



The mangrove forest as a feeding ground and nursery habitat for the ichthyofauna: Mida Creek in Kenya.

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Introduction

- Mangrove forests shelter diverse terrestrial and aquatic organisms.
- Mangrove forests exhibit a high diversity of bony fish but 4 common families are found in Kenyan mangroves: Gerreidae, Atherinidae, Gobiidae and Clupeidae.
- Some earlier but limited evidence were found sustaining the nursery and feeding function of mangroves (e.g. Lugendo *et al.*, 2006).

Objectives

- Identify the fish assemblage of Mida Creek
- Describe the functions provided by mangroves in relation to the ichthyofauna :

Feeding ground & Nursery habitat

Materials and methods



Fig. 1 : map of Mida Creek (Osore *et al.*, 2004)

Sampling by passive fishing



Fish identification + weight + length measurements



Removal of fish stomachs and tissue samples

Stomach content & stable isotope analyses

Results and discussion

Fish species composition

- In July 2011, 29 fish species were recorded, 18 species each contributing to <1 % of a total catch of 939 teleost specimens.
- One gregarious species, *Spratelloides delicatulus*, represented 70% of total fish composition followed by *Ambassis natalensis* with 9%.
- It represents the typical situation for a tropical system: one or two dominant species and many less abundant species. (Kimani *et al.*, 1996; Mirera *et al.*, 2010)
- More data needed based on a consistent sampling strategy to standardise the comparison of the fish assemblage caught in diverse Kenyan mangroves.

Trophic interactions : feeding functions

- Based on nitrogen and carbon isotopic signatures and on stomach content results, fish species can be separated in two groups reflecting their trophic mode:
 - a mixed diet with piscivorous preference for *Sphyraena barracuda* & *Synodus variegatus*.
 - a zoobenthivorous/omnivorous regime for 12 species.
- Fish diet does not rely on primary producers but on invertebrates. However some species can adapt their diet or are defined as opportunists. (e.g. *Monodactylus argenteus*) (Nyunja *et al.*, 2002)

Nursery function through population structure

- Data showed that 6 species were (almost) exclusively represented by juveniles. These include: *Sphyraena barracuda*, *Monodactylus argenteus*, *Synodus variegatus*, *Gerres oyena*, *Spratelloides delicatulus* and *Lutjanus ehrenbergii*. They are considered as transient species (Lewis & Gilmore, 2007),
- Four other species showed a high abundance of adults (73% to 80%). Two species could be designated as mangrove residents: *Sphaeramia orbicularis* (Mees *et al.*, 1999) and *Ambassis natalensis*.

Conclusion

- Families of small-sized fish (Clupeidae and Ambassidae) dominated the ichthyofauna in Mida Creek.
- A majority of fish belongs to zoobenthivorous/omnivorous trophic mode; mainly feeding on invertebrates. However, two species (*Sphyraena barracuda* and *Synodus variegatus*) appeared to be carnivorous, especially piscivorous. A main question that needs to be further investigated in East African mangroves: are the invertebrates, which were preyed upon by fish, exclusively dependent on carbon sources of mangrove forests?
- Juveniles were numerically much more abundant than adult specimens in the whole area. Mida Creek might have so a similar function as habitats for juveniles as do estuaries.

