

BENTHIC FAUNA FROM KENYAN MARINE SEDIMENTS: A REVIEW

WHAT DO WE KNOW AND
WHAT DO WE NEED TO KNOW?

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INTERNATIONAL WORKSHOP ON SUSTAINABLE USE OF COASTAL AND MARINE
RESOURCES IN KENYA: FROM RESEARCH TO SOCIETAL BENEFITS

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NORTH COAST BEACH HOTEL, KILIFI COUNTY, KENYA

Outline

- Introduction
- Distribution of studies along the Kenyan Coast
- What we know from the studies
- What we need to know

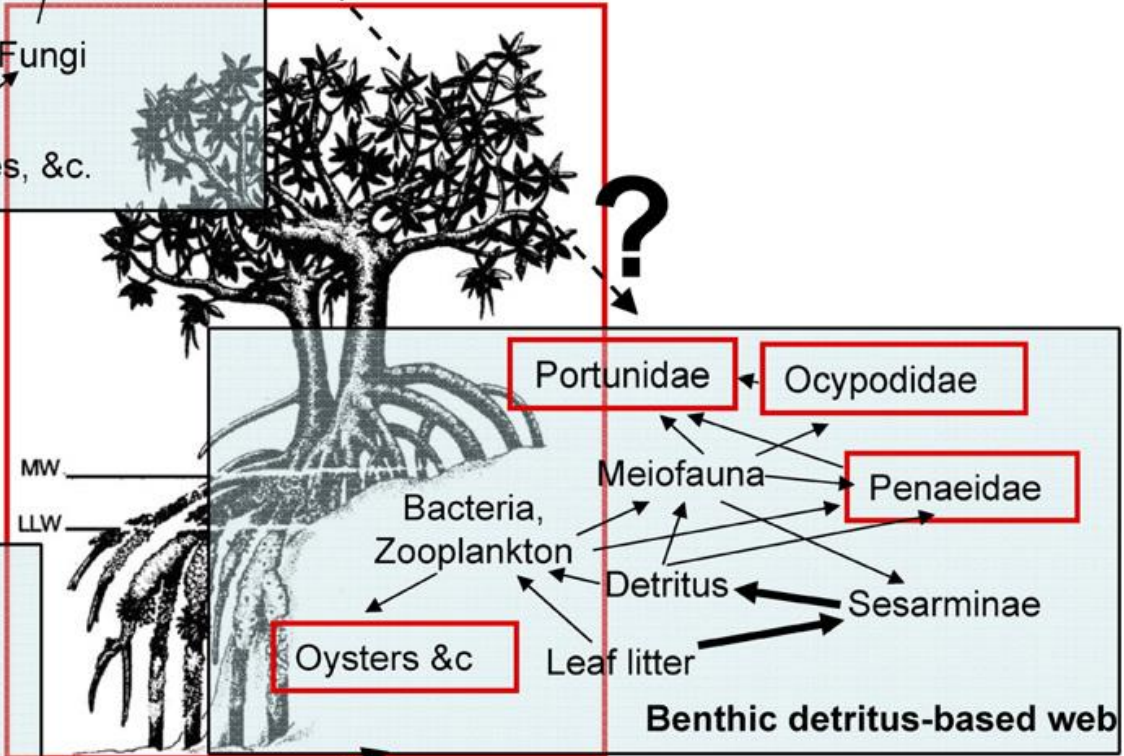
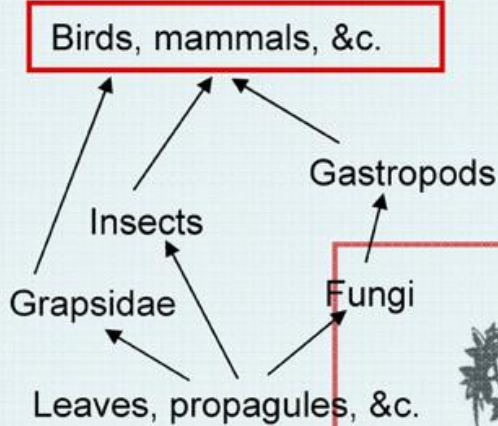
Categories of sediment benthic fauna

Fauna associated with soft substrate (mud & sand)

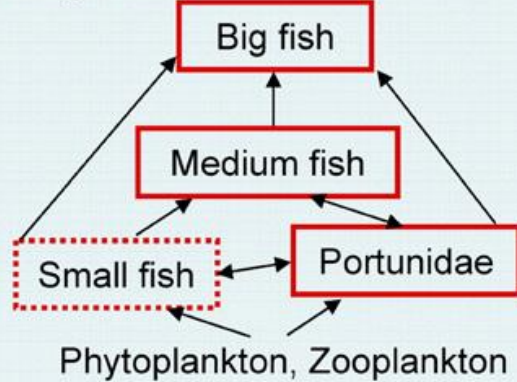
- Based on habitat: endobenthos, epibenthos and hyperbenthos
- Based on size:
 - $> 2\text{mm}$ \Rightarrow megafauna;
 - Between $0.5\text{-}2\text{mm}$ \Rightarrow macro
 - $< 0.5\text{mm}$ meiofauna

Importance of benthic fauna

Terrestrial tree-based web



Pelagic web



Detritus-based mangrove food webs From: A.M. Ellison / Journal of Sea Research 59 (2008) 2–15

Importance of sediment benthic fauna

- Drive the detritic food web and transfer the energy to pelagic food web thus are important links between mangrove organic matter and estuarine secondary production (Lee, 2008)
- Burrowing activity => aerate deeper sediment layers, alter chemical properties of sediment and overlying water
- Burying of om helps reduce nutrient transport

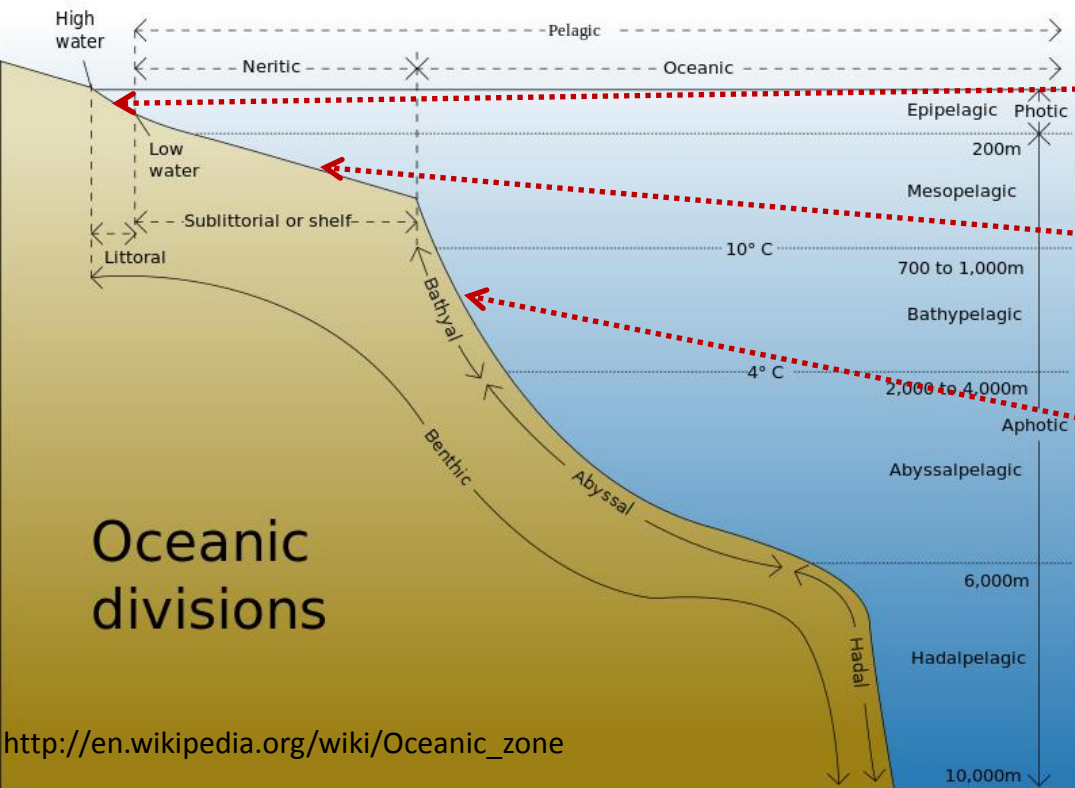
Source of information

- Peer-reviewed publications and grey literature like theses were sourced mainly from:
 - VLIZ data base
 - KMFRI data base
 - UoN library (digital repository)
 - Internet search
 - Other local universities?

Distribution of the studies in Kenya

- Water Depth
- Location
- Biotopes
- Categories of benthos

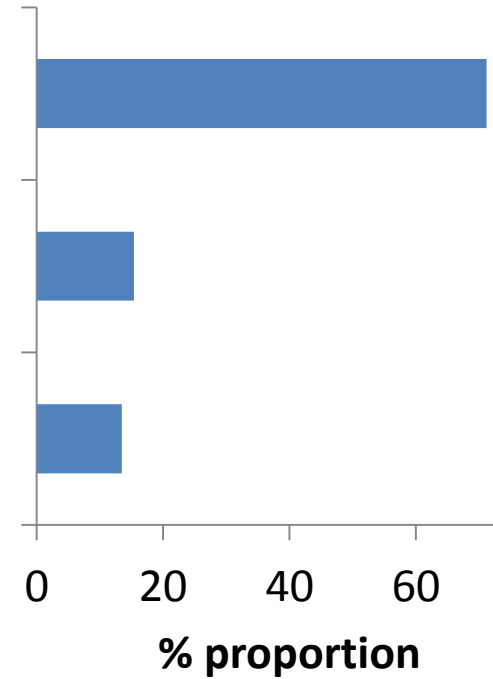
Depth Extent



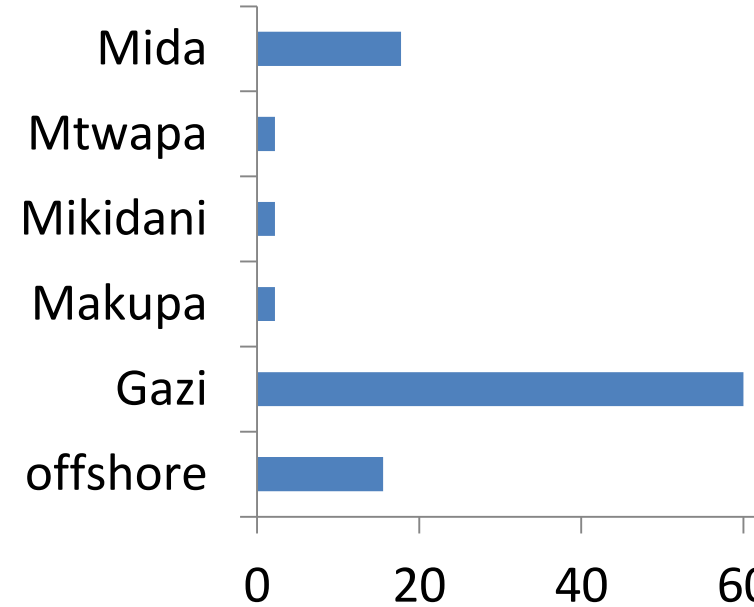
Intertidal

subtidal

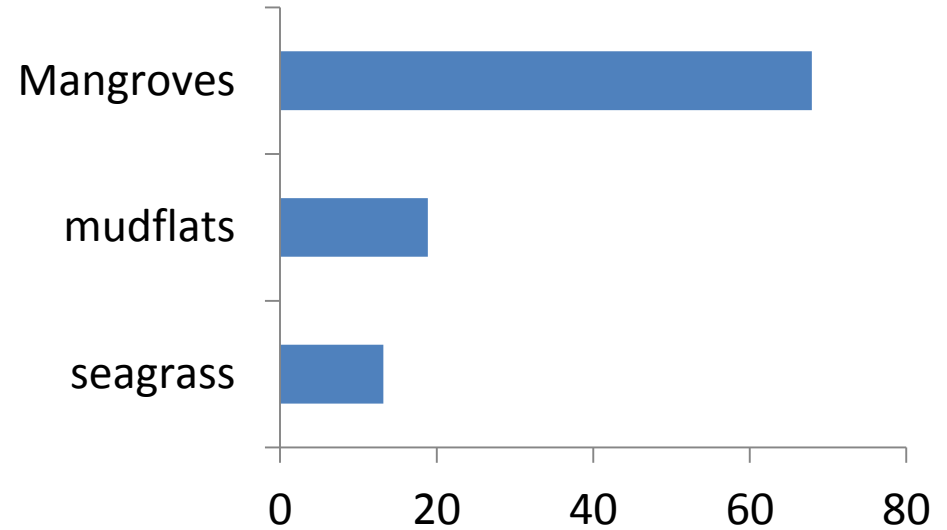
deep ocean



Location of studied along the Kenyan Coast



Types of biotopes studied along Kenyan Coast



Muddy sediments (intertidal mud flats and continental slope: 19%

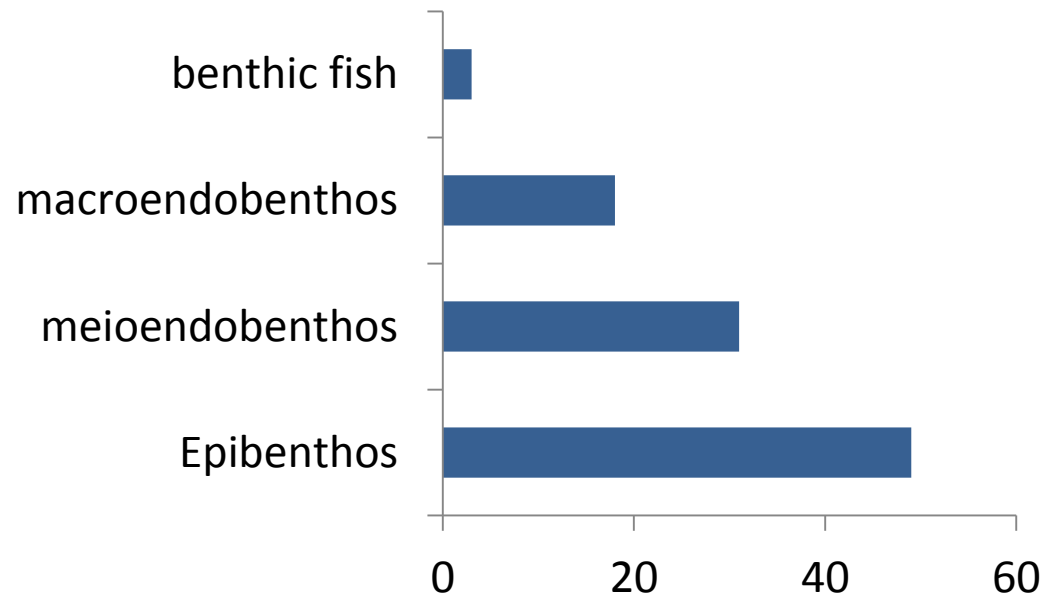
Sandy beaches: ?

Communities/ species studied in Kenyan

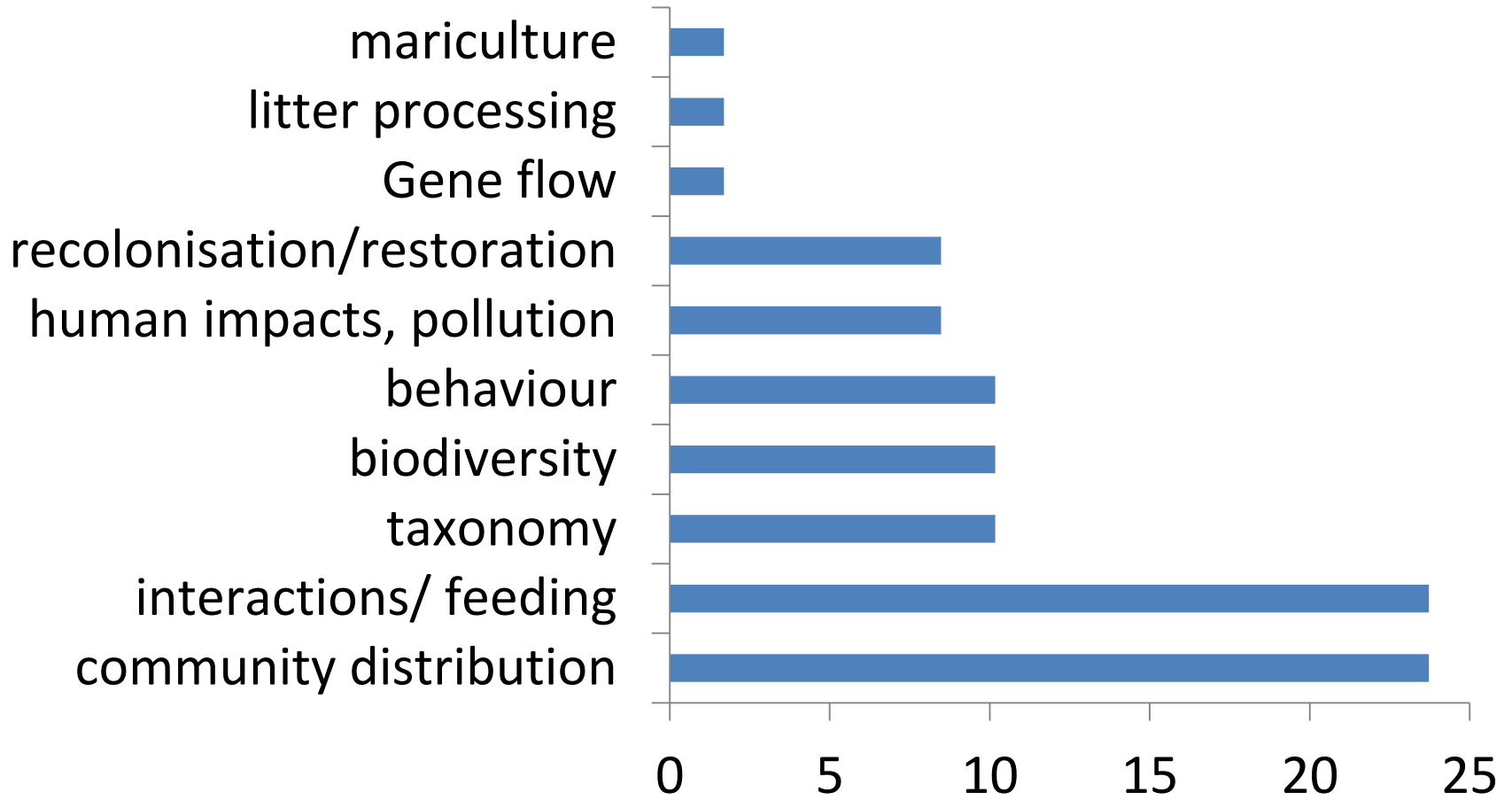


<http://upload.wikimedia.org/wikipedia/commons/d/d5/Ben>

<http://www.vliz.be/projects/trophos/keyspecies>



Topics covered benthic studies



What do we know?

Community/species distribution

- Possibility of zonation of benthic fauna
- Communities display spatial variation even between small distances
- Decreasing benthic density along the continental slope

Taxonomy /Species diversity:

- High number of un described species in the region. Indication of high diversity along the continental slope

What do we know?

- Trophic interaction: Niche partitioning, inspite of homogeneity of food source
- food quality and quantity influences density,
- benthos act as food for fish
- Competition for food / predation of benthos by epibenthos hyperbenthos & fish

What do we know?

- Forest Restoration: enhanced recolonization of species, increased diversity and return to normal ecosystem functioning.
- Human impact/pollution: can alter species distribution e.g. increase in crabs & reduction in gastropods. Benthic fauna can be a useful indicator of human impact
- Mariculture: Crab fattening is a viable livelihood venture for local communities but impacts of wild seed collection not known

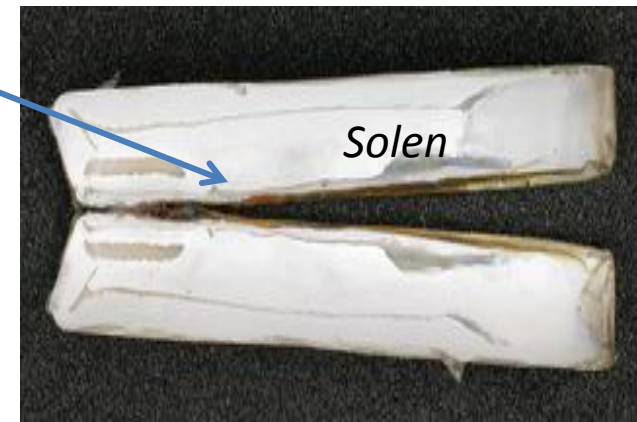
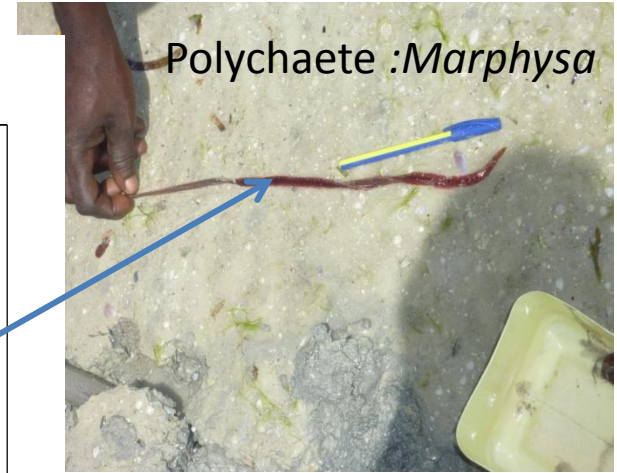
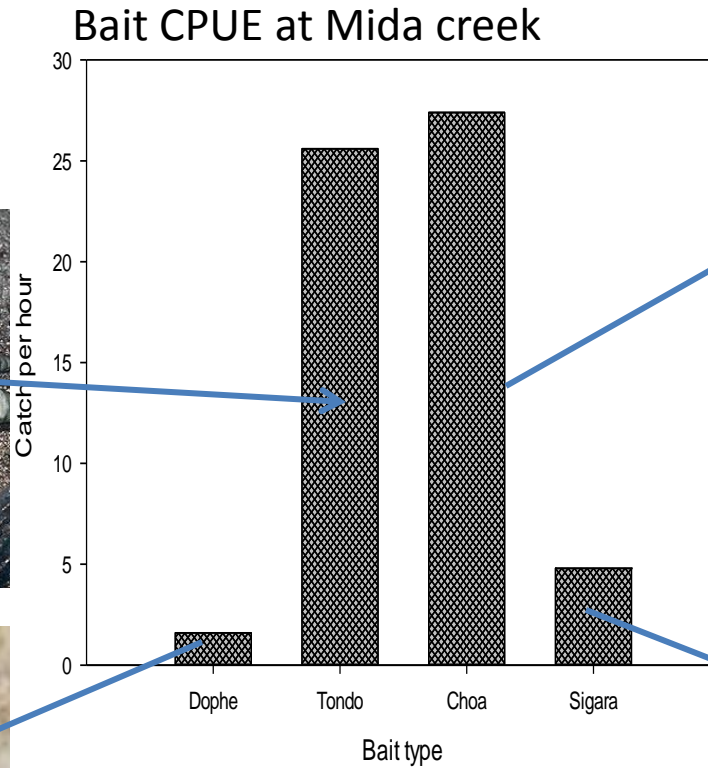
What do we know?

- Crabs & gastropods are important agents of litter processing/nutrient cycling
- Gene flow: Significant genetic variation observed between *Scylla serrata* populations suggesting limited gene flow even between close populations.
- Genetics/behaviour in crabs: Tree climbing behaviour is a convergent evolution in crabs
- Crabs have ability to store short memories of landmarks that helps in homing behaviour

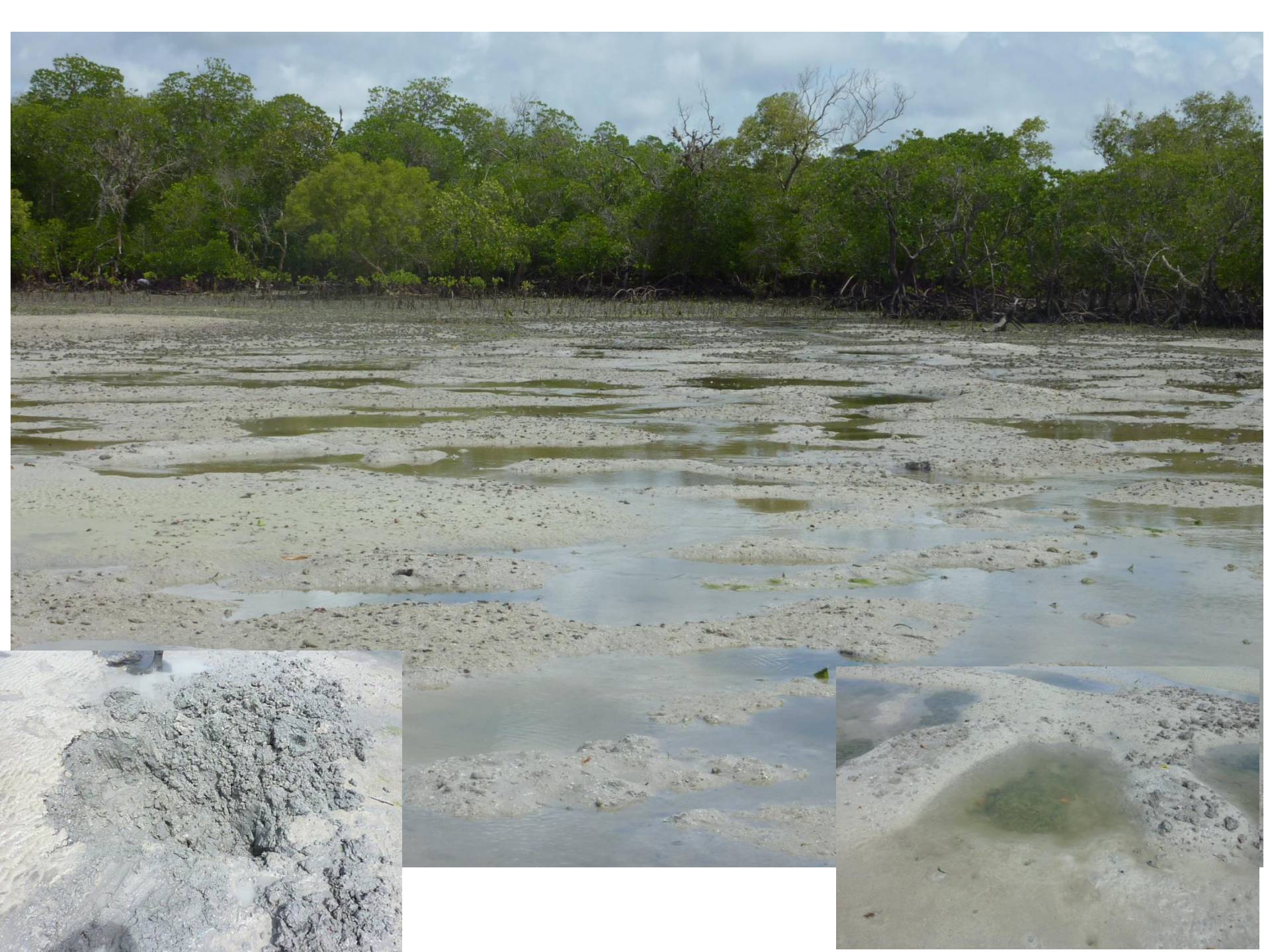
What do we need?

- Data and information archiving: centralized system which is accessible to all stakeholders
- Integration of available data and information on mangroves benthos in order to inform mangrove management strategies
- More studies on other less studied coastal biotopes like sea grass beds, sandy beaches (species distribution /interactions, taxonomy/diversity)
- More studies on the continental shelf/slope
- Studies on inter connectivity between coastal and offshore populations

Bait preference preliminary results









Fish caught using bait







THANK YOU

