

# ENVIRONMENTAL MONITORING IN THE COASTAL ZONE

**NYALI BEACH HOTEL, MOMBASA:  
Wednesday 23rd - Friday 25th April 1997**



A contribution to the UK Overseas Development Administration (ODA)  
Land-Ocean Contamination Study (LOCS) in East Africa.

Organised by the British Geological Survey and Kenya Marine and Fisheries  
Research Institute.



**KMFRI**

**ODA**



ODA LOCS

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*Bibliographic reference:*

Rawlins, B. G. and Williams, T. M. 1997. Abstracts of the ODA / LOCS Workshop-Environmental Monitoring in the Coastal Zone, Mombasa, Kenya, 23rd-25th April, 1997. British Geological Survey, Keyworth, Nottingham, U. K.

# WORKSHOP PROGRAMME

WEDNESDAY 23RD APRIL

## Introduction and Coastal Zone Management

- 9-00 Registration
- 9-45 Martin Williams (BGS) Introduction: background to the ODA LOCS project
- 10-30 Coffee
- 11-00 Martin Williams and John Rees (BGS) Contaminant monitoring in estuarine and nearshore marine systems. 1: Survey framework, design and sample collection
- 12-30 Lunch

## Chemical oceanography and pollution

- 14-00 Abdalla C Yobe (KMFRI) Assessment of land based sources of pollution along the Kenya coast
- 14-20 Peter J Shunula (IMS) Considerations on sources and control of pollution of the coastal zone in Tanzania
- 14-40 Alfred Muzuka (IMS) 1. Methods of dating coastal sediments and corals.
- 15-00 Alfred Muzuka (IMS) 2. Can stable isotope compositions of tropical East African flora be used as source indicators of organic matter in coastal marine sediments?
- 15-20 R. B. Owen (Dept. of Geog., Hong-Kong) Heavy metals in Hong Kong coastal sediments
- 15-40 C. Z. Kaaya (Dept of Geology, Dar-es-Salaam) Sources of Chemical Pollution in Dar-es-Salaam Coastal Waters
- 16-00 Coffee

## **Remote sensing in Coastal Zone Management**

- 16-20 Peter Mumby  
(CTCMS, U. K.) Practical remote sensing of coral reefs and seagrass beds: a cost benefit assessment.
- 16-40 Edmund Green (CTCMS, U. K.) A Comparative Assessment of Mangrove Areas using Remotely Sensed Data from Satellites and Airborne Sensors.

## **THURSDAY 24TH APRIL**

### **Interpretation of marine pollution data**

- 9-00 Martin Williams (BGS) Contaminant monitoring in estuarine and nearshore marine systems. 2: Analysis, interpretation and integration of chemical data.
- 9-45 John Rees (BGS) Estimation of residence time of sediment-hosted contaminants, based on interpretation of sedimentological and oceanographic data
- 10-30 Coffee**
- 11-00 Barry Rawlins (BGS) Obtaining pollution chronologies in marine sediments
- 11-30 Jason Weeks (ITE) Biomarkers in marine pollution monitoring

### **12-30 Lunch**

### **Biological / Ecological studies**

- 14-00 Nyawira Muthiga  
(Kenya Wildlife Service) Coral reef monitoring within protected areas in Kenya
- 14-20 Johnson Kazungu (KMFRI) Nitrogen transformational processes in a mangrove ecosystem
- 14-40 Jacqueline N Uku (KMFRI) Submerged marine flora as indicators of environmental health
- 15-00 Coffee**
- 15-30 Omondi Wawiye (KMFRI) Phytoplankton as bio-indicators of environmental stress: comparison between a polluted and a pristine environment along the Kenyan coastline
- 15-50 Patrick Gwada (KMFRI) Regeneration structure of Kenyan mangroves after human perturbation: case study of Mida creek
- 16-10 Helida Oyieke (National Museums of Kenya) Coastal zone environmental quality vs biological diversity

## FRIDAY 25TH APRIL

### Physical oceanography

- 9-00 Mika Odido (KMFRI) Tidal flushing of the creeks around Mombasa Island
- 9-20 Michael Mutua Nguli (KMFRI) Water exchange and mixing in tropical inlets - a case study of Tudor inlet, Mombasa
- 9-40 Johnson Kitheka (KMFRI) Coastal water-circulation, groundwater flux and salinity anomalies at Mida Creek, Kenya

### 10-20 Coffee

### Coastal zone management and GIS

- 11-00 Dirk Van Speybroeck (UNEP) UNEP's eastern African Coastal and Marine environment resources database and atlas project
- 11-20 Dixon Waruinge (UNEP) Integrated coastal area management in Eastern Africa
- 11-40 B. A. J. Mwandotto (Coastal Development Authority) Kenya integrated coastal area management (ICAM) Pilot project
- 12-00 Prof. J. Bauer (ECO-TERRA) Holistic coastal zone protection in areas of conflict (the case of Somalia's coast during the last 10 years)

### 12-30 Lunch

### Beach erosion

- 14-00 Jeremiah Daffa (NEMC) Oil spills and marine contingency planning in Tanzania
- 14-20 N. Nyandwi (IMS) Man induced coastal erosion and its management in Tanzania
- 14-40 A. M. Dubi (IMS) Beach erosion and the role of coastal structures in beach protection
- 15-00 Yohannah Shagude (IMS) Sediment distribution and transport off the western coast of Zanzibar
- 15-20 Pamela Aboudha (KMFRI) Beach erosion and its management strategies in Kenya

### Acronyms:

- KMFRI: Kenya Marine Research Fisheries Institute  
IMS: Institute of Marine Sciences (Tanzania)  
UNEP: United Nations Environment Programme  
NEMC: National Environment Management Council (Tanzania)  
BGS: British Geological Survey (U.K.)  
ITE: Institute of Terrestrial Ecology (U.K.)

## **SUBMERGED MARINE FLORA AS INDICATORS OF ENVIRONMENTAL HEALTH**

Jacqueline N Uku and Joseph Wakibia  
Kenya Marine and Fisheries Research Institute  
Mombasa, Kenya

Seagrasses and macroalgae compose the submerged marine flora found along the Kenyan coastline. Seagrasses (marine angiosperms) have leaves and are attached to the substrate by way of roots and rhizomes whereas macroalgae (seaweeds) are more primitive in structure with a thallus instead of leaves and a holdfast for attachment to the substrate. These marine plants have diverse ecological and economic uses which have been recognised in the region. However, their importance in pollution monitoring, especially in the case of eutrophication from nutrient enrichment, has yet to be realised. These plants are sedentary and as a result they are capable of reflecting changes in the status of the environment. Studies outside East Africa indicate the usefulness of these plants in monitoring programmes. Their use is recommended in East Africa.