Environmental perspectives on Marine Mining in the Southern African Region

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With input from colleagues at the Benguela Current Commission, Regional EBSA Workshop participants & SADAC representatives
Introduction

- SANBI developed the first **National Marine Ecosystem Map**
- Marine chapter of the **National Biodiversity Assessment**
  Reports on State of Biodiversity at species & ecosystem level incl.
  - Ecosystem Threat Status
  - Ecosystem Protection levels
  - Outlines Priority Actions for the Biodiversity Sector
- Represented South Africa **EBSA** workshops: 15 EBSAs in EEZ
- Engages marine production sectors to support **mainstreaming**
  of biodiversity in fisheries, petroleum, mining and other sectors
- SANBI is undertaking technical work to developed a **Network of Offshore MPAs for Operation Phakisa**
Overview

• History of Resource use in the region
• Expansion and diversification of marine mining activity
• Biodiversity Impacts
• Regional overview of biodiversity knowledge
• Challenges, opportunities and capacity building requirements

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Mining vessel
Horizontal mining (crawler)

Vertical mining (drill)

Mining ship images from De Beers

History
Work by De Beers in ML3

- *JAGO* submersible dives
- Research on habitat impacts & pollution
- De Beers Biodiversity Action Plan
Expansion & diversification
Listed 2012:

- EPL for industrial minerals
- Expired EPL
- Pending EPL (as on 2 April 2012)
- EPL active
- EPL for diamonds and precious stones (no industrial minerals)
- Mining licenses granted (diamonds or industrial minerals)

Note: no seabed mining for phosphates has taken place
Expansion & diversification

RICH PICKINGS
The mineral sands mine on the West Coast is expected to inject more than R1 billion a year into the provincial economy over the next five years.

SAND MINING BOOM

TORMIN PROJECT: Mine predicted to bring money, jobs to Western Cape
Garnets, offshore heavy minerals (Titanium)

Lease applications:
East and West coast
Proposed phosphate prospecting on the Eastern Agulhas Bank

Lease over Agulhas Bank, South Africa
47 464 km²
PRESS RELEASE
Jan. 13, 2014, 1:53 p.m. EST

Diamond Fields Announces Granting of South African Marine Phosphate Exploration Licence

VANCOUVER, BRITISH COLUMBIA, Jan 13, 2014 (Marketwired via COMTEX) -- Diamond Fields International Ltd. (CA:DFI +25.00% ("DFI" or the "Company") is pleased to announce that it has been granted a marine exploration license for phosphate and associated minerals by the Government of the Republic of South Africa. The exploration license is valid for a period of five years in the first instance, and extends over an area of approximately 47,468 km2 within the Outeniqua Basin in the South Western Cape. The license was awarded following an extensive environmental management plan compiled by the Council for Scientific and Industrial Research and public consultation with interested and affected parties.
Expansion & diversification
2015

Expansion & diversification
Impacts in Southern Africa

- Direct physical disturbance
  - Physical removal of benthic organisms, kelp cutting
  - Deposition of tailings
  - Habitat loss or alteration incl. sediment type
  - Irreversible damage that can transform habitat
  - Temperature changes
- Sediment plumes and pollution
- Benthic pelagic coupling impacts
- Underwater Noise
- Alien and Invasive species


Introduced invasive anemones on petroleum pipe, PetroSA
Key considerations

Biodiversity significance
How important is the area in contributing towards biodiversity goals?

Species of concern
Are threatened or sensitive species associated with the area and to what degree are they likely to be impacted?

Threatened and sensitive habitats
Does the area include threatened and sensitive habitats?

Ecosystem services
What are the key services in the area and to what extent will these be negatively affected?
Fisheries

1. Fishing is an important ecosystem service that should be maintained.
2. South Africa has 18 fishery sectors.
3. Many associations & groups, many overlapping rights.
Namibian phosphate mining interests overlap with fishery habitat

*Beggiatoa* and *Thiomargarita* mats,

Walvis Bay, Namibia

Slide provided by Lisa Levin
Utne-Palm et al. (Science 2010)
Investigation of cumulative impacts on the marine ecosystem from mining of phosphorites off the Namibian coast

Namibia Seabed Environmental Assessment Project
Ministry of Fisheries and Marine Resources
NAMIBIA
Progress to date and where Namibia is at now:

• Submission by the Minister of Fisheries and Marine Resources led to a Cabinet Decision in 2013 to impose a Moratorium on industrial minerals marine mining activities

• Cabinet directed that
  o a Strategic Environmental Assessment (SEA) be conducted to assess the cumulative impacts (specified to phosphates)
  o an independent scoping study and a comprehensive Environmental Impact Assessment is being carried out

• Following I&AP circulation of the draft report, final report will be submitted to the proponent Ministry of Fisheries and Marine Resources for decision and further action
Ecologically and Biologically Significant Areas (EBSAs)

- Secretariat of the Convention of Biological Diversity
- Regional workshops to identify sites that meet EBSA criteria
- 7 Criteria to define EBSAs
Ecologically and Biologically Significant Areas

35 AREAS MEETING EBSA CRITERIA IN THE SOUTH-EASTERN ATLANTIC
39 AREAS MEETING EBSA CRITERIA IN THE SOUTHERN INDIAN OCEAN REGION, Workshop report
15 EBSAs in South Africa

Biodiversity knowledge
Sensitive seabed habitats in the region

- Fragile, three dimensional habitats like cold water coral reefs
- Habitats of very limited extent eg. Some gravel and mud ecosystem types
- Threatened habitat types
Sensitive species in the region

- Fragile species with slow growth rates
- Species known from very few localities
- Threatened species
- Species sensitive to noise

Heaviside’s dolphin, ©Peter Chadwick

©Geoff Spiby
Vulnerable Marine Ecosystems

- Food and Agriculture Organisation (FAO) - International Guidelines for the Management of Deep-sea Fisheries in the High Seas
  - VME Criteria
  - Triggers
  - Identification guides
  - Lots of information

- Habitats vulnerable to fishing may be vulnerable to mining

Biodiversity knowledge
South Africa’s Vulnerable Marine Ecosystems

• Topographic features that can support VMEs
• Reef-building cold water corals
  *Lophelia pertusa*, *Gonichorella dumosa* and *Solenosmilia variabilis*
  
  Sponge grounds *Suberites* sp. nov. and *Pheronema* spp.
• Octocoral, bamboo, black & lace coral grounds
Biodiversity knowledge
Research Priorities

• Marine taxonomy and biodiversity data management
• Ecosystem classification and mapping
• Sensitive Ecosystems incl. VMEs, cold seeps etc
• Ecosystem services

Echosounder image of cold water coral reef, 900m, Larry Hutchings

Seep habitat, 600m, Image provided by Lisa Levin
Key challenges

1. Poor offshore information base, technological & capacity challenges
2. Inadequate protection of offshore ecosystems
3. Overlap with Biodiversity Priority Areas
4. Weak EIAs & lack of scientific input
5. Low awareness of activities, potential impacts & governance framework
Garnet Mining on East Coast

PROPOSED PROSPECTING ON THE ICENINE PROSPECT, TUGELA BANKS, FAST PACE TRADE AND INVESTMENT (PTY) LTD.

1.3 Map showing the spatial locality of all environmental, cultural/heritage and current land use features identified on site.

“None.”

1.4 Confirmation that the description of the environment has been compiled with the participation of the community, the landowner and interested and affected parties:

“Not applicable (since the prospect area is situated on the marine continental shelf there are no communities and landowners).”
Green Flash Trading Phosphate Prospecting Areas

GFT 251 and 257 prospecting licence areas.

Overlap with demersal trawl fishery

Overlap with Threatened and Unprotected ecosystems
“No visible impacts will be seen as the ocean floor is fluid and is continually changing as a result of the currents and ocean movement.”

GreenFlash phosphate prospecting application
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Opportunities to address challenges

1. Increasing priority and funding for this research
2. Opportunities for co-operative & collaborative research
3. Biodiversity priority areas, Marine Spatial Planning & MPA networks
4. Mining and Biodiversity guidelines, Biodiversity GIS & EIA practitioner training
5. Targeted capacity building, awareness raising & opportunities for improved co-ordination
Chamber of Mines CEO Bheki Sibiya with Minister of Water and Environmental Affairs Edna Molewa
Protection of ocean environment
A Need for Deep-Ocean Stewardship

The Goal:
Balance the use of resources with the need to maintain the integrity of deep-ocean ecosystems for future generations.
Deep-Ocean Stewardship Initiative

- Promote scientific research & observation
- Rectify Governance Gaps
- Ecosystem-based strategies
- Engage Stakeholders: Industry, Government, Scientists, Civil Society
- Unify Expertise: biology, economics, policy and law, technology, behavior
- Assist Developing Nations: Awareness, Technology, Training