

# OCTOPUS MANAGEMENT AS AN ENTRY POINT FOR COLLABORATIVE FISHERIES MANAGEMENT IN KISIWA PANZA, PEMBA, TANZANIA

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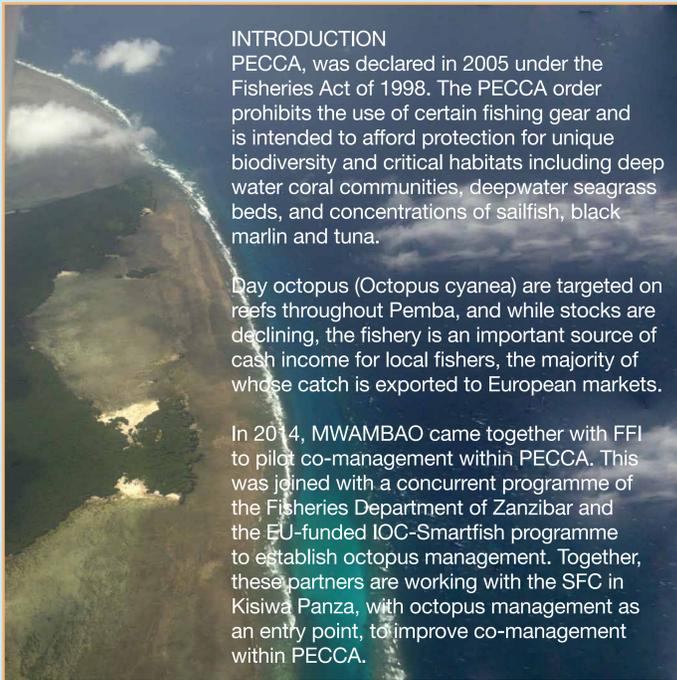
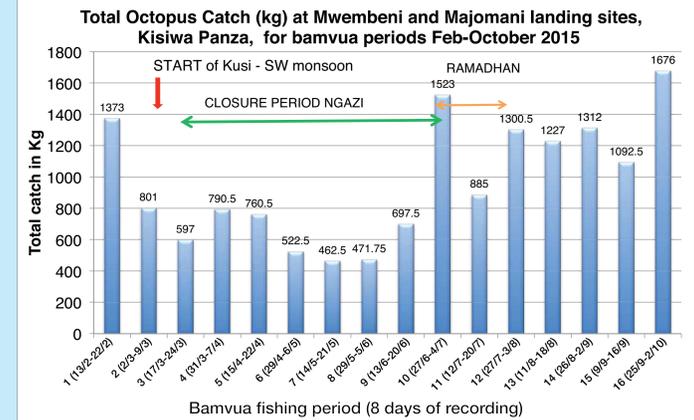
## ABSTRACT

Kisiwa Panza is a 13.5 km chain of mangrove-linked islets fringed by coral reef, off the SW coast of Pemba, Tanzania and lies within the Pemba Channel Conservation Area (PECCA). Mwambao Coastal Community Network (MWAMBAAO) in collaboration with the SmartFish programme of the Indian Ocean Commission and Fauna & Flora International (FFI) embarked on capacity building of the local Shehia Fisheries Committee (SFC) through a pilot sustainable octopus fisheries management project.

Results have been encouraging with a suggested increase in octopus size and catch following a 3-month closure of 10% of the village fishing grounds. This initiative has built local momentum for further marine conservation activities, but continued capacity building is critical to allow the SFC to effectively manage their fishing grounds. Revisions to the fisheries regulations to facilitate further co-management are suggested based on these experiences.



AERIAL VIEW OF THE ISLAND SHOWING NTZ OF NGAZI



## INTRODUCTION

PECCA, was declared in 2005 under the Fisheries Act of 1998. The PECCA order prohibits the use of certain fishing gear and is intended to afford protection for unique biodiversity and critical habitats including deep water coral communities, deepwater seagrass beds, and concentrations of sailfish, black marlin and tuna.

Day octopus (*Octopus cyanea*) are targeted on reefs throughout Pemba, and while stocks are declining, the fishery is an important source of cash income for local fishers, the majority of whose catch is exported to European markets.

In 2014, MWAMBAAO came together with FFI to pilot co-management within PECCA. This was joined with a concurrent programme of the Fisheries Department of Zanzibar and the EU-funded IOC-Smartfish programme to establish octopus management. Together, these partners are working with the SFC in Kisiwa Panza, with octopus management as an entry point, to improve co-management within PECCA.

## POLICY ENVIRONMENT FOR CO-MANAGEMENT

Zanzibar's fishing communities started to be involved in management c. 1998 when the mechanism of community participation was formalized by the Fisheries Act of 1998 (revised 2007). The policy is complemented by The Fisheries Management Act of 1995 (revised 2009) and the Marine Conservation Unit regulations of 2015 provides further regulations accommodating the role of Shehia Fisher Committee in creation of their own local management zones.

## CO-MANAGEMENT IN KISIWA PANZA

Following a socio-economic baseline study and an assessment of local capacity in January 2015, the SFC, in consultation with the two concerned villages, agreed on a temporary 'no-take zone' for octopus. The area, known as 'Ngazi', extends over 60ha. of reefcrest area (Fig. 1) and represents less than one tenth of the island's fishing grounds. The committee decided to close the area to all fishing for 3 months, opening again during the holy month of Ramadhan. By-laws were established and sanctioned, and a sub-committee appointed to manage the area. This is the first case of written by-laws being formally adopted under the MCU regulations in Zanzibar. The PECCA manager took part in all meetings where consultations and decisions took place, and also attended all training sessions.

## METHODOLOGY - MONITORING OCTOPUS CATCH

Four monitors and a data logger recorded octopus catch at two main landing sites on the 16 major fishing days of each month (i.e. the two periods of 8 days encompassing the spring tides, known locally as 'bamvua'). Recorders sampled the first 30 returning fishers at each site including both gleaners and skindivers (an average of 37-58 fishers were monitored/ day). Fisher and fishing trip data were recorded alongside metrics of catch (mass, size, sex of octopus, total catch weight). The total weight of octopus purchased from each landing site daily was also recorded.

## PRELIMINARY MONITORING RESULTS

Octopus landings were monitored over an 8 month period (from one month prior to closure to current). To date, 16,053 octopus have been sampled with mean mass of 664 g (min =27 g, max = 9750 g). A total of 6417 catches were sampled from 724 individual fishers, many of whom were repeat fishers. Most fishers sampled were men (70%) but more than one quarter were women (29.9%). The average total catch per fisher was 1663 g. A variety of gears were used (spearguns, metal rods, wooden sticks). Fishing method appears to influence capture success, with divers with spearguns capturing larger octopus. Women only fished on foot using metal rods and caught 19.6% of the octopus catch. Men fished using all gear types and both on foot and skindiving.

The sum of the total catch for each bamvua at both landing sites is taken to represent the vast majority of the octopus harvest from the island and is shown in Figure 2. The period of closure is illustrated, as is the month of Ramadhan, significant because no diving of any kind is permitted during this time.

Total catch shows an expected decline following the onset of 'kusi', when fishing conditions are poor, and declined steadily during the closure. Catches increased by more than 100% during the first bamvua following the opening of Ngazi, when the area was intensely fished by more than 600 fishers. The subsequent bamvua shows the catch declining and approaching pre-opening levels.

At the end of Ramadhan, where fishers resume skindiving, a large increase was observed and the catch has remained substantially above closure levels for three months. Catch during the last bamvua shows a record total of 1676kg, which is consistent with the extreme tide experienced at this time of year, giving fishers access to larger areas of reef.

The increase in average size of octopus pre and post opening of Ngazi also indicates a positive management result with the average mass prior to opening being 635.7g (n=8770) and post opening 699.5g (n=7282).



## LESSONS LEARNED

In the days following the first octopus closure for Kisiwa Panza, most fishers expressed enthusiastic support for further closures. Preliminary monitoring results also suggest improvements in terms of total catch and size of octopus, but these data require further analysis for more detailed conclusions to be drawn.

Patrols and the upholding of the by-laws were considered successful, with only three incidents of poaching recorded during the closure. The community are currently planning their second closure for octopus and have begun to consider other management regimes, and management of other species.

The main advantage of octopus management as an entry point for co-management are the quick results gained over a proportionally small area of fishing grounds closed. Our experience has been that the tangible benefit evidenced on the day of opening builds trust between committee and fishers, and between fisheries officers and the community, opening the door to further co-management negotiations.

Existing legislation for co-management provides support for the basic principles, but some detail still needs to be developed. Guidance on standard operating procedures and gender balance within the Shehia Fisher Committees is needed. Clear guidelines should also be provided for by-law establishment and formal adoption, particularly with regard to targeted management zones. This pilot project will generate recommendations for improving MCU regulations to facilitate scaling up of co-management.

At the local level, a sustainable way to support patrols and ongoing management of fishing grounds by PECCA officials and the Shehia Fisher's Committee is needed. Further work is necessary to develop these aspects, allowing further scaling up to other sites within PECCA.

