

# **SUSTAINABLE USE OF FISHERIES RESOURCES**

VLIR-UOS International Conference 2014

## **Progress Update on KCDP Fisheries Research**

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# KCDP RESEARCH SUBCOMPONENT

**AIM:** To build a threshold of scientific knowledge that will contribute to improving effectiveness in the sustainable management of Kenya's coastal and marine fisheries resources.

**MAIN OBJECTIVE:** The specific objective of the subcomponent is to advance research on coastal and nearshore fish stocks and promote alternative fishing technologies

# SPECIFIC ACTIVITIES

## 1. Economic evaluation of Kenya's key coastal and marine fisheries

Estimation of the value of direct and indirect benefits as well as potential benefits of fishery products from Kenya's marine and coastal waters (**Consultancy**)

*explore new avenues for investment and Public/Private partnership opportunities*

## 2. Conduct research to support stock assessment of priority fisheries stocks

Generate data on catch- effort trends and biological information (growth, reproduction, size at maturity, recruitment patterns) for selected indicator species

- Ringnet fishery
- Marine ornamental fishery
- Lobster fishery
- Artisanal prawn fishery
- Demersal reef fishery
- Beach seine fishery in Lamu

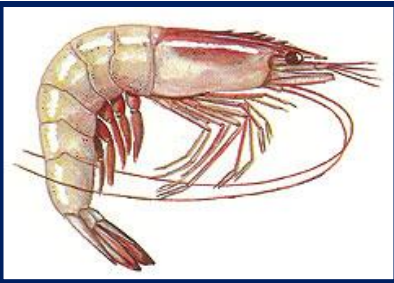
## Achievements 2012/2013

- **Strategic documents** and standardization of **data collection protocols**
- **Identification of pilot study sites**
- Establishment of **stock assessment working groups** and team leaders (KMFRI, SDF, NGOs, Universities)
- **Data gap analysis** and identification indicator species for stock assessment (14 fisheries assessed using risk assessment frameworks and stakeholder discussions)
- **Training of CAS data collectors** and implementation of catch assessment monitoring in key landing beaches (collaboration with SDF)
- Community **consultative meetings**, field surveys and biological sampling

# Indicator Species Identified for Stock Monitoring



**Lobster Fishery**



**Shrimp Fishery**



**Aquarium Fishery**



**Pelagic Fishery**



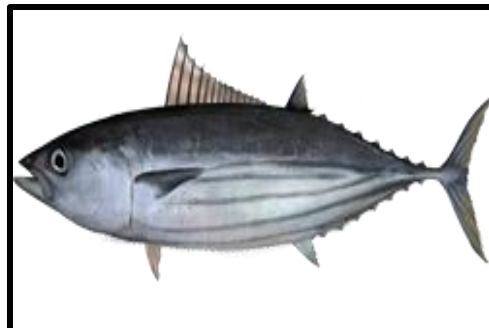
**Demersal Reef Fisheries**



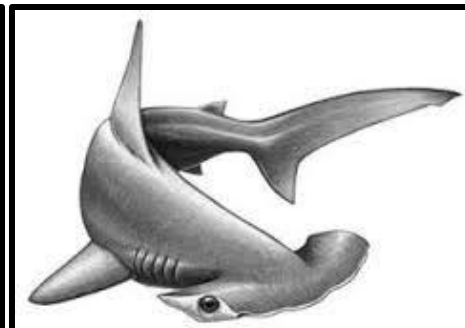
**Octopus Fishery**



**Crab Fishery**



**Pelagic Fisheries**



**Sea cucumber Fishery**



# Prioritized species for stock assessment: Group I



*Panulirus ornatus* (**Lobster fishery**)



*Amphiprion allardi* / Angelfish sp  
(**Aquarium fishery**)



*Carangoi*  
(**Small and medium pelagics fishery**)



*Fenneropenaeus indicus*  
(**Prawn fishery**)

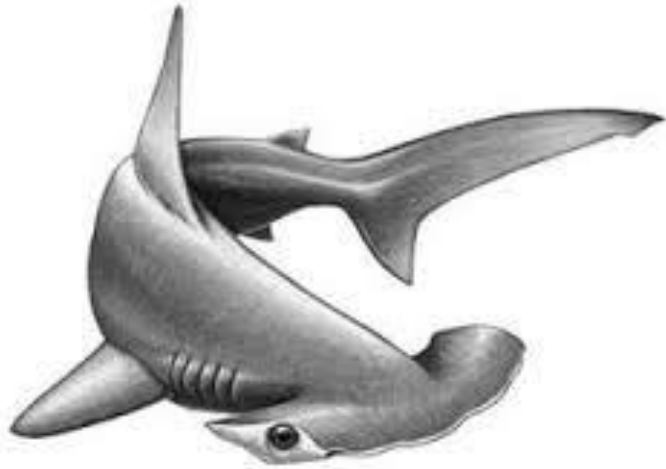
# Prioritized species for stock assessment: Group II



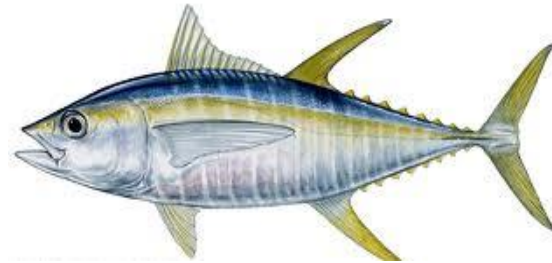
*Siganus sutor*  
(**Demersal reef fisheries**)



*Octopus vulgaris* (**Octopus fishery**)



*Sphyrna lewini* (**Artisana shark fishery**)



*Thunnus albacares* / *Katsuwonus pelamis*  
(**Artisanal tuna fishery**)



# The Stock Assessment Process



**Training of data enumerators**



**Assessment of catch composition**

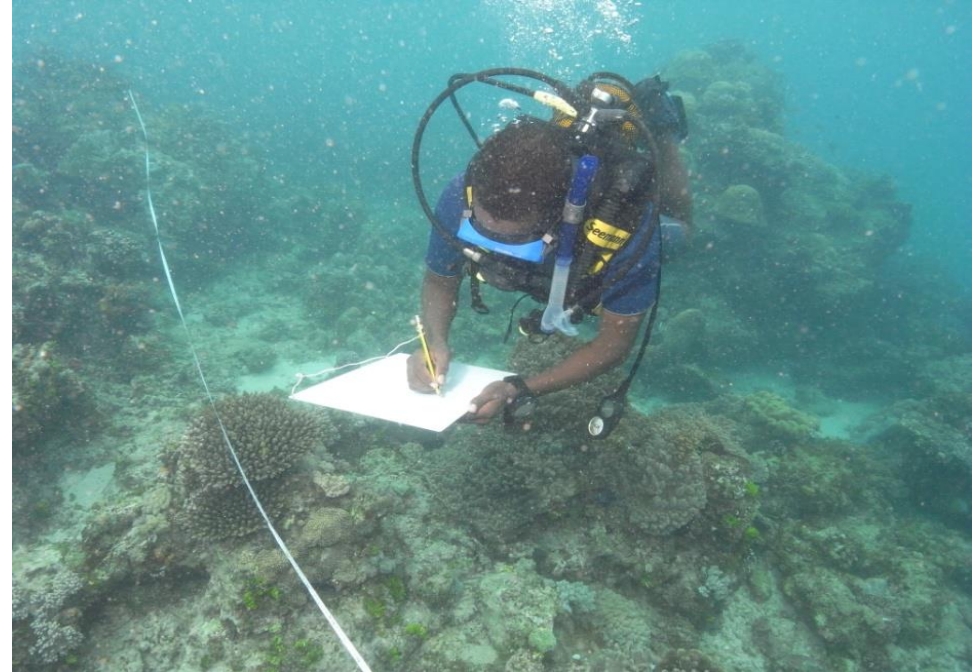


**Boat based surveys**



**Biological sampling**





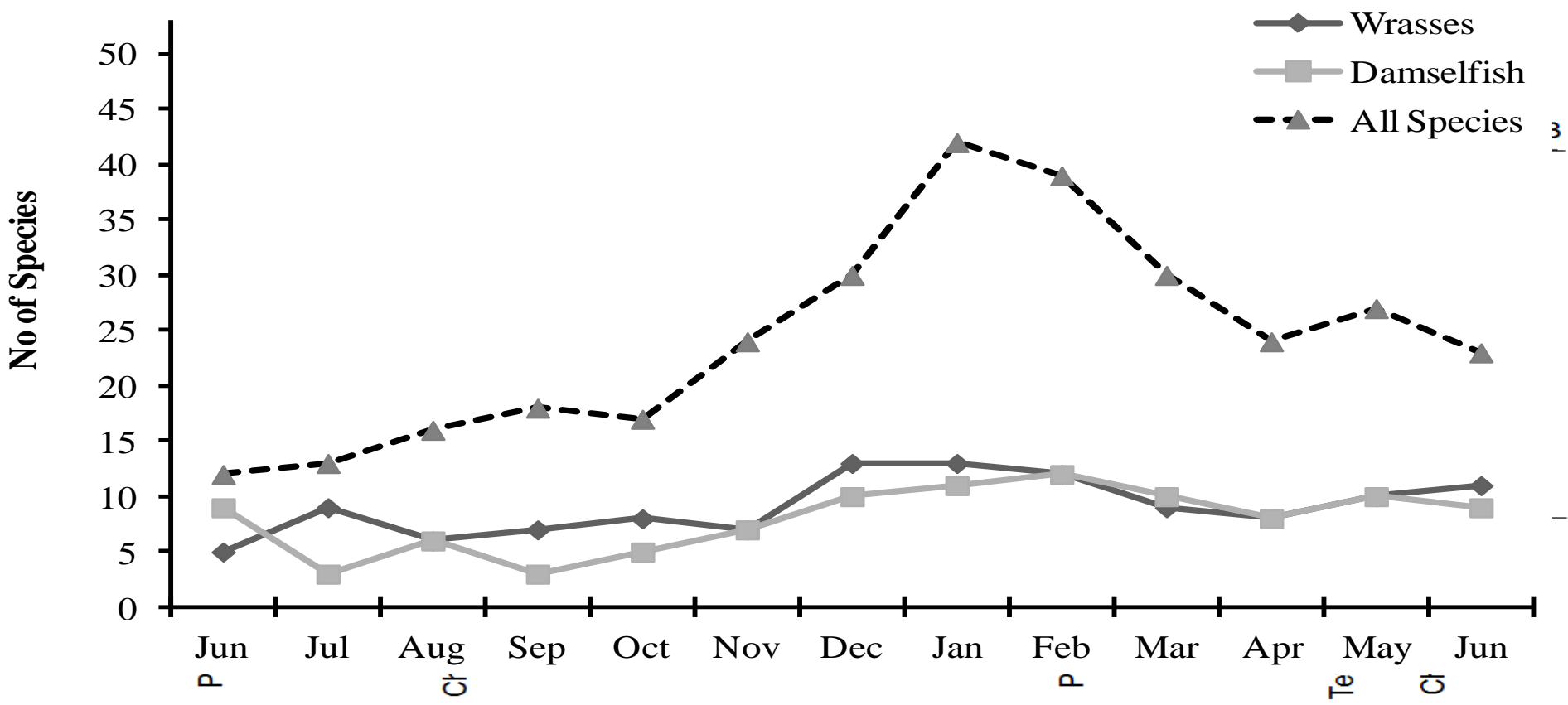
**Community Consultative meetings**

**Underwater fish census surveys**



**Bycatch assessment of beach seine fishery (Lamu)**

# Preliminary Results: Ornamental Fishery



**Recruits**

**Juveniles**

**Subadults & Adults**

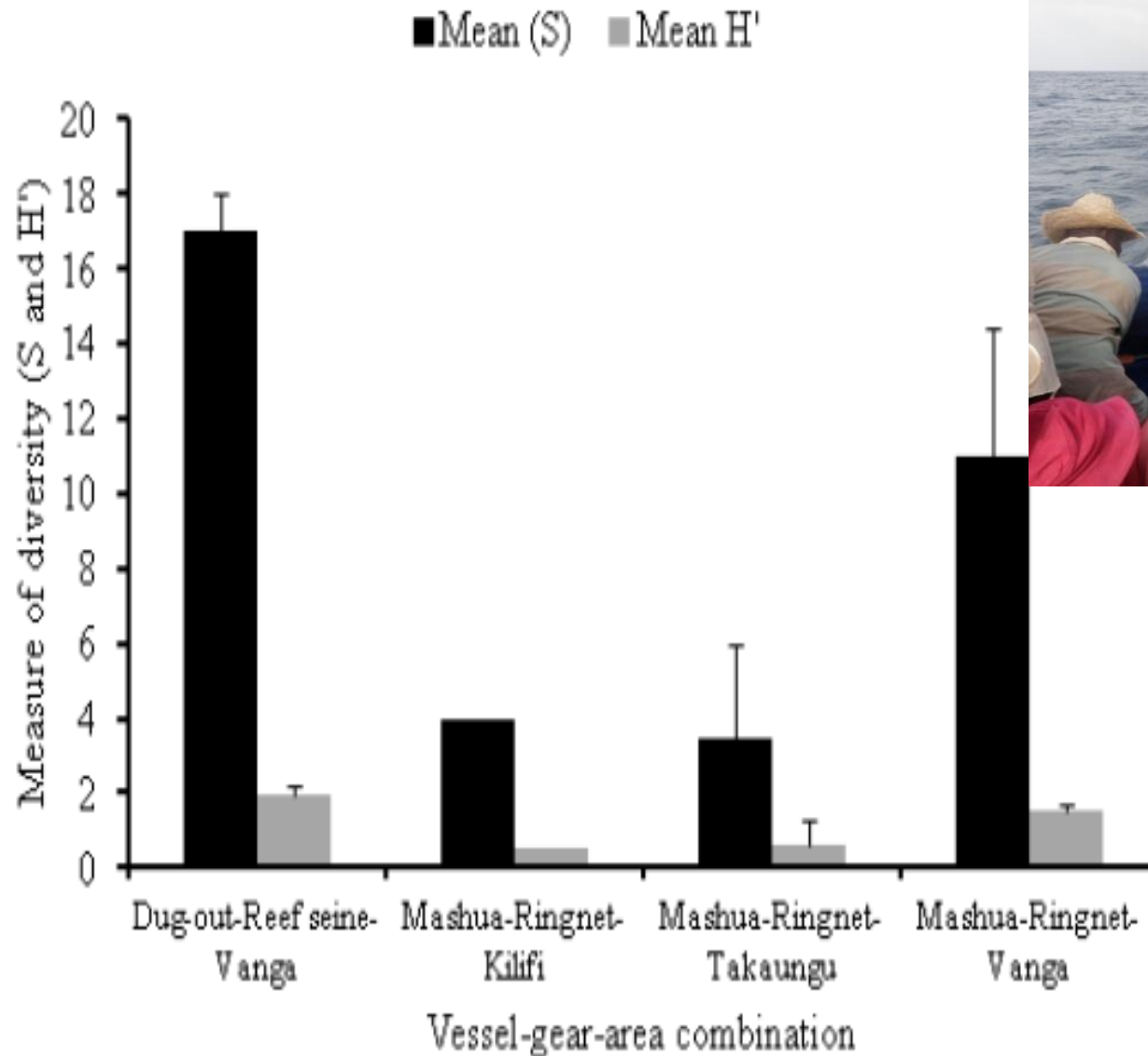


Spatial and temporal recruitment patterns



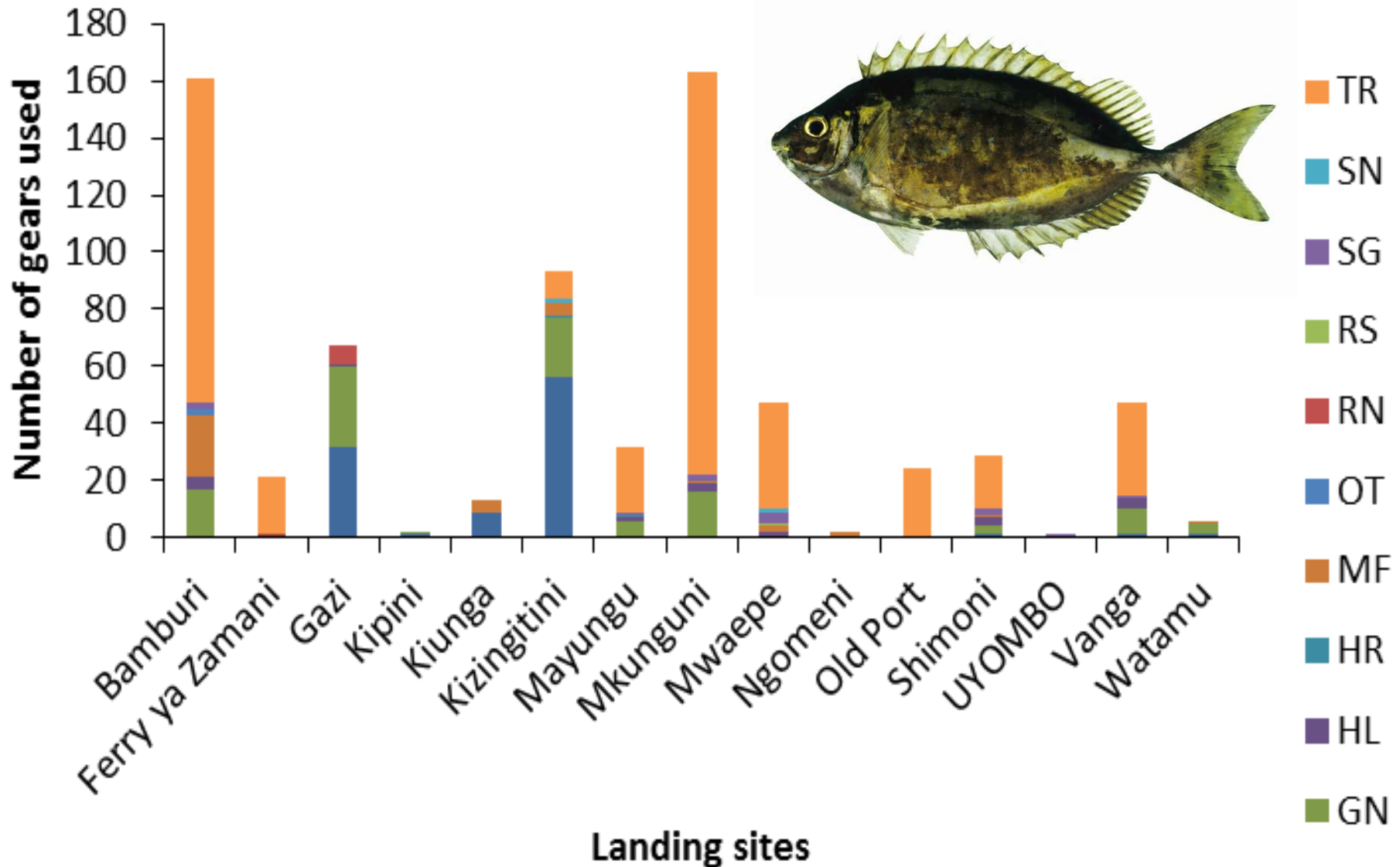
# Preliminary Results: Small and Medium Pelagics Fishery

Variation in catch diversity among gears



# Preliminary Results: *Siganus sutor*

## Spatial Composition of gears used to catch *S. sutor*



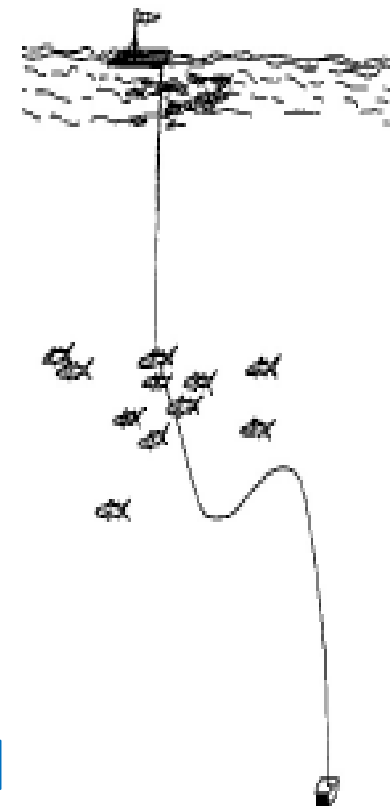


### 3. Develop and revise fishery management plans based on recommendations from stock

Activities	Achievements 2012/2013
Fishery management plans	<ul style="list-style-type: none"><li>• Prawn Fishery Plan (gazetted in 2010)- <b>need to update the plan concerning the impacts of artisanal prawn fishery</b></li><li>• Ringnet Fishery Plan: (2013) - <b>pending gazettelement, need to update fishery description and conduct an ecological risk assessment in line with EAF framework</b></li><li>• Small and Medium Pelagic Fishery Plan (2013)- developed under EAF Nansen/SWIOFP and finalized under KCDP, <b>pending legal review for gazettelement, need to update on fishery description</b></li><li>• Aquarium and Lobster Fisheries – <b>under development</b></li></ul>

## 4. Develop a Fish Aggregation Devices (FADs) fishery **Initiated under the SWIOFP**

- **Increase fish production and income among artisanal fishers through improved access to high value pelagic fishery resources**
- **Reduce fishing pressure in the inshore reef areas to offshore areas that are less exploited**



### Achievements 2012/2013

- Participatory mapping with fishers near FAD areas
- Fabrication and deployment of deep water and subsurface FADs in Mtwapa (5)



**Fabrication and deployment of FADs in Mtwapa, Kenya**



# 5. Develop alternative environment friendly fishing technologies

- Promote the use of gears that reduce the bycatch of juveniles, non-target and TEP species
- Promote new fishing methods to better access deep water demersal fish (snappers)



**Fabrication and trials on dropline fishing gears and upscaling**

**Upscaling use of modified traps in southcoast**

## **6. Develop resource use maps of key fishing grounds**

**Characterization and mapping of fishing grounds to guide fishery management and co-management strategies such as zoning of fishing activities , conflict resolution and delineation of community conservation areas.**

### **Achievements 2012/2013**

#### **Strategic planning:**

**(KMFRI, KWS, SDF, WCS, EAWLS, GVI, ANO, CORDIO):**

- Identification of mapping data gaps/needs
- Methodologies discussed and agreed on
- Sharing of digitized data



### Distribution by Species

- ▲ Bigeye
- Sailfish
- Sharks
- ⊕ Swordfish
- Yellowfin
- Tuna
- shoreline

### Distribution by gear

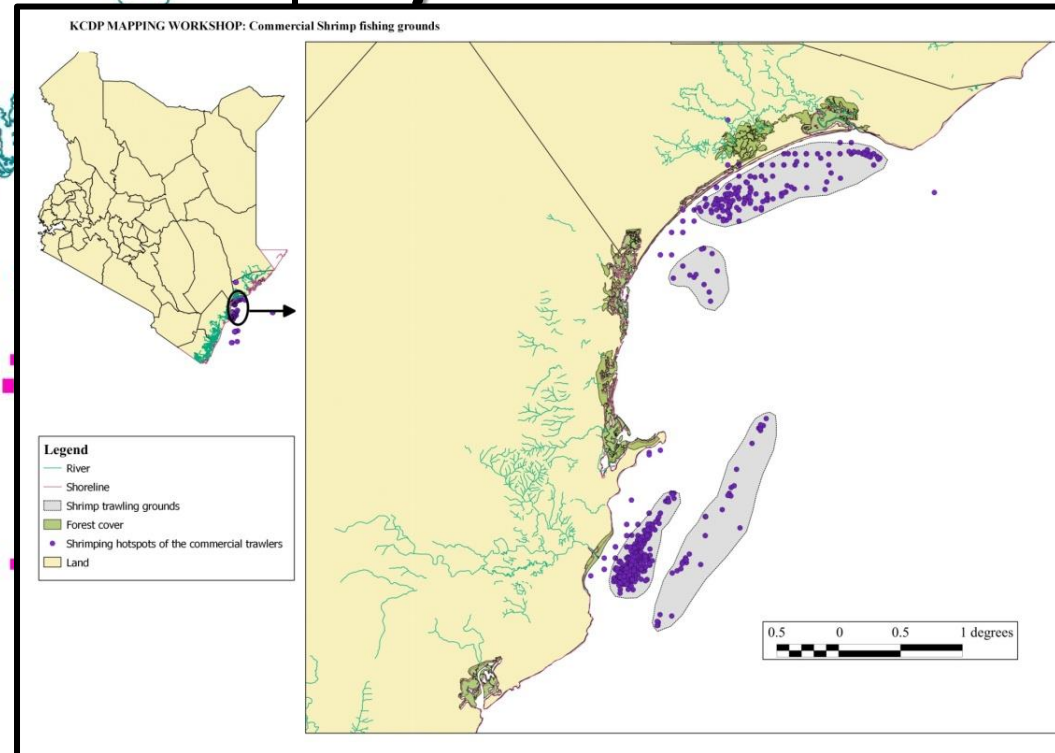
- ▲ longline
- ▲ pole\_line

### Distribution by year

- 2005
- 2006
- 2007
- 2009

# Distribution of tuna fishing activities along the north coast of Kenya

# Distribution of commercial fishing activities in Ungwana-bay

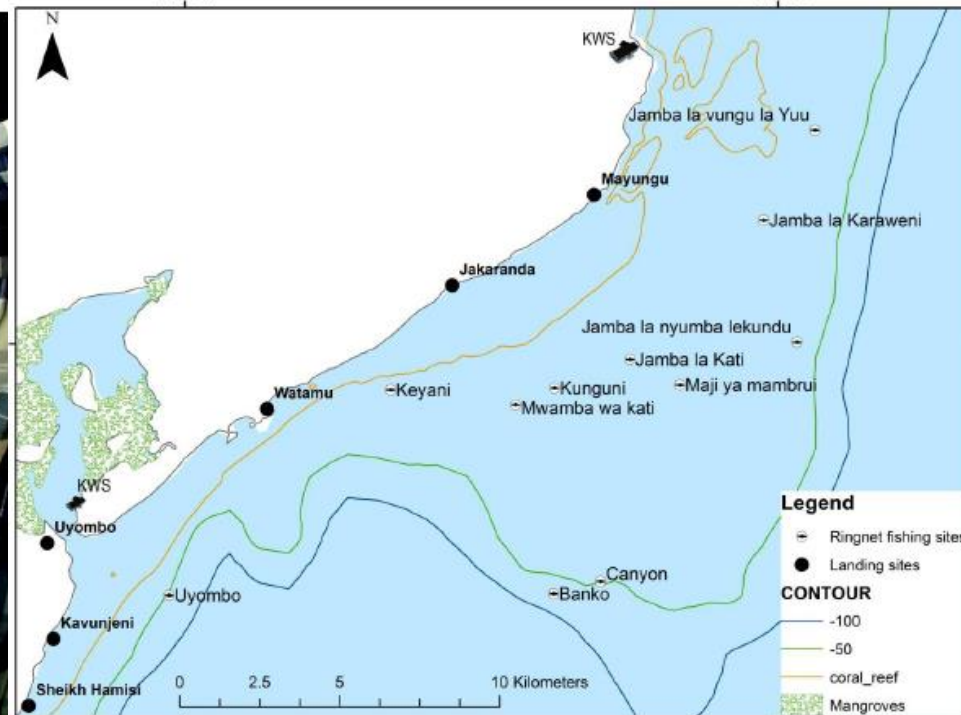


# 6. Develop resource use maps of key fishing grounds

## Achievements 2012/2013

### Participatory mapping:

- Mapping in north coast in collaboration with KWS wardens and rangers
- Mapping of ringnet fishery grounds



## **7. Build capacity for conducting fishery stock assessment**

**Characterization and mapping of fishing grounds to guide fishery management and co-management strategies such as zoning of fishing activities , conflict resolution and delineation of community conservation areas**

### **Achievements 2012/2013**

- Mentoring of interns from our local universities
- MSc studies directly supported by KCDP contributing to stock assessments (3 MSc students)
- Other MSc and PhD students also benefiting from data collected
- Short training for scientists on stock assessment methodologies
- Diving skills for scientists and technicians to build capacity for fisheries independent surveys

# WAY FORWARD KCDP FISHERIES RESEARCH 2014/2015:

Research to support stock assessment of priority species  
(6 prioritized fisheries)

Socioeconomic assessments

Onboard Observer Programs (Ringnet, Prawn, Artisanal tuna fisheries)

Beach seine fishery case study in Lamu

FADs fishery colonization monitoring

Participatory mapping of fishing grounds for management plans

Capacity building trainings

## Experimental gear trials to support artisanal fishers:

Modified basket traps

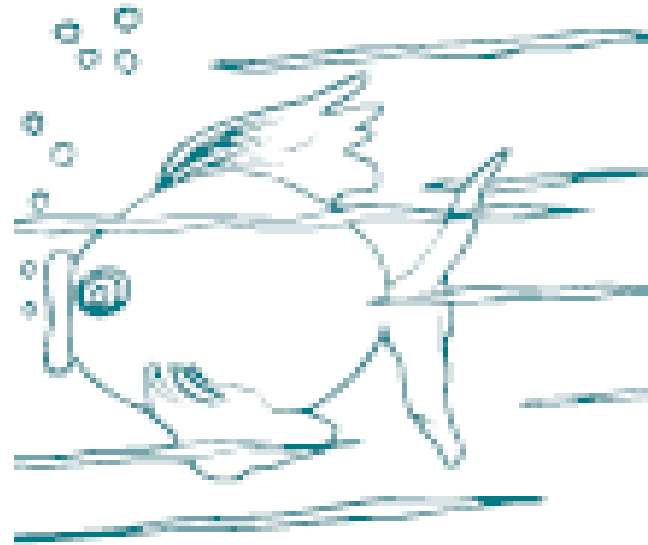
Artisanal tuna fishery: longline/ pole and line

Artisanal prawn fishery

Deep water demersals: dropline

More detailed technical reports are available....

Thank You



**Acknowledgements:**

