





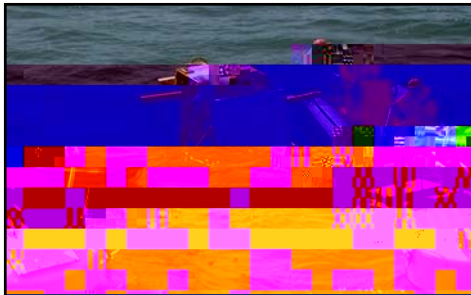
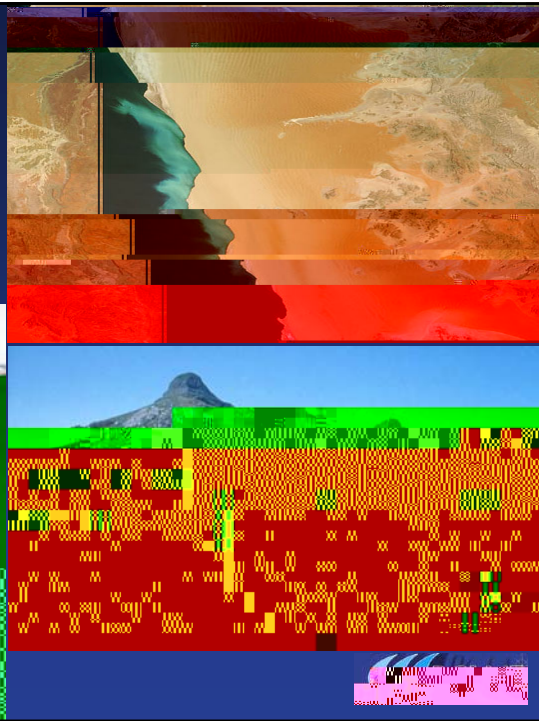
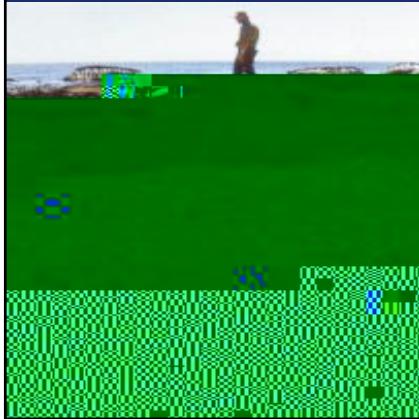
**MARINE  
RESOURCE  
UTILISATION**

- Commercial fisheries



## EXTREME EVENTS

Benguela Nino's  
Harmful Algal Blooms  
Low oxygen  
Sulphur eruptions



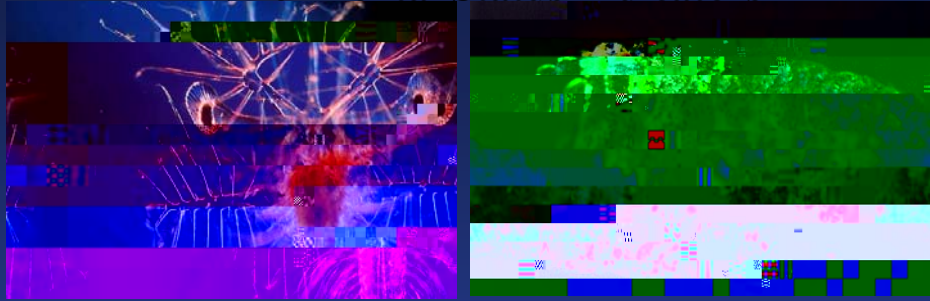
## ENVIRONMENTAL VARIABILITY

- Develop early warning system
- Improve forecasting of extreme events
- Establish baseline data
- Monitor harmful algal blooms
- Assess links to climate change





## Benguela Plankton Environmental Status Indicators



- Regional monitoring lines for zooplankton off South Africa, Namibia and Angola
- Continuous Plankton Recorder (CPR) and Aquashuttle ...deployed in region
- Training (NOAA /Southampton Oceanography)



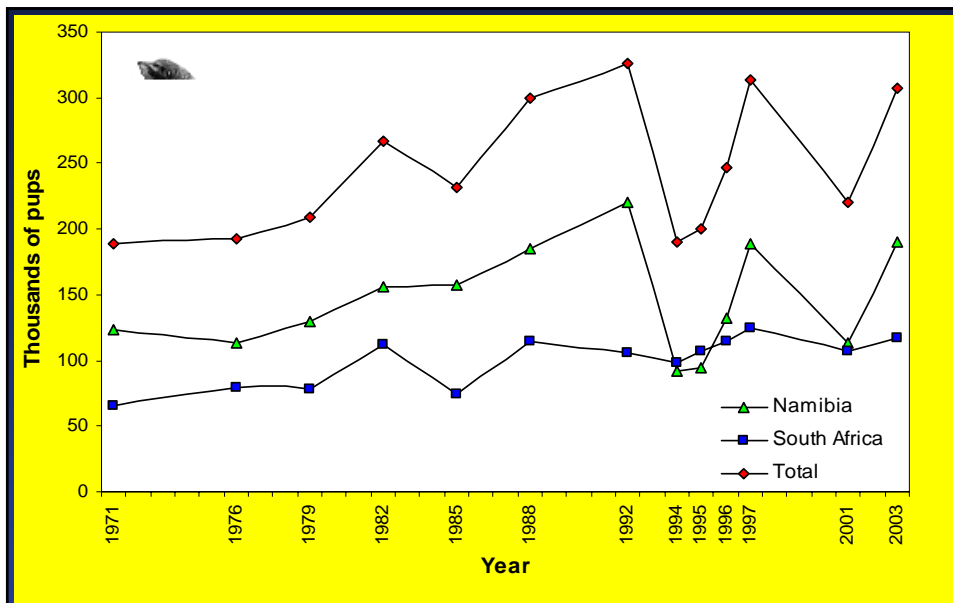


## Ecosystem- Wide Ma 2 Key BCLME Pr

Ecosystem approach  
management (EAF)

Monitoring of top pre  
indicators of ecosyste



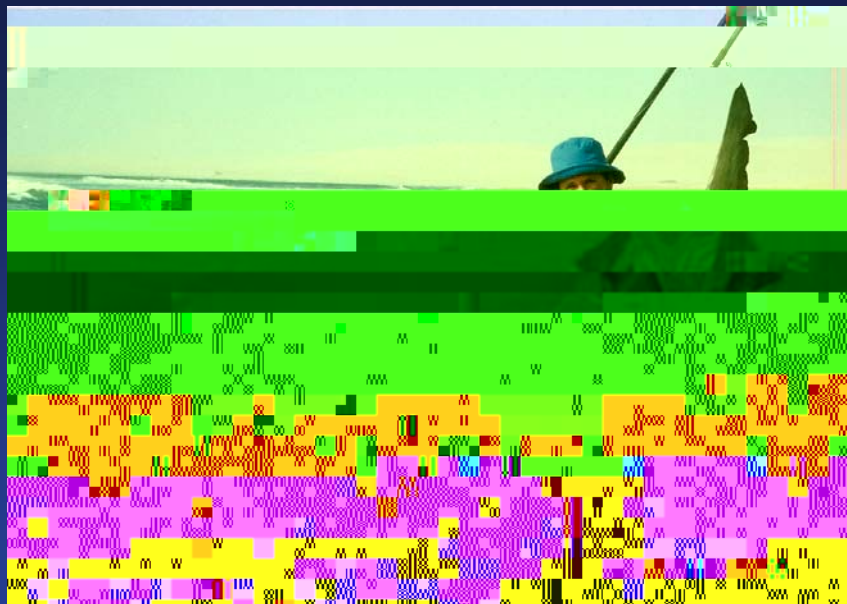


Trends in seal pup numbers in the BCLME region

R. Crawford



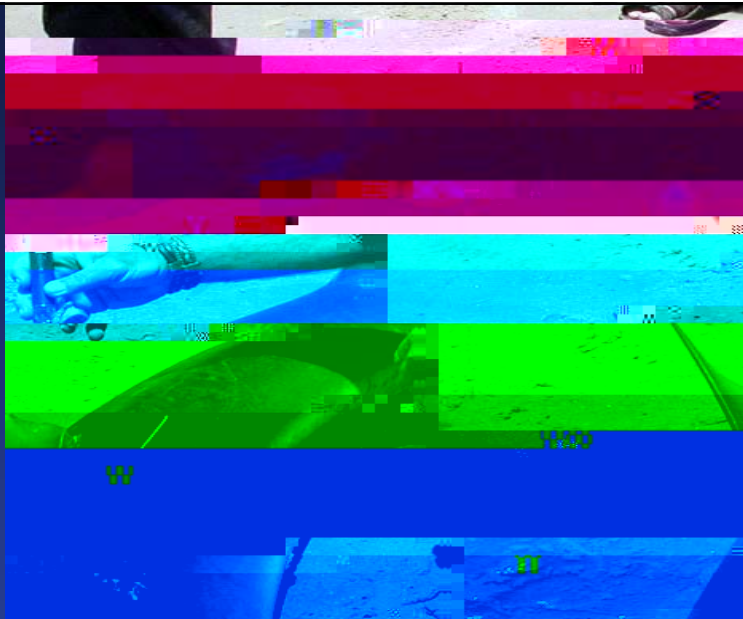
Transboundary Resource – Bronze Whaler Sharks



BCLME Project – Angola and Namibia





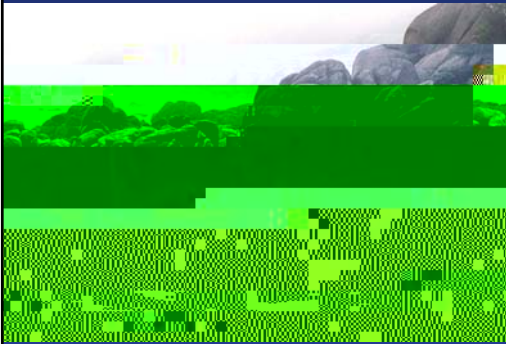


Satellite tagging of Bronze Whaler Shark



## MANAGEMENT OF POLLUTION

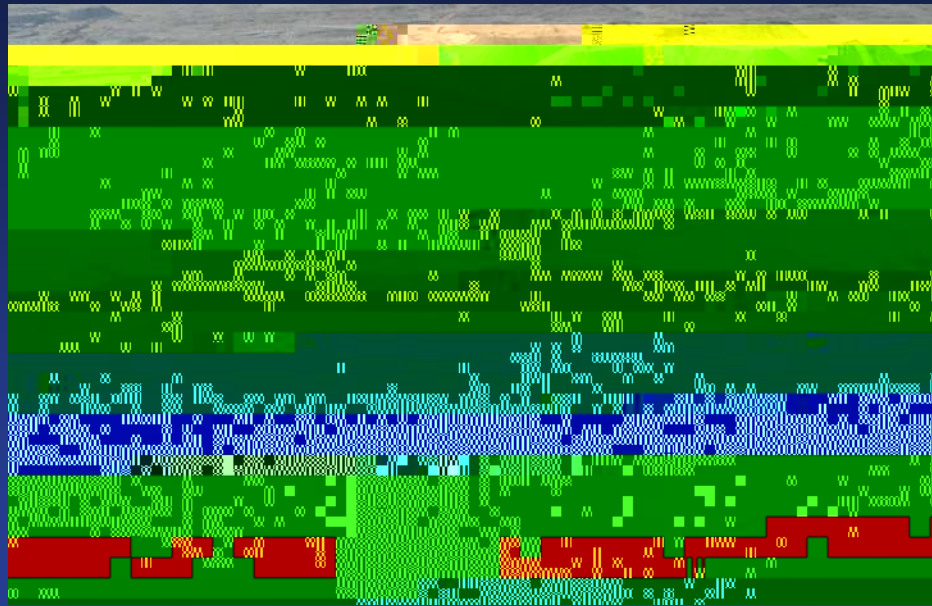
- Harmonisation of water quality guidelines
- Regional oil spill contingency plan
- Assessment of land-based sources of marine pollution



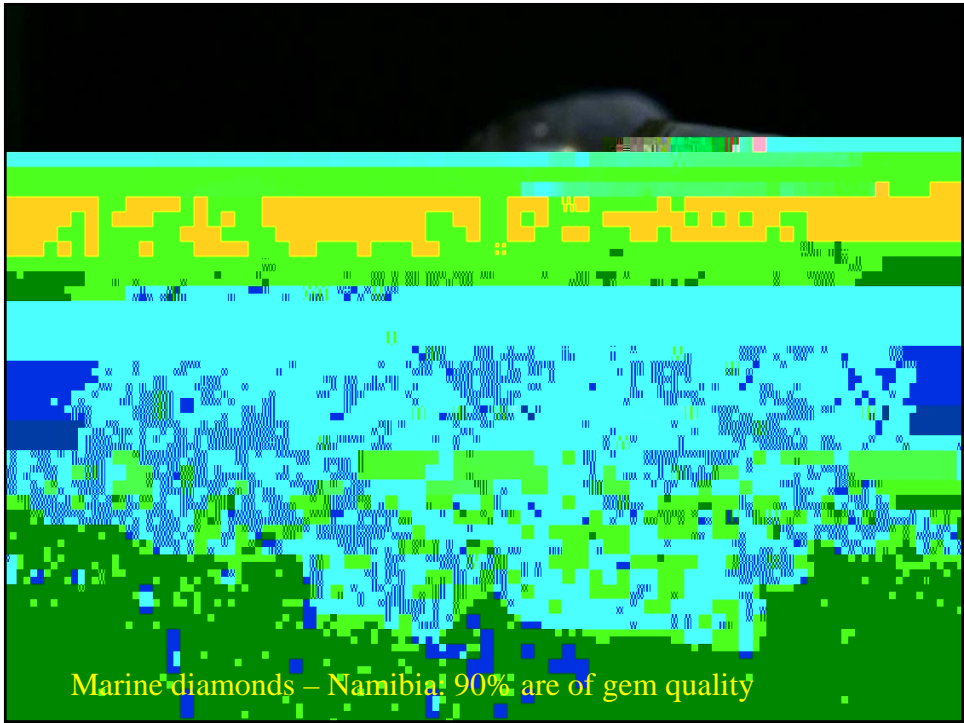
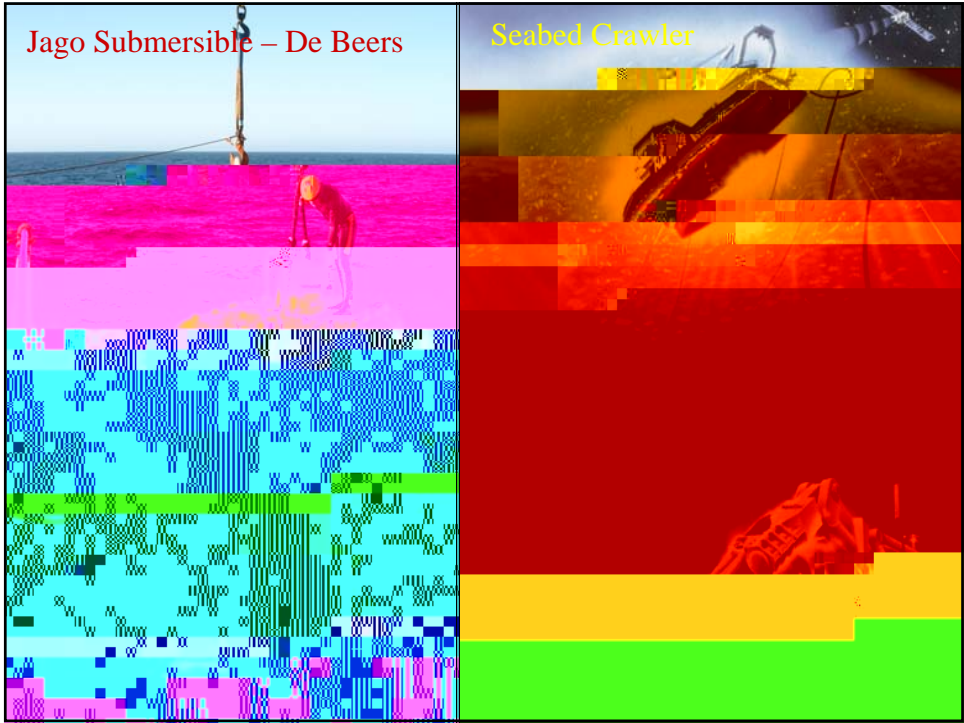
- Transboundary pollution monitoring
- Marine litter programme



**COASTAL DEGRADATION SHOWING LARGE SCALE IMPACT OF  
DIAMOND MINING NEAR SA-NAMIBIA BOUNDARY**



**Cumulative impacts of diamond mining on Benguela Large Marine Ecosystem: BCLME Project – Assessment and Mitigation**





Development and Implementation of Strategic Plan  
for Capacity Strengthening

### International Co-operation

- FAO (Ecosystem approach to fisheries –EAF)
- IOC ( Annual consultative meetings, LMEs)
- IOC-GOOS Africa (operational oceanography)
- UNEP (GPA – Pollution, Regional Seas, LMEs)
- NOAA (Global LME’s and consultations)
- GEF IW:LEARN ( LMEs shared experiences and lessons learned )
- Marine science institutes (Norway, France, Germany, USA)



## **Key Regional Instruments and Initiatives**

- SADC Treaty on regional development and integration
- SADC Protocol on Fisheries
- BENEFIT ( partners: Norway - Germany)
- SEAFO (South East Atlantic Fisheries Organisation)
- Monitoring, Control and Surveillance of Fishing Activities ( EU – SADC MCS Programme)
- NEPAD (New Partnership for African Development)



## **Some Key International Instrument**

- UNCLOS (1982) – Law of the Sea
- UNCED (1992) – LME's
- Convention on Biodiversity (1993)
- KYOTO (1995) “Code of Conduct for Responsible Fishing – FAO)
- UN Agreement ‘Straddling and Highly Migratory Fish Stocks (1995)
- UN Millenium Goals (Goal 7 – ensure environment sustainability
- Reykjavik Declaration (2001) “Ecosystem Approach to Fisheries Management”
- WSSD Johannesburg (2002)



## Co-operation with other African LME

- **Guinea Current LME**
  - joint assessment of shared stocks and pollution
  - survey cruises, training , scientific exchange
  - workshops and consultations
- **Canary Current LME**
  - Regional workshop, TDA, consultations
- **Aghulas-Somali Current LME**
  - Regional workshop and consultations



## BENGUELA CURRENT COMMISSION

Ministerial Conference

Benguela Current Commission

Secretariat

Executive Secretary / Ecosystem Coordinator

Ecosystem Advisory Committee

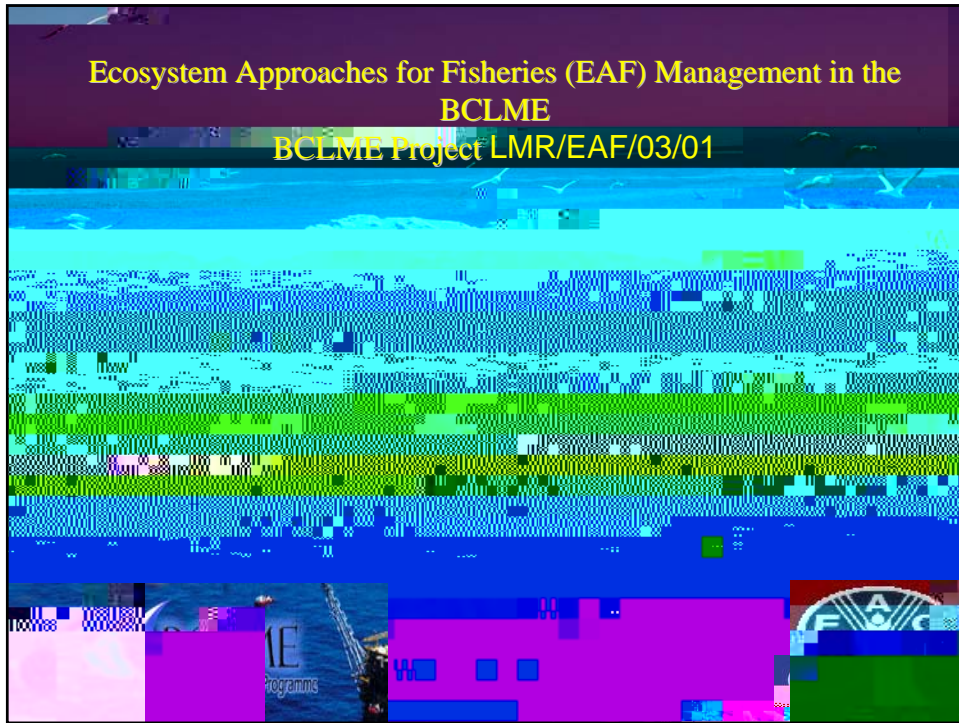
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# Ecosystem Approaches for Fisheries (EAF) Management in the BCLME

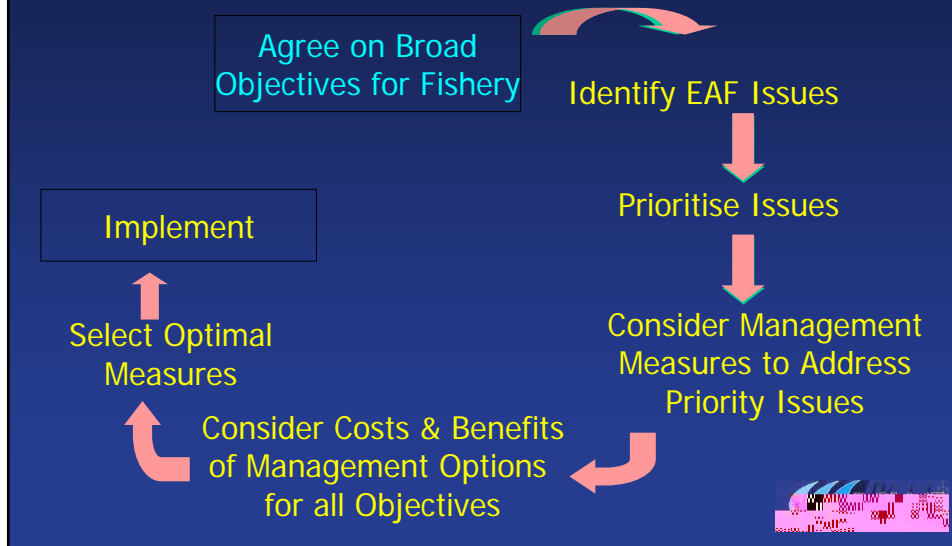
BCLME Project LMR/EAF/03/01



The goal of EAF-  
Feasible, agreed objectives and management  
measures for all stakeholders



## Application of EAF approach FAO



## Assessment of Impacts – EAF

- **Direct Impacts of the Fishery**
  - Target species
  - Bycatch species (including endangered)
  - Impacts on habitat
- **Direct Impacts of the Ecosystem**
  - Environmental variability
  - Regime changes
  - From other human activities
- **Indirect Impacts**
  - Foodchain effects (biological)





## Fisheries Considered

Artisanal

Purse seine - small pelagics

Small pelagics

Small pelagics

Midwater trawl - horse mackerel

West coast rock lobster





## **Project Outputs - Putting it all Together**

- Identification of most pressing EAF issues in BCLME
- Consideration of governance needs and management measures required
- Evaluation of costs and benefits of implementation of governance and management for EAF
- Facilitating implementation : decision-making, incentives, indicators
- Advisory report to BCLME governments

