

## Biological Studies *Ad Hoc* Committee Workshop Summary

### **Biological Studies at the Mid-Ocean Ridge Crest**

Rutgers University in New Brunswick, New Jersey, USA  
24th-25th April, 1995

Convenors: D. Desbruyères and R.A. Lutz

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*Ad Hoc* Committee that biological studies do not fall easily within the framework of InterRidge. The scales on which the three principal themes operate are not those used by biologists. This may be the reason for the very limited participation of biologists in InterRidge workshops. However, Active Processes is the most natural theme for biological studies to fit into.

A Basic Framework for Biological Studies at the Ridge Crest

#### **1 Origin and Evolution of Vent Taxa**

- Paleo-tectonics
- Paleo-oceanography (need input from geosciences)
- Evolution
- Genetics
- Biogeography

#### **2 Community Structure and Species Persistence (Community Dynamics)**

- Cold sulphide deposits
- Temporal variation
- Monitoring (observatories link)
- Ridge fauna
- Dispersal and reproduction
- Life cycle
- Symbionts transmission
- Adaptation to extreme conditions

Hydrothermal vents are an unstable environment. Biological communities must persist within a segment and then disperse in lifecycles which help them to survive. Cold sulphide deposits are not being studied at present but may be the most important aspect of hydrothermal venting in terms of volume and their associated biological communities.

#### **3 Biogeochemical Interaction**

- Biological modification of vent fluid chemistry
- Biomineralisation
- Subsurface circulation system plumbing

These are fundamental processes occurring at hydrothermal vents, yet there is currently little or no work going on in these areas.

#### **4 Biological Production**

- Chemosynthetic production
- Symbiosis
- Ultrathermophily (limits of life)

- Exploration of OM from vents to ridge
- Cold biological production (psychrophilic chemosynthetic production)

All of this is currently under discussion over the Internet and an implementation plan is being formulated which will eventually be ready for discussion at the Steering Committee level.

## **Recommendations and Actions of the Biological Studies *Ad Hoc* Committee**

### ***International Sample Exchange Agreement and 'Bio-box'***

The bio-box is an American concept. It is a box containing all the supplies and information necessary for non-biologists to effectively and correctly sample and preserve hydrothermal vent biota. Optimally, all vessels carrying a bio-box would be in communication with a biologist.

The International Sample Exchange Agreement pertains to preserved and frozen samples. Its aim is to avoid duplication of sampling which is costly not only in monetary terms but also in terms of environmental impact. The Biological Ad Hoc Committee will request ratification of the Agreement which will have been endorsed by all the member nations of InterRidge. The Agreement excludes commercial use of any exchanged sample. Each nation will have a curatory clearing house kept by a national corresponding curator whose responsibility it will be to:

- keep a record of all samples collected by PIs from his or her country
- respond to sample requests; keep a record of all exchanged samples
- curate bio-box samples

Limitations of the Agreement will include:

- non-commercial use of samples
- investigators must supply reports on work carried out
- the life of the study must be agreed upon before exchange
- citation must be agreed upon before exchange
- samples may never be redistributed by the requester.

### ***Ridge Crest Biologist Directory***

This directory is currently under development on the WWW.

### ***Data Exchange - BioOcean-H***

BioOcean-H is currently used as a format for data exchange in France for deep sea research data but not for hydrothermal vent fauna. This database is being extended as a project of the Biological Ad Hoc Committee to include vent fauna so that data may be exchanged on the WWW.

### ***International Vent Biology Symposium***

An international symposium is being planned by M. Biscoito (Portugal) and C. Cary (US) to be held in Madeira in the Spring of 1997. The proceedings will be published in a volume edited by D. Dixon (UK).

### ***Species Identification Manual***

A manual is currently being compiled which will be distributed to all cruises working at the ridge crest so that biological samples that arrive on deck can be identified and described by geologists in a way which can be understood by biologists. Contributions of manual pages are being made by numerous individuals within the community.

### ***Demarcation of Sanctuaries and Definition of Collection Area***

Areas of particular interest, areas where instruments are deployed and areas where monitoring is on-going will be designated and the community will be informed and requested to respect them. An effort will be made to co-ordinate sampling.

***International Listing of Sea-going Capabilities***

A listing has been compiled by the InterRidge Office and is accessible via the WWW. Work will continue on the listing to expand and update it.