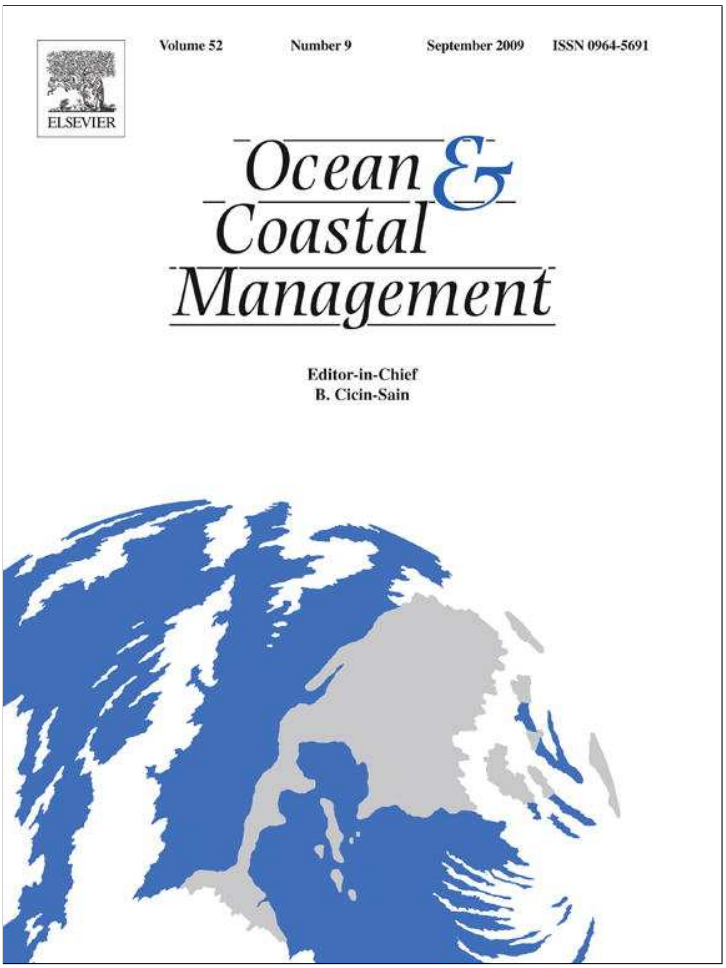

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The structure and evolution of the coastal migrant fishery of Kenya

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ABSTRACT

The current study was carried out over a period of one year to characterise the coastal migrant fishery of Kenya. The study looked at gears and vessels used, and ownership, demographic factors including ages of the fishers and family sizes, migrant activity and resource conservation at two main fishing villages in Kenya; Vanga and Mayungu in the south and north coasts, straddling at 4.663°S and 39.215°E and 3.214°S and 40.135°E respectively. Further, the fishers were categorised with regard to fishing, gear and vessel operation and trade, and evolution upon entry into the fishery was also assessed in order to define fisher-stake in the fishery for resource management and conservation planning. Structured questionnaires were used to interview the fishers, and data and information recorded from 1018 fishers during the survey. Migrants accounted for over 63% of the fishers in the two study sites, with majority of the fishers lying in the 15–45 year age bracket. Dependence level averages at 4–6 person families per fisher. Entry to the fishery was mainly at seamen level, progressing to fishermen and finally to fish dealers (*tajiris*), with the latter holding >62% capital in the fishery. Resource management in the fishery was low and only ~10% of the fishers were active participants in marine conservation and community beach management issues. Fisher migrations were mainly monsoon season-linked (>58%) although social factors such as family location determined to a great extent the expanse of the migrations. The revival of fisheries cooperatives and active participation in community resource management and conservation groups is envisaged as the key to the sustainability of both the marine resources and the economies associated with this high mobility, cross-border fishery.

1. Introduction

The east African coast stretches more than 1000 km from Kiunga on the Kenya–Somalia border (Fig. 1) to Mtwara on the Tanzania–Mozambique border, sustaining an estimated coastal population of 11 million inhabitants [1]. The main socio-economic activities are fishing and fishery associated activities such as trade in fish and fish products, supply of fishing gears and equipment, supply of fuel and engine repair services to boats, menial jobs in the fishery, and all other activities that emanate from fishing activities, although small scale agriculture, mangrove harvesting, tourism, and trade also contribute substantially to the coastal economies. The main inhabitants of this coastal stretch include the *Swahili* Bantu speakers spreading widely from the north in Mogadishu, Somalia, to Ruvuma river in Mozambique in the south; the *Bajuni* of north coast Kenya; the *Digo*, a tribe straddling the Kenya–Tanzania border; and the *Wahadimu*, *Watumbatu*, *Wadiba* and *Wapemba* of Zanzibar, Mafia and Pemba islands off mainland Tanzania to mention but a few [2]. The Digo, Bajuni and Wapemba are traditionally fishing communities with the latter two being migratory exploiting the vast marine resources of the entire east Africa coast over decades. Generally, fishers comprise a notable percentage of the active coastal population with the main fishing islands off the coastal mainland such as Pemba and Mafia recording over 5% fishers in the population [3]. Entry into the fishery is often at seaman level, where starter fishers join and become part of the general crew on a vessel, with their duties mainly relegated to menial jobs such as loading and offloading of fishing gears and

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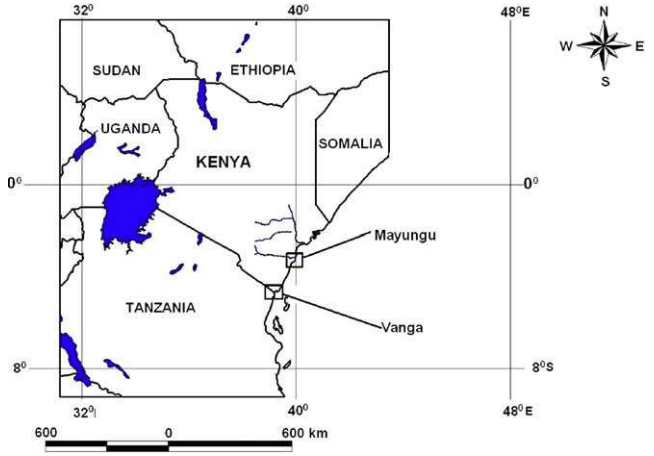

Fig. 1. A map showing the study sites in the survey of the coastal migrant fishery of Kenya; Mayungu, north coast and Vanga, south coast.

catch. Gears used range from hand lines and long lines, traps, spears, and drift and demersal gillnets onboard small fishing vessels comprised mainly of dugout canoes (*mtumbwi*), sail-propelled outrigger canoes (*Ngalawa*) and dhows [3].

Geographically, this coast lies within one of the most dynamically varying large marine ecosystems worldwide; the western Indian Ocean (WIO) eco-region. It experiences a tropical humid to sub-humid climate, with two distinct seasons influenced by monsoon winds [4]. These winds, christened trade winds due to their control on sailing and early trading patterns along the coast [5], have a strong influence on weather and the resulting fishing patterns. The north east monsoons (NEMs) season corresponds to short rains in Kenya and Tanzania running from December through March, while more prevalent rains occur from April to June during the south east monsoon season (SEMs) [6]. The region has an immense wealth of economic opportunities, from exploitation of marine resources, trade in marine products, to transport routes for goods destined for the interior. Consequently, the monsoon winds have greatly shaped the resource-use patterns, and trade and transport systems among the coastal communities. Though the majority of coastal economic activities have greatly diversified with regard to trading patterns and entrance of new stakeholders, fishing remains the major large scale activity supporting a greater percentage of the coastal communities [7].

The coastal migrant fishery in Kenya is part of the wider east African and WIO region migrant fishery, running from Mozambique in the south to Somalia in the north although the north bound migrations have been restricted by instability in the neighbouring Somalia (pers. observ.). The fishery is characterised by all-year migrations and has been in existence for several hundreds of years, closely associated with trade dhows dating back to the 16th century Arab-invasion of east Africa [5]. Along the Kenya coast, the landing beaches of the migrant fishery run from Vanga on the Kenya–Tanzania border, through Kenya's south coast fishing villages of Majoreni, Shimoni, Funzi and Gazi, to the north coast villages of Kuruwitu, Takaungu, Malindi, Mayungu, Ngomeni, Kipini and Lamu through to Ziwayuu on the Kenya–Somalia border. The Vanga and Mayungu villages are however the main fishing villages and the favoured camping sites by migrant fishers characterised by diverse populace and highly varied fishing methods, accounting for over 80% of the recorded migrant activity along the coastal fisheries in Kenya. The introduction of community resource management programs under the Fisheries Department, Kenya in beaches along the two major migrant sites has effectively confined migrant activity to the Vanga and Mayungu areas with few outcrops north of Mayungu such as Ngomeni and Mto Kilifi in the larger Malindi district [8]. Further, despite the legal requirement for fishing permits issued by both the Fisheries Departments in Kenya and Tanzania, many migrant fishers have operated without licences, given the lack of surveillance and difficulties in enforcing regulations on cross-border fisheries resources (pers. comm.). The current study was conducted at these two main villages to characterise the structure of the migrant fishery and the evolution of the fishers and their progression upon entry into the fishery. The aim was to define fisher categories and their stake in the fishery for the purpose of conservation and management, as well as evaluation of the economies associated with the migrant fishery.

2. Materials and methods

The study was conducted over a period of one year from October 2005 through September 2006. An initial synthesis of existing information and data on the coastal fishery from literature and fisheries reports [13] was first conducted between May and July 2005, followed by a preliminary survey to identify the main fishing villages and preferred camping sites of the migrant fishers in August 2005. Baseline information collected included the number of registered fishers, fishing vessels and archived fish catch data from fishing villages along the Kenya coast and the Vanga and Mayungu sites were selected as the preferred camping villages for the migrant fishery. The Vanga fishing village, on Kenya's south coast straddles 4.663°S and 39.215°E, while Mayungu in the north coast borders the Ungwana bay fishery in Malindi, at 3.214°S and 40.135°E (Fig. 1). The two villages represent highly diverse populace and hotspots for migratory fishing characterised by varying levels of fishing technologies. The Vanga fishing grounds are part of a complex ecosystem of mangrove bays, estuaries and creeks close to the shore bordering patchy and island reefs offshore [8]. This fishery supports an estimated 1000 active fishers, with its easier access to deeper and rich waters of the Vanga–Pemba channel [8,9]. The main inhabitants are the Digo community. Endemic fish species include the groupers, *Epinephelus* spp. and the diversity of the fishery is high and the fishing grounds are also foraging areas for five species of dolphins, and resident dugongs [1] with the coastal stretch being an important marine turtle nesting area. In contrast, the Mayungu site presents unsheltered fishing grounds characterised by a fringing reef with high coral diversity with deep offshore banks close to the continental shelf in some areas [10]. Large sea grass beds occur and part of the fishing grounds lie under the Malindi marine protected area (MPA) reserves bordering the Ungwana bay fishery [11,12]. The village is inhabited mainly by the Giriama though many immigrant fishers have moved to settle permanently.

Field surveys comprised five-field days on the first week of every month for a period of one year, visiting each fishing village and fish landing sites in time for the set-off and return from fishing grounds, and the fishers interviewed individually. The timing of the surveys was synchronized with the tides which greatly influence the set-off and return times for the fishers. The interviews were conducted on structured questionnaires (Appendix 1). Data recorded included demographic details (citizenship, residence, age, family sizes etc.), migration routes, fishing operations and catch data including major species fished, days fished/week, catches on the particular day of interview, reasons for entry into a particular fishing village, planned migrations and reasons for exit as well as personal views on the fishery. To gather additional information of fisher movement, and evolution of the fishers, selected fishing units comprising vessels and crew were tagged and keenly monitored for entry and exit in the main survey villages of Vanga and Mayungu as

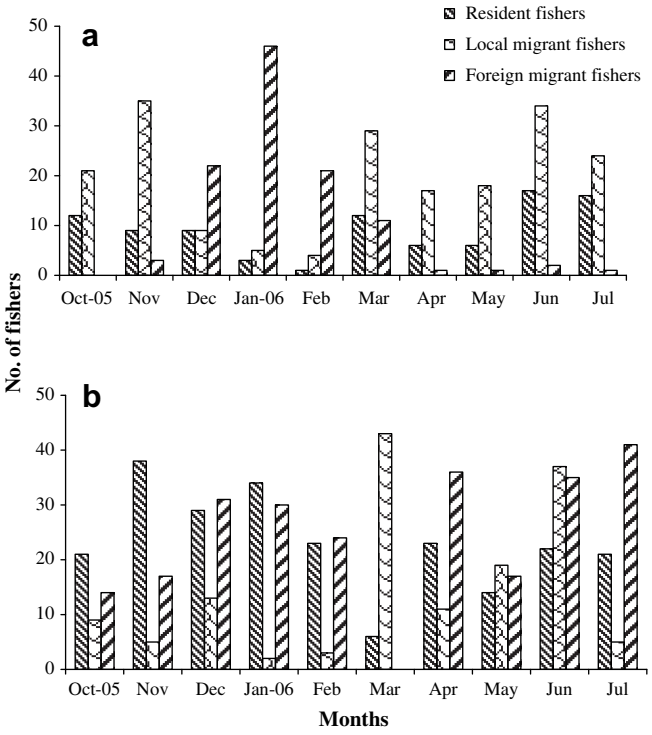

Fig. 2. Resident, local and foreign fishers of the coastal migrant fishery of Kenya at Mayungu (a) and Vanga (b) study sites.

indicators of migrations in and out of the study sites over the study period. Monitoring of the seasonality of the fishers' migration and expanse, factors driving the migrations, target fishing grounds, and catch and species landed was done continuously during the field surveys based on the recorded data from the interviews.

To clearly define the fishers ad understand the structure and evolution in the fishery, the fishers were categorised into seamen, fishermen and *tajiris* or fish dealers (who also doubled as employers) based on gear and vessel ownership, and whether the particular fisher actually went out to sea for fishing or not. Seamen were basically employees depending on the *tajiris* for wages upon return from every fishing trip based on the catch, or involved in collaborative fishing ventures with fishermen. Fishermen were defined as the actual sea-going fishers with their own gears and/or vessels. Some fishermen who lacked their own vessels often entered into collaborative fishing ventures using their own gear onboard the vessels of the *tajiris*. Under such arrangements, the catches were shared on agreed ratios based on the calculated gear and vessel effort. The *tajiris* represent senior fishers-turned fish dealers owning both fishing gears and vessels and often employing young seamen, or hiring out their fishing vessels and gears to fishermen in return for a percentage of the catch.

3. Results and discussion

3.1. Structure of the fishery: resident and migrant fisher statistics

A total of 1018 fishers were interviewed, with 623 fishers from Vanga and 395 fishers from the Mayungu villages representing 63% and 30% of the estimated fishers within the south and north coasts of Kenya respectively. In Vanga, 61% of the seamen and fishers were Kenyan citizens with 37% local residents, 23.5% local migrants and 39% foreign migrants from the Pemba, Mafia and Zanzibar islands off mainland Tanzania. In Mayungu, 23%, 49.6% and 27.4% of the

Fig. 3. Age class distribution of fishers of the coastal migrant fishery of Kenya at Mayungu and Vanga study sites.

interviewed fishers were resident, local and foreign migrants respectively, with ~77% of the fishers being Kenyan citizens (Fig. 2). Overall, the total migrant fishers on both sites accounted for 69% of the total fishers interviewed.

Analysis of seasonal trends in the migrations showed that the numbers foreign migrant fishers at Mayungu peaked during the December–March season, attributable to good catches and calm waters associated with the NEM season. The number of local migrant fishers exhibited two peaks in October–December and March–July season. At the Vanga site, the highest peak for local migrant fishers was in March–June with two peaks for foreign migrant fishers during November–February and April–July.

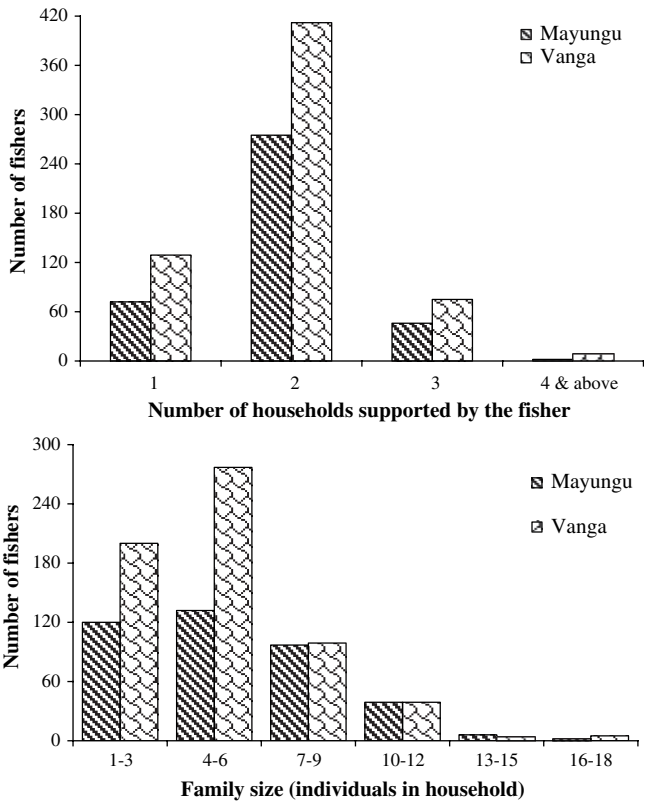

Fig. 4. Demographic factors in the coastal migrant fishery of Kenya; dependence (number of individuals per household supported by individual fishers) among fishers in Mayungu and Vanga villages during the current study.

Comparing the two study sites, it was observed that local migrant fishers dominated the Mayungu site unlike on the Vanga site where a bigger percentage of the fishers was comprised of foreign migrants. This disparity may be attributed to the geographical location of the two fishing areas with Mayungu remotely far from the home-bases of foreign migrant fishers of the islands off mainland Tanzania, compared to Vanga, which straddles the southern Kenya border with neighbouring Tanzania, allowing for easy cross-border fishing by the foreign migrants.

3.2. Demographic factors: age, household numbers and family sizes among the fishers

Age distribution among fishers showed that active migrant fishers were aged 21–45 years accounting for 77% of the fishers (Fig. 3). Younger migrant fishers aged <20 years accounted for 8% of the total fishers interviewed, explained by diversification into other income generating activities since this category of youth ventured into fishing mostly as a last resort, especially during low tourist seasons. Comparing the two sites, the Mayungu site recorded 68% fishers aged 21–40 years compared to 75.5% at Vanga. Further, Mayungu recorded high numbers of younger fishers (<20 years old) (14% of the fishers interviewed), compared to only 5% in Vanga. Fishers aged 66 years and over accounted for <1% in both fishing villages.

Dependency level in the fishery averaged at two households per fisher (i.e. the parental family and the fisher's nuclear family) among 70% and 66% of the fishers in Mayungu and Vanga respectively. Single fishers (unmarried) accounted for 18% and 21% of the fishers at Mayungu and Vanga. An estimated 1% of the fishers in both villages were polygamous, supporting an average of four households or more. Polygamy, though recorded among only a small percentage of the migrant fishers, has an economic social impact, with the mobility of the fishers spiralling a migrant economy through 'offloading' of both fish catch and income to the families along their migration routes. Low income among the seamen and fishermen was however found to be a key factor discouraging polygamy. Family sizes averaged 4–6 persons per household in 33% and 45% of the families in Mayungu and Vanga, but 18-member families were also found accounting for 0.5% and 0.8% of the fishers in the two study villages respectively. The annual fishing cycles and migrations were closely linked to the dependence level with family sizes as key social factors (Fig. 4).

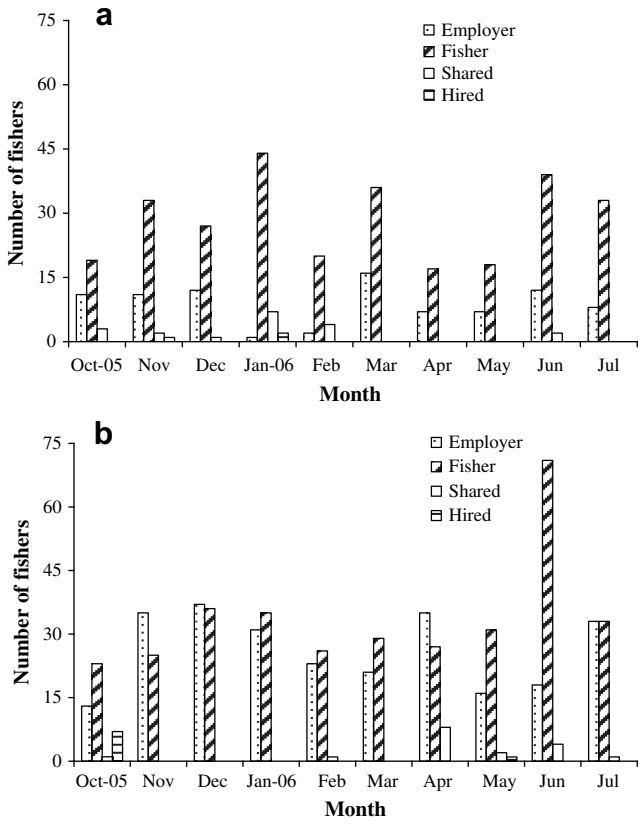

Fig. 6. Gear ownership within the coastal migrant fishery of Kenya, at Mayungu (a) and Vanga (b) study sites.

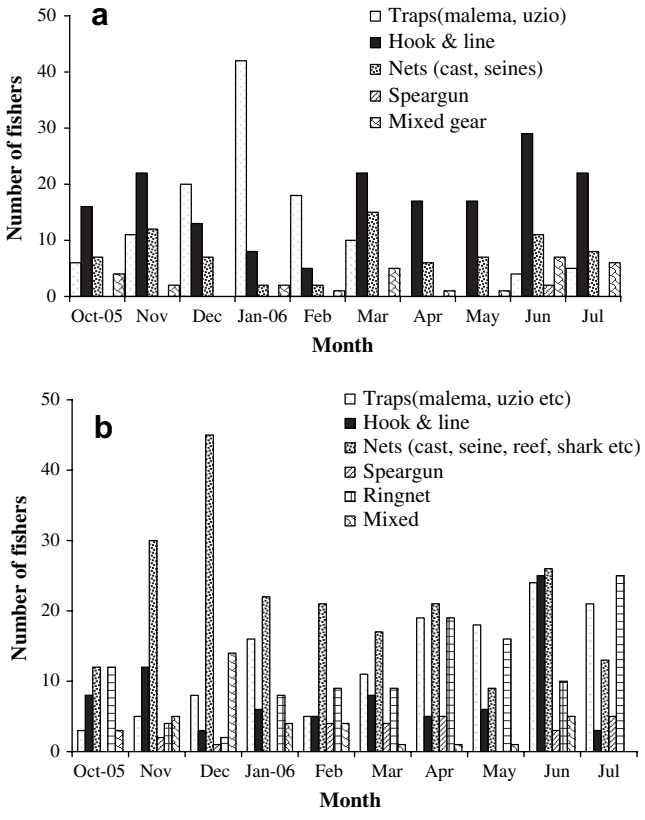

Fig. 5. Types of fishing gears used within the migrant fishery of Kenya at Mayungu (a) and Vanga (b) study sites.

3.3. Fishing operations; gears and vessels used in the fishery and ownership status

Fishing gears used within the fishery fell into two categories; traditional gears encompassing traditional traps such *malema* basket traps, spear guns and sticks or *ngovya* for octopus and crab fishing, and tidal weirs or *uzio* (Fig. 5). Modern gears included hand lines and nets (gillnet, beach seine or *Juya*, shark net, reef net, *simu* net and the recently introduced ring nets). The reef and *simu* nets have very small mesh sizes and target sardines and other smaller species. Modern gears accounted for 63% and 68% of the gears in Mayungu and Vanga respectively with hook and line accounting for 43% of the gears at Mayungu compared to nets, traps and ring nets which dominated the Vanga village, at 36%, 22% traps and 19% of the gears recorded respectively. Ring nets were absent from Mayungu village courtesy of a November 2004 ban by the Fisheries

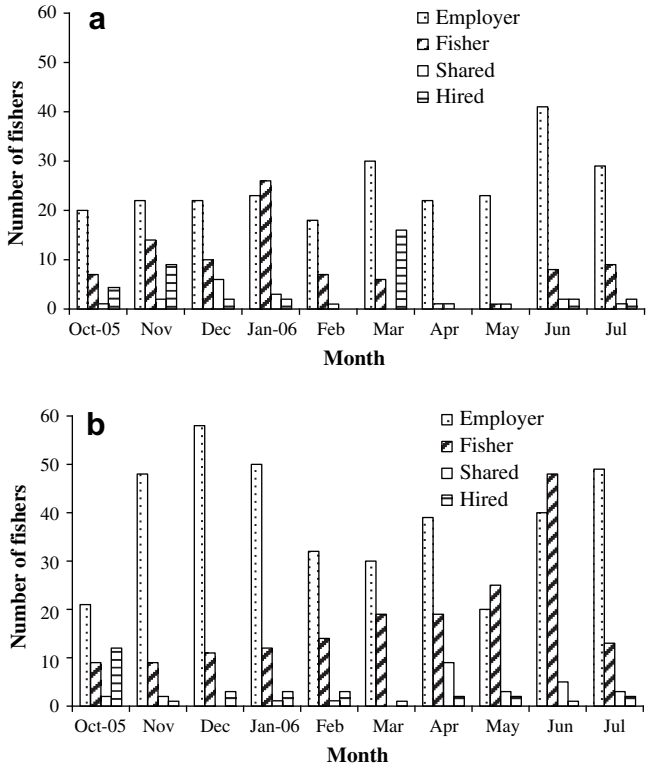

Fig. 7. Fishing vessel ownership within the coastal migrant fishery of Kenya, at Mayungu (a) and Vanga (b) study sites.

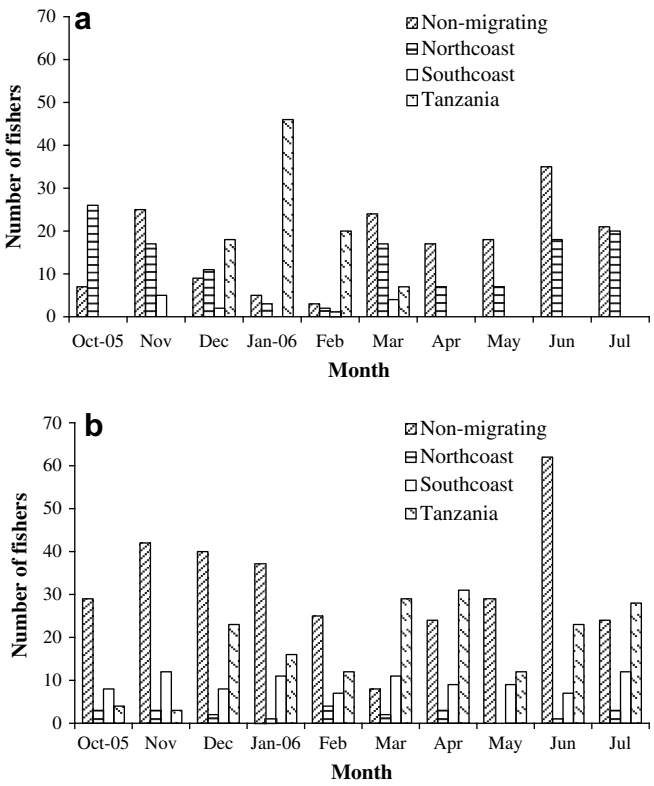

Fig. 8. Planned fisher migrant activity within the coastal migrant fishery of Kenya at Mayungu (a) and Vanga (b) study sites during the current study period.

Department, Kenya. The dominance of hook and line in Mayungu may be attributed to the unsheltered fishing grounds making the use of vulnerable nets risky with traps dominating the calmer November–March season. In both study sites, the use of banned gears including spear guns was noticeably low, at <1% and 4% in Mayungu and Vanga respectively. Among the fishing vessels, dugout canoes were dominant accounting for 55% and 35% of the vessels used in Mayungu and Vanga respectively. At Mayungu, engine powered dhows and sail-propelled *Mashua*, each accounted for 10% while outrigger canoes (*Ngalawa*) were 16% of the vessels used, compared to 24%, 31% and 16% in the Vanga site respectively. Outboard engine boats (*Dinge*) were noticeably absent at Vanga compared to 16% on the Mayungu site.

Gear and vessel ownership within the fishery fell into shared/hired, fishermen and *tajiri* owned gears (Fig. 6). At Vanga, 42% of the fishers were mainly seamen depending on *tajiri* owned gears, compared to 22% in Mayungu. This high dependency was attributed to the high cost of ring nets, which were the preferred gears in Vanga unlike at Mayungu where hook and lines remain the preferred gear. Among all the fishers sampled, gear ownership was 74% and 54% migrant-fisher owned at Mayungu and Vanga respectively, and hiring of fishing gears was rare at both villages. Generally the coastal migrant fishery in the study villages was found to be *tajiri*-dominated, owning 63% and 62% of the vessels at the Mayungu and Vanga study sites, compared to only 23% and 29% fisher owned vessels in the two sites respectively (Fig. 7).

3.4. Evolution of fishers

The evolution of the migrant fishery revolved around the *tajiri*-driven economy and many fishers entering the sub-sector started mainly as seamen, working for the gear and vessel-rich *tajiris*, with wages pegged on the daily catch. Consequently, the migration trends of the seamen greatly depended on the movement of the *tajiris*' vessel although some seamen often opted out of a migrating vessel and remained within the same fishing village, joining crews on new vessels entering the fishery. Such cases were often driven by social issues such as the need to stay with the family in the current fishing village, religious festivals such as Ramadan, Easter and Christmas, or sickness.

Under good seasons and many years of toil as seamen, some would manage savings and acquire gears and fishing vessels of their own, thus graduating from seamen to the fishermen category, and after some years finally diversify into fish trade, initially with the support of their wives as fish mongers. Those with polygamous families were therefore often fast in setting up retail outlets in more than a single fishing village along the vast coast, though polygamy was not the major factor passé. With age and experience, and acquisition of more fishing gears and vessels, these fishermen would often 'retire' from the fishing activities as *tajiris*, creating new employment opportunities for young seamen joining the industry. This characteristic evolution, from seamen to fishermen and finally to *tajiris* appears to be a key factor that has seen the growth of vibrant migrant economies along the Kenyan coast and springing of new fishing villages where new *tajiris* set up new fish collection points in competition with their counterparts in the established villages, thus seeing the emergence of new fish landing beaches and villages. The numerous non-designated fish landing sites along the Kenyan coast today (in reference to designated landing sites, Fisheries Act Capt. 378, 1989) are evidence to the fast growth of local economies within the migrant fishery, making an updated documentation of new landing areas by the Fisheries Department an uphill task (pers. observ.). The Mayungu landing site is one example, being typically a migrant fisher village, hardly

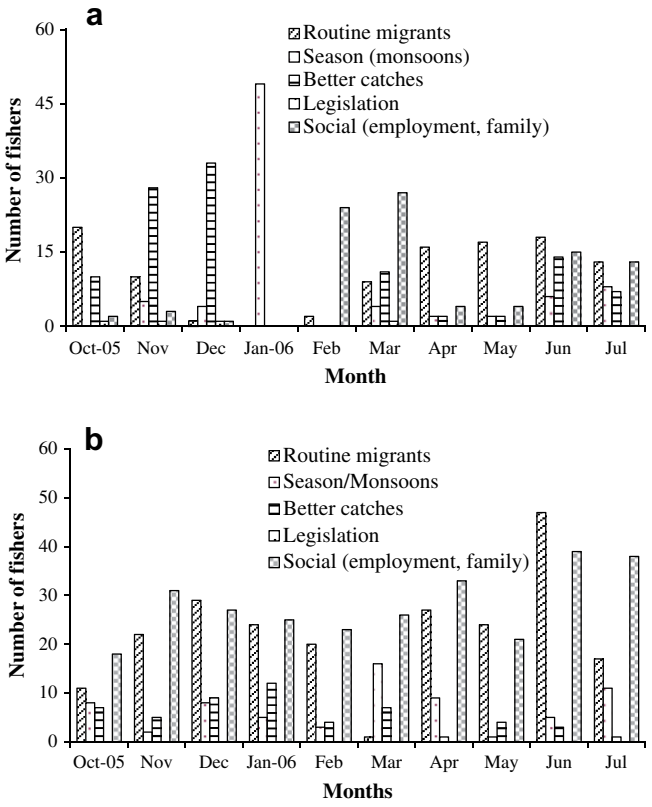

Fig. 9. Driving factors behind in-migrations within the coastal migrant fishery of Kenya at Mayungu (a) and Vanga (b) study sites.

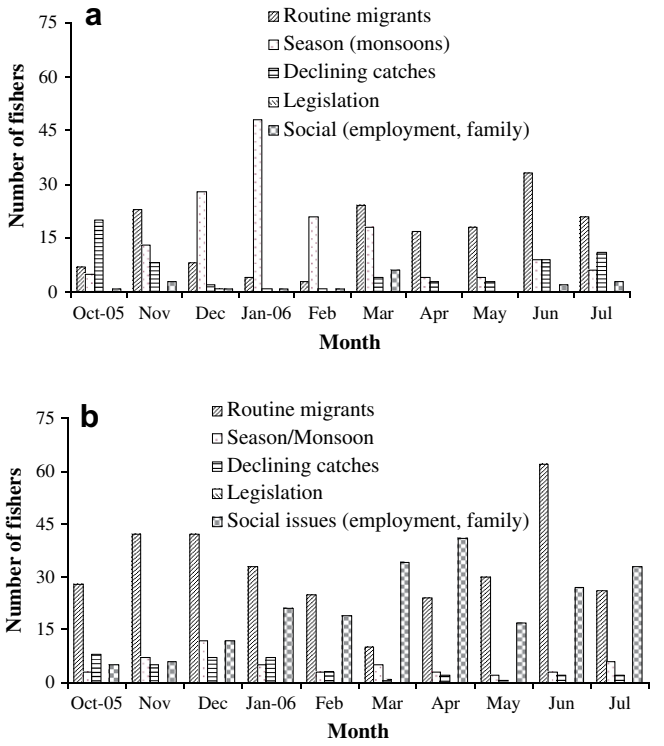

Fig. 10. Driving factors behind out-migrations within the coastal migrant fishery of Kenya at Mayungu (a) and Vanga (b) study sites.

8 km away from the more established Malindi fish depot. Thus springing new landing beaches and growth of fishing villages are seen as the result of emergence of younger *tajiris* creating new fish collection points to evade older *tajiris*. A look at the landing sites along the entire coastal stretch of Kenya, from Vanga to Mayungu however showed that new fishing villages and landing sites were more likely to be engaged in the use of deleterious fishing methods including spears, dynamite and toxic herbs, since such non-designated sites lacked surveillance by both the Fisheries Department and the Kenya Wildlife Service, the latter being custodians of marine protected areas.

3.5. Resource management

Resource management and conservation are aimed at maintaining the integrity of the fishery through sound exploitation regimes. Analyses of the level of participation in conservation issues, membership to community based organizations (CBOs) and views with regard to better management of the fishery showed that only 17% and 9% of the fishers in Mayungu and Vanga were affiliated to CBOs (mainly fishermen cooperatives and self help groups), with evidently low participation in resource management further aggravated by the high mobility of the fishers. Beach management units (BMUs) were more common within the migrant fishery at Mayungu (15%) but were virtually absent in Vanga where 6% preferred the fishermen cooperatives compared with Mayungu at only 2% of the fishers. History of poor performance of fishermen cooperatives in the 1990s due to mismanagement is largely to blame for the reduced morale in groupism; the spirit of coming together to form community self help, conservation, resource management and fish marketing organizations (fisheries cooperatives), save the turtle groups, marine conservation and beach management groups and consequently a low level participation in resource management. There is a need to encourage participation in marine conservation by migrant fishers as a way of curbing deleterious fishing methods. The need for self reliance to avoid exploitation by *tajiris* was evident, with 77% and 65% in Mayungu and Vanga respectively calling for micro-financing to acquire better vessels and fishing gears with 7% and 25% in Mayungu and Vanga respectively being dependent solely on the fishery for their livelihood, with fishing having been passed on from generation to generation in the family. Several fishers also called for improved fisheries legislation with 5% in Mayungu and 7% in Vanga calling for the removal of destructive beach seines, ring nets and trawlers. At the Mayungu site which borders the Ungwana bay trawl fishery, fishers urged a total ban on trawling, attributing the declining livelihoods to destruction of fishing gears by trawlers as well as encroachment on the non-trawl zone designated for the artisanal fishery. The Vanga fishers were for the total ban of ring net fishing [14,15]. Fishers from both sites however strongly opposed the creation of new marine protected areas (MPAs), with many claiming that MPAs only deprived the fishers of better fishing grounds with little benefits to improved fisheries. Some called for the revival of CBOs and fisheries cooperatives, with 6% and $<1\%$ of the fishers in Mayungu and Vanga respectively believing they would benefit from better resource and financial management.

3.6. Fisher migrant activity and factors driving the fisher movements

Fisher migrations were categorised into non-migrants, local migrations bound for the north and south coasts of Kenya, and foreign migrations mainly headed for Pemba, Mafia and Zanzibar

islands off mainland Tanzania. Non-migrants accounted for 47% of the total fishers sampled, while foreigner migrations accounted for 26% of the fishers, mainly during the December–April NEM season. At the Vanga site, 29%, 15% and 4% fisher movements were attributed to foreign, local south coast and north coast bound migrations during the same period. At Mayungu, this season recorded an increase in foreigner migrants, as they sailed southwards from the northern fishing areas of Ngomeni, Kipini, Kiunga and Lamu. Local migrations within north coast Kenya mostly targeted these fishing grounds in Kilifi, Ngomeni, Kipini, and Kiunga, accounting for 18% while south coast bound migrations from the Mayungu site accounted for 9%, destined for the Diani-Chale Funzi, Shimoni and Majoreni-Vanga fishing grounds (Fig. 8).

During the November–March season, there was a notable decrease in local migrations within the south coasts, accounting for only 3% of the fisher movement. Similarly, during the April–July season, foreign migrant fishers were virtually absent at Mayungu, attributed to the unfavourable SEM season. It was observed that foreigner migrations to the islands off mainland Tanzania were mainly linked to social issues and homing; the return to their 'main' homestead since many of the fishers were in polygamous marriages. On the other hand localized migrations within the south and north coasts were mainly in search of better fishing grounds during the favourable NEM season. Inbound migrations to the study sites were categorised into routine migrations, season (monsoons) and search for better catch-driven, legislative or social factors (Fig. 9). On the Mayungu site, 27% of the inbound migrations were in search for catches while high migrations into the Vanga site (45%) were attributed to social factors, with a large number of foreigners seeking employment and better livelihood from the *tajiris*. Generally, routine migrations accounted for 27% and 36% of the fisher migrations at Mayungu and Vanga respectively and were linked to the fishers' 'traditional moving with the monsoons' as shown by the inbound migrations into Mayungu during the calm November–January period. Monsoon-driven migrations were rare in Vanga owing to the sheltered nature of the fishing grounds while outbound migrations at Mayungu were mainly driven by unfavourable seasons (40%) compared to Vanga where social issues were the main factors driving the fishers, accounting for 35% of the exit migrations (Fig. 10). The main social factors were enumerated as 'homing' associated with festivities and religious seasons.

3.7. Fish catches and species landed

The total fish catches landed at both fishing villages based on daily statistics were estimated at 202,400 kg, representing about 4% of the estimated 6000 tonnes landed from Kenya's marine fisheries annually [8]. In Mayungu, a total of 26,756 kg of fish was landed against 175,652 kg landed at Vanga; a ratio of 13–87% respectively. The high landings from the Vanga site are attributed to well-sheltered fishing grounds and the large sample size of more aggressive migrant fishers, who use more technologically advanced fishing methods such as ring nets, compared to the Mayungu local migrant fishers who were more pegged to traditional gears. Peak fish landings were observed in the months of January–March at Mayungu, and November–January at Vanga coinciding with the NEM season and there were notably lower catch landings from both fishing areas in the months of April–July coinciding with the SEM season. The main pelagic species landed were fusiliers (*Caesio striatus*), barracuda, trevally, sardines, kingfish, cavalla jacks, halfbeaks, sharks, tuna and bonito dominating the catches as well as demersal groupers, emperors, snappers, rabbit fish, parrotfish, surgeonfish, unicorn fish and goatfish. Crustaceans, mainly crabs and prawns, and molluscs dominated by octopus and squid, and echinoderms represented by sea cucumber were also common, mainly among the Vanga fishers.

4. Conclusion

It is evident that a combination of several factors influences the migrations and resource exploitation patterns employed within the two main landing beaches of Mayungu and Vanga in the coastal migrant fishery of Kenya. Two migration patterns were found to clearly define the fishery; inter-seasonal migrations closely linked to the monsoons and intra-seasonal migrations driven by declining catches, legislative, social and religious factors. However, it is the monsoon seasons that appear to have shaped the seemingly age-old seasonal annual fishing cycles associated with routine migrants. The *tajiris* are a big factor in fisher migrations and many seamen depended on shared, hired or *tajiri* vessels and gears, with the resultant fishing migrations aimed at utilizing shared resources. Due to difficulties in accumulating savings while fishing and returning home daily, the fishers have devised the *kwenda-ago*, a strategic migration away from the home village to remote grounds, fishing for several weeks or months, and returning home after accumulating some savings in both fish and proceeds from fish sales in the villages close to the fished grounds. The evolution of fishers within the fishery and the increasing number of *tajiris* are clear evidence of the substantial contribution of the migrant fishery to economies of the coastal fishing villages. The cry for financial aid remains strong among all fishers rich and poor alike. However, these are noted cries for aid in financial management rather than microfinance, signaling the need for the revival of CBOs to help the fishers manage their incomes and the migrant economy as a whole. Further, the mobility in the migrant fishery calls for structured management based on the fisher categories to enhance the exploitation of the offshore fisheries and pelagic fish stocks. However, the problem of structuring and managing the transboundary fishery based on fisher categories, migratory status and other social economic factors remains a huddle due to the lack of adequate research on the entire fishery. Hence more research is needed on the entire coastal migrant fishery along the east African coast.

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Appendix 1. Structured questionnaire used in the survey of the coastal migrant fishery of Kenya.

Preliminary survey of the coastal migrant fisheries of Kenya

Goal: The aim of this survey is to assess the migrant fishery of Kenya in an effort to provide more information on its structure and

Name of data Collector: _____Date:____-____-2005/6_

1. Fisherman Data

a) Name of Fisher:- _____ Place of Birth (village):-_____

b) Name of landing site: _____

c) Age (yrs):- _____

d) No. of Wives:- _____ No of Children:-_____

e) Resident village:-_____

2. Fishing Operations:-

a) Fishing areas:- _____

b) Gears used: - 1. _____ 2._____3._____

c) Fishing Operations:-

- Gear Ownership :-

1. Self: - _____ 2. Shared: - _____ 3. Hired:-_____4. Employers /Tajiri's:-_____

Other (Explain): _____

- Vessel Ownership :- Type:- (Horse Power if engine)_____

1. Self: - _____ 2. Shared: - _____ 3. Hired:-_____4. Employers /Tajiri's:- _____

Other (Explain): _____

- Do you belong to a Community based Organization? Yes_____ No:- _____

If yes, Type of organization:-

1. Cooperative society_____ 2. Conservation group: - _____ 3. Self help: - _____

other (explain):- _____

Name of CBO /group: - _____

d) Days fished during the last one Week (tick):-1: ___ 2:___3:___ 4:___5:___6:___ 7:___

e) Type of fish caught today: _____ Catch (kg): _____

f) Which fishing area did you last fish:- _____ Date/Month:- _____

g) Why did you migrate here? _____

h) Do you plan to migrate again?:-_____To: (village)_____

i) Why do you plan to migrate? _____

j) Views about the fishery: _____

_____

_____

evolution and assess the available management options for conservation and sustainable resource exploitation.

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