * Jim Barry
- * Rosalind Beatty
- * Stace E. Beaulieu
- * Thom Benedict
- * Joan Bernhard
- * Margaret Bradbury Laura Brink
- * Kurt Buck
- * Ed Bull
- * Erica J. Burton Susie Bussel
- * Gregor M. Cailliet
- * Andrew G. Carey, Jr.
- * Robert S. Carney
- * Walter E. Carr
- James F. Case
- * Alison Cebula
- * Pierre Chevaldonne
- * Jim Childress
- * Joan B. Company
- * Krystn Cosby
- * David L. Cowles
- * Aubrey K. Davis
- * T.C. Dawe
- Jody W. Deming
- * Jeff Drazen Cheryl Dybas
- * Renate Eberl
- * Kevin J. Eckelbarger
- * James E. Eckman
- * Ron Etter
- * Tamara L. Faulkner
- * Daphne G. Fautin E. Fisher
- * Donald D. Flescher Nadine Foster
- * Tamara Frank Lee A. Fuiman
- * Robert Y. George Peter Girguis
- * Shana Goffredi
- * Marcia M. Gowing
- * Greg Grantham
- . Greene

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James W. Hagadorn Gordon Hendler

- * Bruce W. Heyer
- * Sarah Hood
- * Russ Hopcroft
- * Nancy Jacobsen Wally Jarman
- Kristen Brynie Kaplan * Ann L. Knowlton Michael Latz
- * Lynn M. L. Lauerman
- * Dean Vincent Lauitzen
- * Noreen M. Layden
- * Gyongyver Levai
- * Lisa A. Levin Ian R. MacDonald
- * Chistopher Mah Baldo Marinovic
- * Christoper Martin
- * George Matsumoto
- * Sarah McHatton
- * Ian J. McLaughlin
- * Ian S. McLaughlin Charles G. Messing
- * Robert J. Miller
- * Jon A. Moore
- * Dawn Murray
- * Douglas C. Nelson John Norenburg
- * James Nybakken
- * William Nyden Shannon Parratt
- * Tynan Pfingst
- * Adele Pile
- * Kevin A. Raskoff
- * Anthony Rathburn
- * Rachael Ream
- * Kim Reisenbichler
- * Michael A. Rex
- * Virginia Rich
- * Danielle Richardi
- * Claudio Richter
- * Bruce Robison
- * Kristine Rodgers Richard Rosenblatt Rudolf S. Scheltema
- * Amelie H. Scheltema
- * Kyra Schlining

Jason A. Schmid

- * Jennifer Schurmeier
- * Brad A. Seibel
- * Timothy M. Shank
- * Rob Sherlock
- * Kenneth L. Smith
- * Craig Randall Smith Lisa Smith Beasley
- * George Somero
- * Bradley G. Stevens
- * Carol T. Stuart Andrew Suntsov
- * Tracey T. Sutton
- * Mario Tamburri
 - Erik V. Thuesen
- * David Thistle Jaci Tomulonis
- * Marta E. Torres
- * Jennifer Trask
- * Cindy Lee Van Dover
- * Christina Van Dusen
- * K. A. Vanden Branden
- * Eric Vetter

* Carl Wirsen

* Janet R. Voight * Edith Widder

* Gary C. Williams

* Karen Wishner

* Bradley Wood

* Craig Young

Frank Zal

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DSBS '97 SESSION THEMES

Sensory Systems of Deep-Sea Fauna Evolution and Diversity of Deep Sea Fauna Pattern and Function of Deep-Sea Populations and Communities Source and Utilization of Carbon Inputs in Deep-Sea Systems Microbial Processes in Deep-Sea Habitats

Deep-Sea Pelagic Community Studies Biology and Ecology of Vent and Seep Habitats Effects of Disturbance in Deep-Sea Habitats

Schedule of Events for the 8th Deep-Sea Biology Symposium (tentative)

Sunday, September 21, 1997

1500 - 1800 Registration at the Embassy Suites Hotel

Monday, September 22, 1997

830–1700 Se	ssion I	Cold Seep and Hydrothermal Vent Biology and Ecology
1800-2000		Social Mixer at the Blue Dolphin (near MBA)

Tuesday, September 23, 1997

830-1450	Session II	Pattern and Function of Deep-Sea Populations and Communities
1010-1610	Session III	Sensory Systems of Deep-Sea Biota
930-950		8 th DSBS Group Photograph
1620-1845	Session IV-A	Poster Session

Wednesday, September 24, 1997

820-1400	Session V	Source and Utilization of Carbon Inputs in Deep-Sea Systems	
1000-1500	Session VI	Deep-Sea Pelagic Community Studies	
1500-1545		Open Forum: Next Symposium Location	
1600-1700	Session IV-B	Poster Session	
1830-2130		8th DSBS Banquet: 'Strolling Dinner' at Monterey Bay Aquarium	m

Thursday, September 25, 1997

830-1600	Session VII	Evolution and Diversity of Deep Sea Fauna
830-1000	Session VIII	Microbial Processes in Deep-Sea Habitats
1020-1200	Session IX	Effects of Disturbance in Deep-Sea Environments
1730-2030		Reception / Social at MBARI

Friday, September 26, 1997

900-1400	Seventeen Mile Drive and Pt. Lobos Excursion
900-1400	Wine Tasting Excursion
900-1400	Elkhorn Slough Nature Viewing Excursion (tentative)
900-1600	Western Flyer Cruises and Tours

SYMPOSIUM FORMAT & INFORMATION

Papers:	Twenty minutes will be allotted for each oral presentation, including 15 minutes plus 5 minutes for discussion.
Posters:	Posters and oral presentations are considered to be equally valuable. Space for posters will be approximately $1.3 \times 1.3 \text{ m}$. We have tentatively planned 2 poster sessions, and hope that posters can be left up for both sessions. Posters will not be accessible for viewing except during poster sessions.
Abstracts:	We request abstracts for both oral and poster presentations. Each abstract should include a statement of the scientific issue and present results and relevance of the study. Please limit abstract length to a single page. The deadline for submission of abstracts was June 15, 1997. We can no longer accept abstracts for oral presentations, but may be able to accept poster presentations.
Audio-Visual	The auditorium and the Ocean View Conference Room at the Monterey Bay Aquarium will be equipped with a normal slide projector, overhead projector, and a VHS video projector. In addition, and LCD projector will be available for computer-generated presentations. Note that presenters must have their own laptop computer for computer-generated presentations. Check with the symposium organizers for equipment compatibility. If additional audio- visual equipment is required, please contact the organizing committee as soon as possible.
Conference Proceedings	A booklet of symposium information, schedule, abstracts, and list of participants will be printed and distributed to symposium participants at the meeting.
Accommodation:	Unless notified otherwise, symposium participants must make their own reservations for accommodation. See below for more information regarding hotels and accommodation.
Meals:	Participants are responsible for meals, except the symposium banquet. Several restaurants are accessible near the Monterey Bay Aquarium for lunch or dinner.

REGISTRATION

Because the main auditorium at the Monterey Bay Aquarium holds a maximum of ~260 people, we must limit the total number of registrants for the symposium. We are happy to include as many participants as possible, and registration is presently available. We expect the symposium to be fully subscribed, so please register as soon as possible. Registration information is available in the Second Announcement for the DSBS, on our world wide web page (www.mbari.org) and can be obtained via email from Annette Gough (goan@mbari.org) or Kelly Burgess (kellyb@mbari.org).

The deadline for submission of oral or poster presentations was June 15, 1997, and we are discouraging any further submissions for talks. We may, however, be able to accept a limited number of

posters. Contact Annette Gough, Kelly Burgess, or Jim Barry (barry@mbari.org) for further information.

REGISTRATION FEES: (after June 15, 1997)

Non-student US\$200 Student US\$90

In addition to the conference admission, registration fees include the conference banquet, social mixer, and MBARI reception. Costs of excursions are not included. Costs for guests who accompany symposium participants to social functions or excursions are listed on the registration form.

To register, complete the registration form and send it by fax (408-775-1620) to Kelly Burgess, or surface mail to the symposium office. Registration can also be completed by sending the appropriate information via email to Kelly (kellyb@mbari.org). A registration form is also available through our web page (http://www.mbari.org).

TRAVEL TO MONTEREY

By Air:

Monterey can be reached via air from either San Francisco or Los Angeles International Airports. Several airlines (United, Delta, USAir, American) operate numerous connecting flights daily to Monterey from these airports. Once at the Monterey Airport it is only a short taxi ride (approx. 12USD) to any of the accommodations. The Embassy Suites (see below) offers a shuttle from the airport, upon advance request.

By Car:

Monterey is approximately 2-3 hours south of San Francisco and 6-7 hours north of Los Angeles. Once in Monterey there are numerous signs to direct you towards the Monterey Bay Aquarium.

HOTELS AND ACCOMMODATION

Symposium Participants must arrange their own accommodations

Monterey is a busy tourist destination during the summer months. September is slightly quieter than peak summer months, but several events occur in September. Because hotels are often fully booked during this period, it is important to make reservations as early as possible.

Several options for accommodations for the meeting are available. We have arrangements with a some hotels for rooms at a discounted rate. There are many other hotels in the Monterey area, with reservations services available through the world wide web, and we (MBARI) have created a web-based room-sharing list to assist communication among people interested in sharing accommodations.

SYMPOSIUM - ASSOCIATED HOTELS:

Three sets of hotels that have agreed to provide rooms for your stay in Monterey from Sep. 21-27, 1997. This time of the year is particularly busy and most hotels expect to have no vacancies, so you are encouraged to reserve accommodations at the earliest date. The Saturday evening prior to the symposium is the date of the Monterey Jazz Festival and is always sold out in advance. To reserve a room at one of the hotels listed on the following page, you must make a reservation prior to August 21, 1997, to ensure availability and price. Hotels may require a deposit for the first night, however, some may take a credit card number as a guarantee. All prices quoted are per room and are in USD and do not include tax. Participants are responsible for procuring their own accommodations and are encouraged to

contact the hotels directly for additional information. Be sure to inform the hotel of your participation in the Deep Sea Biology Symposium at Monterey Bay Aquarium. These hotels are:

Cannery Row

\$109 Sunday-Thursday, \$159 for Friday and Saturday. In room coffee and pastry, free parking, some rooms with fireplaces. For reservations call 408 649 8580 and ask for Mary Ann. *Cannery Row Inn-* 200 Foam Street, Monterey, 5 blocks from the Aquarium *Otter Inn-* 571 Wave Street, Monterey, 3 blocks from the Aquarium

Asilomar Beach

\$75 and up. Located in Asilomar approximately 4 miles from the Aquarium a variety of Inns operated by the Larchwood Properties offer deluxe standard rooms, most with fireplaces and with a complimentary continental breakfast and free parking. Free shuttle to and from the Aquarium. Tel. 408 373 1114, Fax 408 655 5048.

Seaside

\$125 per night, 2 room suites, cooked to order breakfast, nightly 2 hour hosted Manager's reception, free parking and shuttle service to Airport (upon prior arrangement), free shuttle service to and from the Aquarium. Tel. 408 393 1115, Fax 408 393 1113.

Embassy Suites on Monterey Bay, Seaside. 4 miles from the Aquarium

HOTEL RESERVATION SERVICE

An independent service called Resort Detectives can assist in making room reservations. The service is provided at no cost through the Internet, by fax, or phone.

Resort Detectives http://www.monterey-rooms.com/info.html 1 800 566-7188 or 408 657-0438 FAX 408 657-9870

ROOM-SHARING WEB SITE

We have set up a small web-based service to facilitate communication among individuals interested in sharing accommodations. The service allows individuals to add Accommodations (or delete) their name and email address from the RoomShare list so that they may contact others with similar interests in shared accommodation. Check the Deep-Sea Symposium UPDATE section of the MBARI web site (www.mbari.org) for access to the service. If you do not have access to a web browser, a list of people subscribing to the room-share list can be obtained by email from Ms. Kelly Burgess (email: kellyb@mbari.org).

TRAVEL FUNDS

Two sources of travel funds are available to support a limited number of symposium participants.

MBARI

MBARI has donated funds to support some travel costs for a small number of students or scientists in need of financial assistance. All funds have now been allocated fully to participants of the symposium.

National Undersea Research Program (NURP)

The West Coast and Polar Regions Undersea Research Center has also contributed funds to support presentations by investigators and students concerning NURP-sponsored research relevant to the themes of the Deep Sea Biology Symposium. Application for these funds can be made by contacting Dr. Cindy VanDover (westnurc@ims.alaska.edu, 907-474-5870) or Dr. Geoff Wheat (wheat@mbari.org, 408-633-7033).

BEST STUDENT PRESENTATION AWARD

The West Coast and Polar National Undersea Research Center is contributing funds to support an award for the best student presentation. Judges will be selected by the DSBS hosting committee. Students should note their status on registration forms for symposium presentations. The award will be ~\$100 U.S.

SYMPOSIUM-ASSOCIATED ACTIVITIES SOCIAL EVENTS

Mixer-Monday, September 22nd

An evening reception hosted by the NURP will be held at the 'Blue Fin Cafe and Billiards', a casual and very comfortable venue just a block from Monterey Bay Aquarium.

Symposium Dinner-Wednesday, September 24th

The Symposium dinner will be held in the Aquarium in the area immediately outside the 16m wide window of the Outer Bay Waters tank. The tank holds 1 million gallons and is the home of pelagic fishes, including tuna, mola-mola and shark. This is a spectacular setting and a dinner not to be missed.

MBARI Reception - Thursday, September 25th

MBARI is hosting a reception at Moss Landing in the late afternoon and evening. This offers symposium participants a chance to visit the research institute.

EXCURSIONS - FRIDAY, SEPTEMBER 26th

We are planning several events for Friday, September 26. Because these events will take place concurrently, it will very likely be possible to attend only one event. The wine fasting and 17-mile drive / Pt. Lobos tours will begin in the morning and continue through mid-afternoon. The Western Flyer will set sail on two short cruises - morning and afternoon - each holding a maximum of 16 participants. Because space is limited, cruise participation will be on a first come first serve basis. Tours of the Western Flyer will be available for those not participating in the short cruises when the ship returns from the afternoon cruise. The Elkhorn Slough bird watching tour leaves on a small boat from Moss Landing Harbor and ventures into Elkhorn Slough. We will try to coordinate scheduling of these tours with the Western Flyer cruises so that those interesting may participate in both. Bird watching is also possible from the shore and many other sites in the vicinity of Moss Landing and Monterey.

Wine Country Tour

Monterey and surrounding regions are home to some of the best vineyards in California. This excursion will offer the opportunity to sample several of the best. Box lunch included.

17 Mile Drive and Pt Lobos Nature Walk

Seventeen-Mile Drive presents some of the most breathtaking scenery in the world and is a definite must-see for first time visitors to the area. Pt Lobos State Park offers spectacular rocky intertidal and kelp forest scenery replete with marine mammals such as otter, sea lion, harbor seal and cetaceans as well as birds. Box lunch included.

Western Flyer Excursions

A limited number (32 total) of participants (on a first-come, first-served basis) will be offered the opportunity to partake in a short excursion from Moss Landing to the deep waters of Monterey Canyon aboard our new SWATH design research vessel the Western Flyer. We hope to deploy our new ROV, Tiburon for a very short dive on each excursion. We plan to run two short (3 hour) trips, one in the morning and another in the afternoon.

Elkhorn Slough Nature Viewing

Elkhorn Slough is an important feeding and roosting ground for many species of marine birds. Small boat tours of Moss Landing Harbor (harbor seals, sea otters) and lower Elkhorn Slough are available from a commercial touring outfit located in Moss Landing harbor.

MAP OF MONTEREY VICINITY



Registration & Application for the 8th Deep-Sea Biology Symposium

Late Registration: Pre-registration ended June 15, 1997

Name:					
Institution:			0		
Address:					
e-mail:	Telephone:		Fax:		
			*		
□ Oral Presentation : close	d	🗆 Poster (n	nay be available)		
r					
Video Format: VHS	□ SESAM □	NTSC Oth	er (specify):		
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□ Late Non-student re	gistration: \$2		*		
\Box Late Non-student re	gistration: \$	00.00 USD			
		90.00 03D			
	Excur	sions:			
□ Wine country tour w/b	ox lunch	\square 17 mile D	Drive & Pt. Lobos		
,		w/box lunch			
\$40.00(USD)		\$40.00(USD)			
□ MBARI/Western Flyer	tour	🗆 Elkhorn Slough (MBARI)			
		bird watch	ing		
No charge		\$22.50(USD)			
Gue	st Social Even	t Attendance	e:		
Mixer \$20.00(USD) Symp	posium Dinner \$4	0.00(USD)	MBARI Reception \$35.00(USD)		
Note: Excusion and C	<u>Suest event fees</u>	s are due on o	or before June 15, 1997		
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Payment may be made by check	drawn on US	Make chec	1: (COD)		
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Or you may pay by credit ca	ard:				
🗆 Visa	□ Mastercard	□ American Express			
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Name as it appears on the	card:				
Signa	ture:				

THE BRIDGE AND INTERRIDGE PROGRAMMES

BRIDGE

BRIDGE is the British Mid-Ocean Ridge Initiative, an £11M research programme of the UK's Natural Environment Research Council.

First funded in 1993, and due to run until 1999, the goal of BRIDGE is, "to enhance our ability to understand the complex web of geophysical, geochemical and biological processes operating at the global spreading plate boundaries during the formation of new oceanic crust from upwelling mantle."

At the mid-ocean ridges the plates that form the Earth's crust are moving apart. Here there is deepocean volcanic activity as lava erupts to fill the widening gap.

BRIDGE research is focused mainly in the North Atlantic, where the mid-Atlantic ridge runs down the centre of the ocean from the Arctic to the Antarctic. In the north the active volcanoes of the ridge have broken through the sea's surface, forming Iceland. In the south the volcanism expresses itself as deep ocean hydrothermal vent fields such as 'Broken Spur' and 'TAG' at depths of more than 3000 m midway between the Caribbean and West Africa.

BRIDGE is a multidisciplinary programme supporting a full range of research. It develops new deepocean technologies; maps previously uncharted seafloor; investigates the structure and chemistry of the seabed and the underlying crust, and – of course – attempts to understand the unique biological ecosystem of the hydrothermal vent fields themselves.

In any study of newly discovered regions the biologists' understanding must wait until the physical and chemical nature of the environment has been characterised. As the BRIDGE Programme matures, the biological studies are becoming more important. The geologists have studied the rocks; the geochemists have studied the superheated fluids gushing from the vents; the oceanographers have mapped and modelled the sulphide-laden plumes that stream into the water-column from the 'black-smokers'. Finally the biologists have the background information they need to begin to piece together the life-histories of the animals that thrive around the seemingly toxic vents.

On a BRIDGE-funded cruise in August 1995 Peter Herring towed fine-meshed (4.5mm and 0.33mm) midwater-trawls through the water column above the Broken Spur vent field, filtering up to 85000 m³ of water per trawl in a search for the larvae of the shrimp which teem around the Broken Spur vent chimneys. He collected several hundred vent shrimp larvae of three types: one that resembled the adult of *Alvinocaris markensis*; one that resembled the adult of *Chorocaris chacei*; and one ('Type A') that resembled neither. None of the three appeared to resemble the vent shrimp *Rimicaris exoculata*, the adult of which lacks eyes. Type A had clearly developed eyes.

As a control sample, a trawl was made at a depth of approximately 3000 m at a site 50 km to the northeast, where there was no known hydrothermal site. To Peter Herring's surprise, this caught 8 vent shrimp larvae. Another control was attempted at similar depths 50-60 km further to the northwest. This also produced vent shrimp larvae (At this point the attempt to make a control collection was abandoned) (Herring, 1996).

To explore the identities of the three types of larvae collected over the Broken Spur vent field, David and Linda Dixon of the Plymouth Marine Laboratory employed DNA techniques. They discovered that Type A was actually the juvenile forms of all three species and that the specimens that appeared to be the young of *Chorocaris chacei* were actually juveniles of *Chorocaris* and *Rimicaris*. All three species were, after all, represented in the collections and it had been discovered that *Rimicaris* began life with eyes (Dixon & Dixon, 1996).

Work is continuing to examine the feeding of vent animals using video film of live vent shrimp collected by submersible, and lipid analysis of body tissues. Lipid analyses can indicate whether animals rely on plankton from surface waters for nutrients, as appears to be the case with the vent shrimp larvae, or feed on the chemosynthetic bacteria at the vents, as appears to be the case for adult *Rimicaris*.

In recent years BRIDGE has co-sponsored several meetings with the Challenger Society for Marine Science and the Marine Studies Group of the Geological Society of London. These meetings led to two volumes of papers considering hydrothermal systems: *Hydrothermal Vents and Processes* (1995) and *Tectonic, Magmatic, Hydrothermal and Biological Segmentation of Mid-Ocean Ridges* (1996). Another volume is in preparation, *Modern Ocean Floor Processes and the Geological Record*, which will examine animal distributions around hydrothermal vents, and hydrothermal populations in the fossil record.

InterRidge

As noted, BRIDGE is the UK's national mid-ocean ridge programme. Other nations also have national programmes investigating this deep ocean region: in France, 'Dorsales'; in the US, 'Ridge'.

At the international level, nations with an interest in mid-ocean ridge studies co-operate through the InterRidge Programme. From 1994 to 1996 the InterRidge Office was in the UK and was funded by

BRIDGE. In January 1996 the InterRidge Office moved to Paris when France became the host-nation. There are three classes of membership to InterRidge and 20 nations currently subscribe: France, Germany, Japan, Spain, UK, USA (Principal Members); Norway, Portugal (Associate Members); Australia, Canada, Denmark, Iceland, India, Italy, Korea, Mexico, Russia, South Africa, Sweden and Switzerland (Corresponding Members).

Research on mid-ocean ridge spreading zones has concentrated in the past on the fast spreading East Pacific (close to the USA and Canada) and the slow spreading mid-Atlantic (close to Europe and the USA). InterRidge has introduced a Project Plan to co-ordinate research examining the very slow spreading South West Indian Ridge in the western Indian Ocean. Here the movement of the plates is slower and this, with the fact that this is in another of the Earth's oceans, may result in a faunal composition around the hydrothermal vents that differs from the shrimp and anemone dominated Atlantic or the tubeworm and bivalve dominated East Pacific.

Contact details for InterRidge are: InterRidge Office, Laboratoire de Pétrologie, Université Pierre et Marie Curie, Tour 26, 3ème étage, 4 Place Jussieu, 75252 Paris Cédex 05, France. t. +33 1 44 27 75 78, f.+33 1 44 27 39 11, <intridge@ext.jussieu.fr> and their web site is at http://www.lgs.jussieu.fr/~intridge.

Both BRIDGE and InterRidge produce newsletters twice a year which are available free of charge by registering with the programme offices.



BRITISH MID-OCEAN RIDGE INITIATIVE

Keith Harrison BRIDGE Programme Manager Earth Sciences University of Leeds Leeds LS2 9JT UK

t. +44 113 233 5241 f. +44 113 233 5259 BRIDGE@earth.leeds.ac.uk

Publications

Herring, P.J., 1996: Travelling Shrimp. - BRIDGE Newsletter 11: 6-8.

Dixon, D.R. & Dixon, L.R.J., 1996: Results of DNA analyses conducted on vent-shrimp postlarvae collected above the Broken Spur vent field during the CD95 cruise, August 1995. -BRIDGE Newsletter 11: 9-15.

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Developmental sequence of vent shrimp found at Broken Spur, based on the results of PCR-RFLP analysis. The degree of morphological similarity is such that without DNA markers it would not have been possible to separate the postlarvae into the different species.

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THE XENOPHYOPHORES - FROM ENIGMA TO DOMINATING FAUNA ELEMENT

The history

The well-known German zoologist and evolutionist Ernst Haeckel was the first to describe xenophyophores. Having at his disposal the collection of the *Challenger* Expedition 1872-76, he described 21 species, but considered them keratose ("horny") sponges living in symbiosis with hydroids (Haeckel 1889). The next to add an opinion on their nature was the Swedish scientist Axel Goës, who from the material af the *Albatross* Expedition 1891 described as new a species already described by Haeckel and considered it a large agglutinating foraminifer (Goës 1892). The final step towards a delimitation of the group was taken by the German zoologist Franz Eilhard Schulze. On the basis of the materials from the *Valdivia* (1898-99) and the *Albatross* (1899-1900) Expeditions, and parts of the *Challenger* collection he described one new species, reconsidered the already existing species, and erected the group Xenophyophora within the rhizopod protozoans (Schulze 1907). Details of the later history and the conception of the group has been given by Tendal (1972, 1996).

The literature

Despite the fact that both the "Deep-Sea Keratosa" of Haeckel, the foraminifer of Goës, and the xenophyophores of Schulze were soon included in some of the important handbooks of the time, scientists seem after 1907 largely to have lost interest in the group (table 1). It was "revived" with the description in 1972 of an abundant new material taken by the *Galathea* Expedition 1950-52, as well as samples from a number of British, New Zealand and Russian Expeditions.

In recent times, once again, the xenophyophores have entered text- and handbooks, and a large group of deepsea biologists from many countries have yielded a wealth of information on the taxonomy, zoogeography, ecology and paleontology (Tendal 1996).

Table 1. The number of different kinds of publications on xenophyophores appearing 1875-1996. The counting of books and "other publications" is somewhat crude.

Period 1	875-1900	01-25	26-50	51-75	76-96
Publications with					
new species	6	3	0 4	4 8	
Hand- and textbooks	1	4	1 3	3 20	
Other scientific					
publications	2	5	2 1	1 39	

How many species of xenophyophores are there ?

From the 22 recognized species at Schulze's time, the number has arisen to 58 in 1996. The present author offers a guess of about 100 existing species, based on 1) the knowledge that undescribed samples exist in institutions in Great Britain, Russia and Denmark, 2) that taxa hitherto designated only "sp." have later been descibed after more material turned up, and there are good reasons to believe that this will happen again over time, 3) the discovery of an unrecognized fauna of small-sized species, 4) modern sampling equipment yielding material of very fragile species, and 5) a number of bottom photographs showing supposed xenophyophores of undescribed morphologies.

Do readers of *Deep-Sea Newsletter* have other suggestions? Then, please, come forward - any idea or information is welcome. Likewise, anybody who knows about or possesses undescribed samples, including single ones or fragments, as well as bottom photographs, is strongly urged to either contact the author for cooperation or for advice on the use of the material or for other means of assuring that their existence becomes known!

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Ernst Haeckel (1834-1919)



Franz Eilhard Schulze (1840-1921)



Stannophyllum aiatum (Haeckel, 1889) About 4 cm across

MYSTERIOUS CHONDROCLADIA (PORIFERA) REFOUND AND REACTING TO THE CAMERA

In Deep-Sea Newsletter 21, p. 11-12 (1993) Tendal, Barthel & Tabachnik demonstrated the identity between an enigmatic organism sometimes seen in abyssal photographs and sponges of the genus *Chondrocladia*. In sponges of this genus, which are all deep-sea species, the body is situated on a stalk, rooted in the mud with the lower end. The lumpy body bears a number of thin branches which fresh on deck and in preserved condition each has a more or less swollen distal part. The deep-sea photographs showed that *in situ* these swollen parts were not visible, but instead much larger thinwalled, tranlucent spherical formations are seen.

During an expedition onboard the German research vessel "Die Sonne" (Cruise SO 97) in the North Pacific, in which one of us (HS) took part, series of bottom photographs were taken. One of these showed one specimen of what seems to be the same species as described by Tendal *et al.* (1.c.). The two localities are about 550 km apart, at depths of 4900 m and 5320 m, respectively. In both cases the sediment seems to be fine mud with numerous lebensspuren.

The earlier reported specimen had 13 branches, all with the translucent spherical formation at the distal end. The new specimen has 17 branches, 7 of which are contracted into small opague lumps. One or two other branches may be in the process of contraction.

The interesting observation here is the speed of the reaction. One of us (OT) has during cruises north of Iceland (The BIOICE programme) several times seen another species, *Chondrocladia gigantea*, the giant clubsponge, coming up from depths of less than 500 m with all the tips of branches carrying contracted massive formations (Tendal & Barthel 1993). If they were extended while the sponge was on the bottom, they must have contracted in less than the 40 minutes it took to carry through the trawling and to haul the gear. The new photograph can



The new specimen of *Chondrocladia*. The photograph was taken on August 17, 1994 on $54^{\circ}18'N$, $157^{\circ}11'W$ at 4900 m depth. It is estimated that the extended sponge measures about 5 cm in diameter be interpreted to show a much faster reaction, probably in tens of seconds, to the disturbance from the weight hanging beneath the camera, presumably a vibration of the bottom or a pressure wave, the effect of which is also seen in the photograph as a cloud of sediment (not seen on the section shown). Similar fast reactions are known from several shallow water sponges, f.ex. *Cliona celata* (Emson 1966), but have not been indicated in deep-sea sponges before. Slow contraction phenomena are, however, often seen in certain other deep-sea sponges (OT pers. obs., Witte 1995).

Ole S. Tendal, Zoological Museum, Copenhagen Heiko Sahling, GEOMAR, Kiel

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NINA GEORGEIVNA VINOGRADOVA

30 May 1928 - 10 March 1997



Nina Vinogradova has left us. full of scientific plans and dreams of future works. A beautiful, kind, wonderful woman, marine biologist and oceanologist. She loved the sea and devoted her whole life to it. She was married to the famous Russian hydrobiologist Michael Vinogradov and both have made enormous contributions to marine biology - Nina on the deep-sea bottom fauna and Michael on the plankton communities down to great depths. One of their two children, Egor, continues the family tradition of studies of marine life.

Nina Vinogradova was the favourite student of Academician Lev Alexandrovitch Zenkevitch. As a student of the Biology Department of Moscow State University, she parti-

cipated in the 2nd cruise of the R/V "Vityaz" in the Sea of Okhotsk, when the trawl for the first time brought animals from enormous depths (exceeding 8000 m) of the Kurile-Kamchatka Trench. Later, there was the Bering Sea. By 1954 she was working at the P.P. Shirshov Institute of Oceanology and took part in the remarkable deep-sea cruise 14 of the R/V "Vityaz" in the region of the Kurile-Kamchatka Trench. The fauna of the extreme oceanic depths, with the trawls for tens of hours slowly crawling to the surface... During fog and rain, Nina stayed on deck around the clock, and in those days she was called "the Chief Mate of the Trawlmaster".

In 1955 she received her Ph.D. Besides working up her own materials, she analyzed the data of all main world expeditions concerning the deep-sea fauna and left a catalogue that included thousands of species. The

deep-sea fauna appeared as the whole object, not divided into limited systematic groups. She found fundamental regularities in the vertical and horizontal distribution of the deep-sea species and created a zoogeographical map of the oceanic abyssal zone, based upon exhaustive material. This map was first presented at the 1st Oceanographical Congress in New York in 1959 and has since been widely cited all over the world in reviews and courses for students.

Nina soon became a full member of the deep-sea biological community. Her studies on abyssal and hadal zones (she preferred the term "ultraabyssal"!) were very intensive. Nina took part in a dozen largescale cruises which covered the Pacific (Kurile-Kamchatka, Japanese, Mariana, Kermadec, and Philippine Trenches) and Indian Ocean (Java Trench). During the later years she has organized research in the subantarctic trenches of the South Atlantic Ocean, the South Sandwich and Orknean Trenches, where she managed to carry out detailed trawl and bottom dredging sections from the trench bottom to depths of 1000 m. Several times trawlings were stopped due to the danger of approaching icebergs.

Expedition followed expedition, and the main question of how the ocean was structured was transforming into the next question, why it is structured as it appears to be: "The principal face of the Ocean", as one of her favourite papers was entitled. Her last papers were focused on the problems of the biological structure of the ocean. She published about 130 scientific papers.

Nina Vinogradova became an active member of the international deep-sea community, a participant in numerous symposia and conferences, a member of the SCOR working group "Ecology of the oceanic abyss", and the Russian contact person and distributor of "Deep-Sea Newsletter". She welcomed these activities; one could see how enthusiastically she copied each new issue of the Newsletter in order to provide one for everybody, and how she tried to see that most recent Russian achievements were included in the Newsletter.

Nina was always ready to help, not just to sympathize, but to take an active part in solving a person's problems. She was a remarkable human who had no enemies and was loved by everyone. At the same time, she was a woman of a strong and active temper. We all loved her and will always feel the bitterness of this loss.

Marina Sokolova, friends and colleagues

AWARD FOR EXCELLENCE IN RESEARCH

Readers of the *Journal of Crustacean Biology* will know that last summer the Crustacean Society presented the award for Research Excellence to Robert Hessler, Professor of Oceanography at Scripps, in recognition of lifetime achievements in crustacean studies.

Bob Hessler's outstanding contributions, not only to crustacean morphology, taxonomy and biology, but also to the origin of the Recent deep-sea fauna, life in hydrothermal vents, etc., are summarized in JCB (vol. 17, May 1997: 374-375).

Congratulations to Bob should also be extended from the *Deep-Sea Newsletter*. Back in November 1981 at Scripps, he was the supreme organizer of the first Deep-Sea Biology Symposium in its present form, was for many years the "manifolder" and distributor of the Newsletter to the many deep-sea biologists on the U.S. West Coast, and has contributed with news on hydrothermal vents, etc.

Cheers, Bob!

Ed.

THE DEADLINE FOR THE NEXT ISSUE OF D-SN IS 1st MAY 1998

Contributions may be sent as e-mail attachments in WordPerfect 5.1 DOS or ASCII to TW c/o Annemarie Jensen: <ajensen@zmuc.ku.dk>. For further information, see http://www.aki.ku.dk/zmuc/inv/staff/tw.htm

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