MULTI-ETHNIC COEXISTENCE IN KILWA ISLAND, TANZANIA

The basic ecology and fishing cultures of a Swahili maritime society

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Abstract

This article examines the socio-cultural structure of a Swahili maritime society in which many ethnic groups continue to live together. The focus of the article is on Kilwa, a Swahili island off the south coast of Tanzania famous for the prosperity it secured from Islamic Indian Ocean trade in the era of the medieval Kilwa Kingdom. By analysing the exploitation and sharing of natural resources particular to the sea surrounding this island, the article details how Bantu people and those of Arab descent have managed to live together in such a small area. The three ecological zones that make up the maritime environment of Kilwa are home to two general types of fisheries, each of which is largely practiced by one of the main ethnic groups. Fishers of Arab descent use expensive keeled boats for gillnet fishing in the open sea while Bantu fishers gather marine products using a dugout canoe, a flat-bottomed boat, or on foot in the shallow inland sea[1] and coral pools. By occupying different maritime zones and targeting different species, the two fishing cultures of Kilwa Island enjoy a harmonious coexistence. Because each zone has different products, the catches for the two ethnic groups are different. Thanks to the diversity of the marine resources around Kilwa Island, each ethnic group can monopolise its own fisheries, thus reducing conflict between fishing activities. This contributes to maintaining a peaceful and harmonious multi-ethnic coexistence on the island.

Keywords

Multi-ethnic coexistence, basic ecology, fishing culture, Swahili, Kilwa Island, Tanzania

Introduction: The Indian Ocean Maritime World

Historically, the Swahili coastal islands off Africa's mid-east coast, such as the Lamu archipelago and Mombasa in Kenya, and Zanzibar, Pemba, Mafia, Songo Mnara and Kilwa in Tanzania (Figure 1), have acted as international trading ports (and, thereby, 'gateways') between Eastern Africa and the outside world. Since the era of Indian Ocean trade beginning in the first millennium (Schoff, 1995) to the period of European invasion and colonisation and the contemporary age of developing tourism; the islands have been frontier lands and international ports where many ethnic groups have

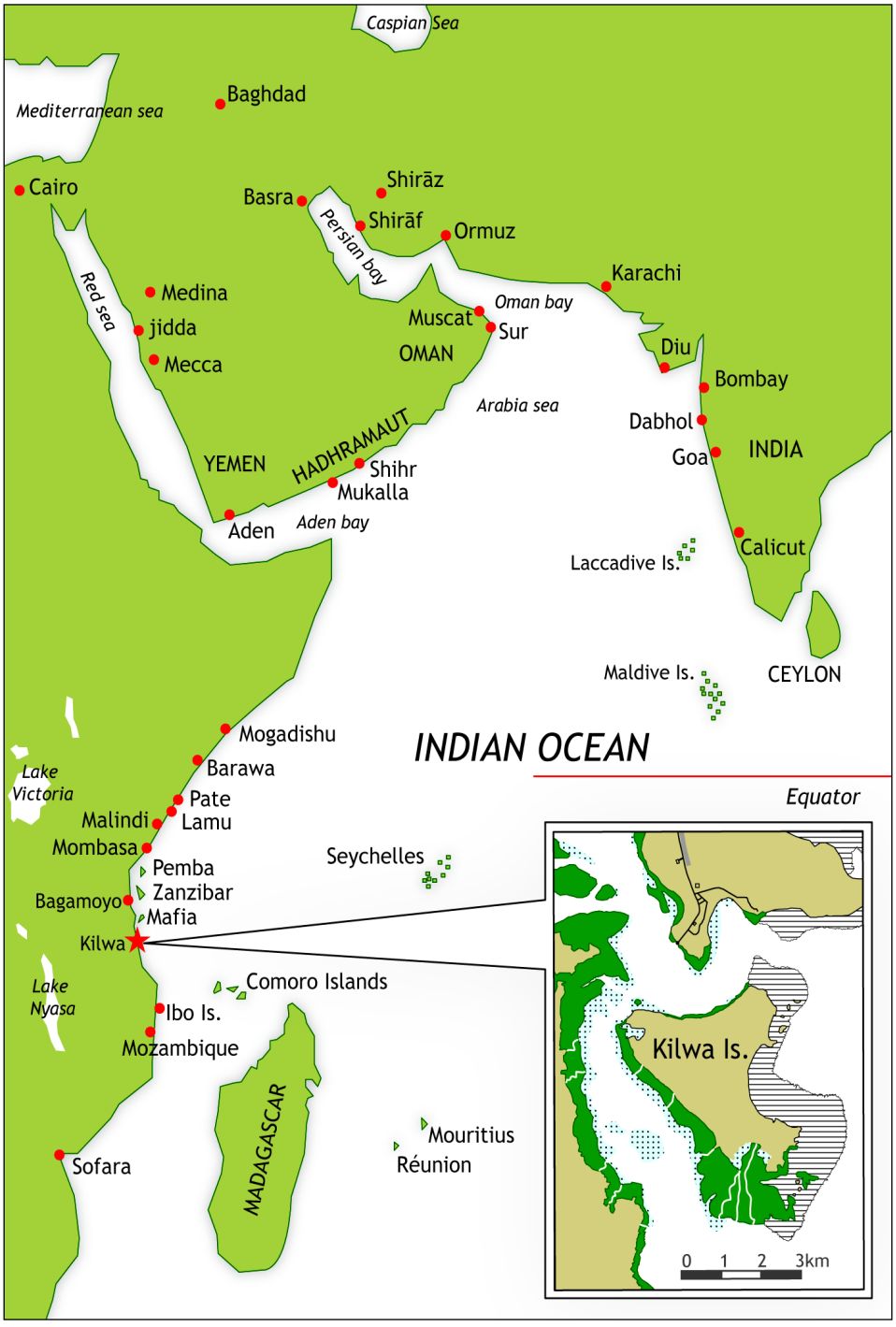


Figure 1 – The Western Indian Ocean and Kilwa Island (based on Gilbert, 2004: 9)

lived together (Allen, 1993; Middleton, 1992). As a result, African societies on the Swahili coast have been influenced by various aspects of Arab, Persian, Indian, European and Asian cultures. Consequently, the Swahili coast should be considered not only as part of the eastern coast of the African continent but also as a western extension of the 'Indian Ocean Maritime World'; a term proposed by Japanese historian Hikoichi Yajima (1993 and 1996) to describe a complex networked society in the Indian Ocean.

The Indian Ocean Maritime World is a large region; it includes the Bay of Bengal in the eastern Indian Ocean and the Persian Gulf, Red Sea and Arabian Sea in the western Indian Ocean. Historically it also includes the islands of Southeast Asia and southern China and the South China Sea, Java Sea, Sulu Sea and Celebes Sea. This vast area has been connected over a long period of time through long distance trade facilitated by wooden sailing boats, such as the dhow. Dhows use the changing patterns of monsoon winds for propulsive power and are still a form of transportation used by the people along the Swahili coast (Agius, 2002; Nakamura, 2007a). The Indian Ocean Maritime World has been a common historical and geographical space that extended beyond the limits of blood relations and territories and even beyond the frameworks of modern nation states (Yajima, 1993: 10-11). The Swahili Coast, as part of this Indian Ocean Maritime World, has provided international trading ports and has been indirectly connected with distant Asian countries through the network (Chittick, 1974a, 1974b; Sutton, 2000). But while the trading network is open to the outside world, the islands themselves are limited in space and natural resources. This raises the question of how multiple ethnic groups have achieved and maintained a harmonious coexistence within Swahili maritime society.

Maritime Environment and Life on Kilwa Island

Kilwa, at latitude 8º 58 South, 39º 30 East, is a small lagoon island located a short distance from the southern Swahili coast of Tanzania. The island is 23 km in circumference, 12 km^2 in land area, and supports less than 1,000 inhabitants. Situated at the mouth of three rivers, Kilwa is surrounded by an inland sea covered with mangroves to the West and an open sea with a fringing reef to the East (Figure 2). Administratively, Kilwa Island belongs to the Kilwa district of the Lindi region in Tanzania (*Wilaya ya Kilwa, Mkoa wa Lindi*). Kilwa Masoko, where the administrative office of Kilwa district is located, is on the coast of the mainland, about 2 km from Kilwa Island. The main livelihoods on Kilwa are fisheries and agriculture. 2002 Tanzanian national census figures identified the population of Kilwa Island as 924, residing in 163 houses, with 304 of the residents practicing agriculture and 260 engaged in fisheries. Most families cultivate staple foods: corn, sorghum and rice as well as other crops, such as cassava, okra, peanuts, sesame seeds and cashew nuts. However, each family's field has an area of less than 1 hectare and, therefore, its produce is consumed by the farming families. Cash income is mainly derived from fisheries, which are focused on collecting marine products from the surrounding sea (Nakamura, 2009).

Kilwa Island flourished as the most influential Islamic Kingdom along the Swahili Coast from the late 12th to the mid-14th Century due to the Indian Ocean trade. The kingdom was formed in the middle of the 10th Century by Ali bin al-Hassan and his followers, who migrated from Shiraz in Persia (Iran). The kingdom reached its apex in the first half of the 14th Century under the rule of the sultan Al-Hasan bin Sulaiman (1310-1333)

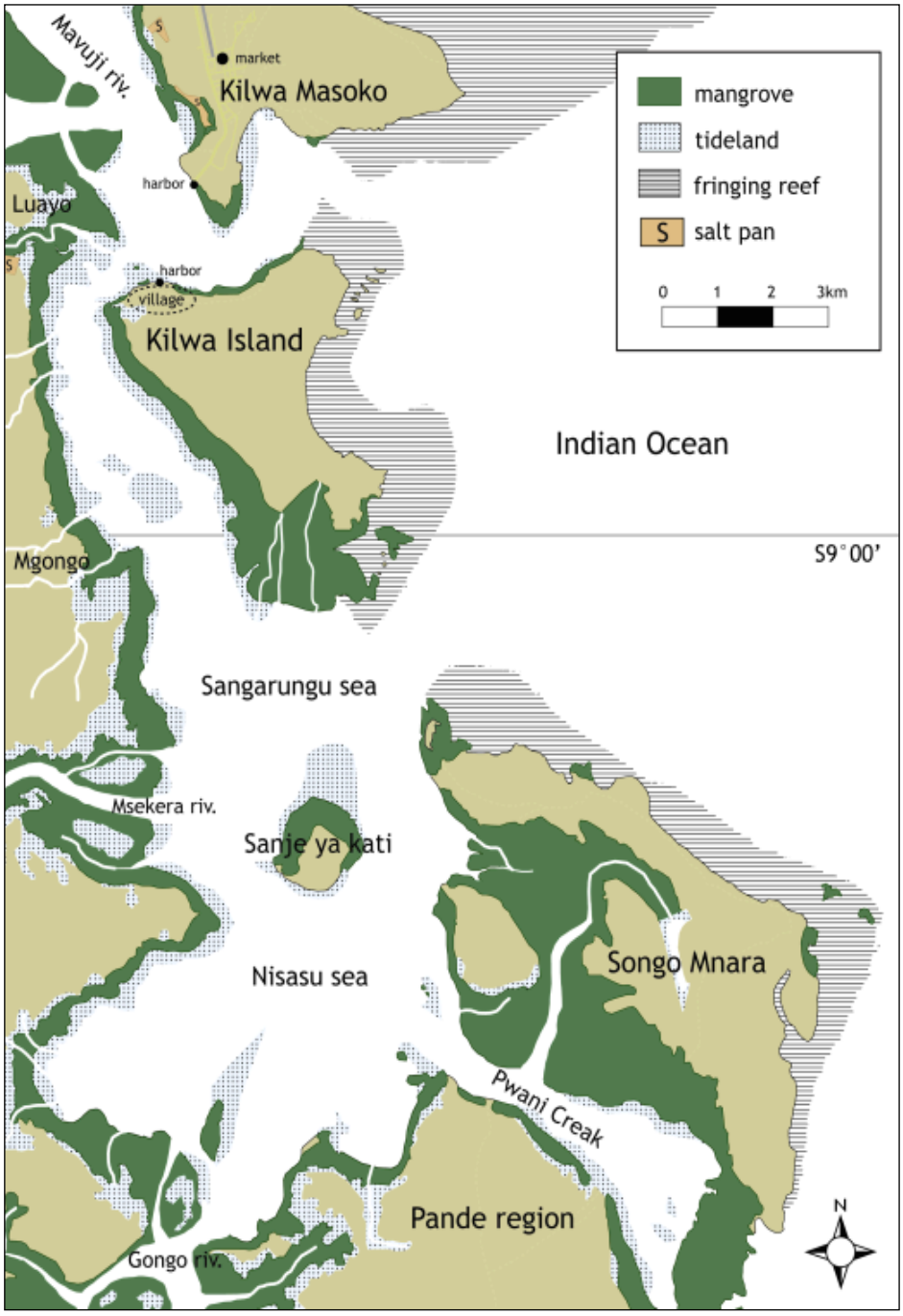


Figure 2 – Kilwa Island and surrounding islands and coast (Nakamura, 2010: 220)

who established a near monopoly over regional gold trade (Freeman-Grenville, 1958; Sutton, 2000). Ibn Battūta, a Moroccan Muslim traveler who visited the Kilwa Kingdom in 1332, wrote, "Kilwa is one of the most beautiful and well-constructed towns in the world" (Davidson, 1991: 142-143). Today, only the stone ruins of the Kilwa Kingdom remain. Although these historical monuments were classified as a UNESCO World Heritage Site in 1981[2], few tourists (less than 300 persons per year by 2000 [Kamamba, 2001]) have visited this island. However, since the start of a rehabilitation project initially funded by UNESCO, France, Tanzania, and Japan in 2001, the site has begun to attract more attention as a tourism destination (ibid).

Ecological Sea Zones

The maritime environment of Kilwa Island consists of three ecological sea zones (Figure 3): an inland sea covered with mangroves to the west (Eco-zone 1); an open sea with fringing reefs to the east (Eco-zone 2); and an intermediate sea between the inland sea and the open sea (Eco-zone 3) (Nakamura, 2007b).

Environmental Features of Eco-zone 1

The inland sea between Kilwa Island and the mainland is approximately 1 km in width. Separated from the open sea by Kilwa Island and Songo Mnara Island and surrounded by mangroves, the inland sea is calm without any strong wind or wave action. Because of fresh water inflow from three rivers, its water is brackish and is dominated by lower salinity. Earth and sand are washed down by rivers and so the sea is shallow and has a mean tidal range of about 3.4m, which results in extensive tidelands appearing during the ebb tide. As sunlight easily penetrates to the bottom, sea grasses grow well and small fish are abundant. Eight species of mangroves cover the coastline of the inland sea.[3] Leaves from the evergreen mangroves drop into the coastal water throughout the year, where they decompose and provide nutrients (Ngusaru, 1997). Various kinds of aquatic animals, such as small fish, prawns, shrimps, crabs, shellfish, microbes, worms, insects and birds, are found in the mangroves, making this a rich and diverse ecosystem. Native fishers recognise the value of the mangrove sea as both a fishing ground and marine breeding zone (fish nursery) and practice many types of fishing methods (Nakamura, 2010). The main livelihoods here consist of gathering crab, shellfish and shrimp in the mangroves, diving for sea cucumbers, catching fish using fish fences and fish baskets, net fishing (seine net and ring net) along the coast, and hand line fishing and gillnet fishing by small boats on the inland sea.

Environmental Features of Eco-zone 2

Eco-zone 2 is the open sea, where fringing coral reefs face the Indian Ocean. This zone is characterised by deep water, rough waves and strong winds influenced by the monsoons and the East African Coastal Current. At the coral reef slope, the water depth rapidly increases and wind and wave action are strong. The seafloor in this zone is mainly composed of coral, sand and some large rocks. The water is warm, and the salinity is comparatively high because there are no fresh water inputs. These maritime conditions favor the development of fringing reefs. Livelihoods in the region with coral reefs consist of gathering octopus, sea cucumber and shellfish or net fishing (fixed net and ring net) of small fish in coral pools, and diving for lobsters on coral slopes. On the open sea, fishermen practice fishhook fishing (hand line and long line) and net fishing (gillnet and trail net) from large boats.

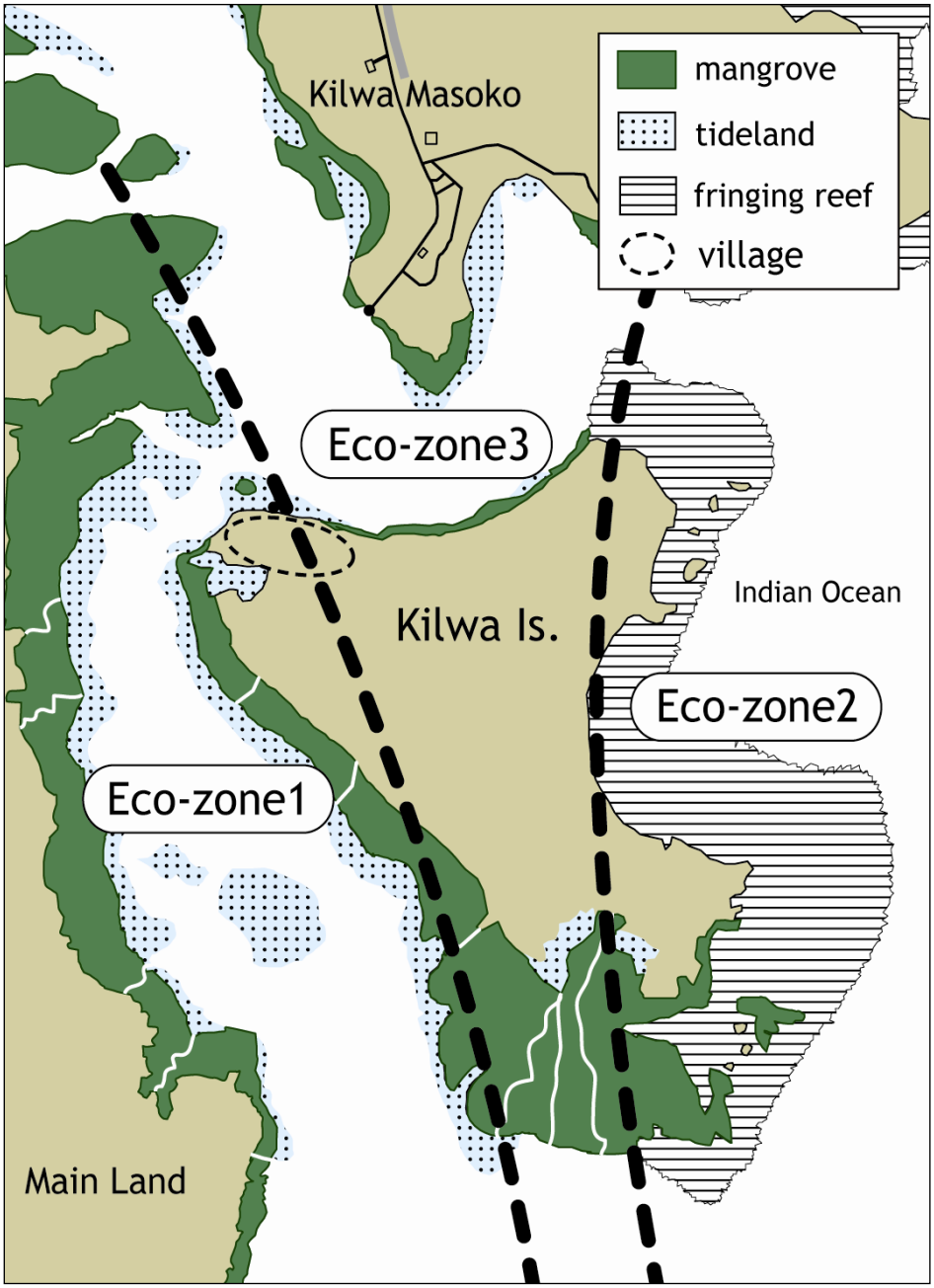


Figure 3 – Ecological Sea Zones of Kilwa Island (based on Nakamura, 2010: 222)

Environmental Features of Eco-zone 3

The intermediate sea is characterised by a combination of the qualities of Eco-zones 1 and 2 and can be divided into two parts. Closer to the inland sea, the water is shallow and mangroves are dense and small coral colonies are also found. Closer to the open sea, the water is deep enough for larger vessels and at the same time is protected from strong wind and wave action. The zone is comfortable for small wooden canoes and, therefore, the main harbour of Kilwa Island is located here. Surrounding the mangroves, many varieties of gathering methods are practiced. In the deeper waters, fishermen practice fishhook fishing (hand line and long line) and net fishing (gillnet, trail net and large seine net from beach) from all types of boat.

The geographical features of each eco-zone, as recognised by local fishers, are illustrated in Figure 4. Fishing activities depend on traditional knowledge. Traditional Ecological Knowledge (TEK), for example, gives insight into changes of wind and tidal conditions and geographical characteristics, such as water depth and seafloor quality.

Geographical Features of the Eco-zones

For Eco-zones 1 and 3, the geographical features are:

1. *kapani*: the mud surface of the mangrove forest
2. *tapata*: small clearings in the mangrove forest
3. *suti*: vegetated mud surface between the mangrove forest and the *wasi*
4. *wasi*: un-vegetated mud surface after the *suti*
5. *mwanini*: sea grass bed
6. *fungu*: tidal flats
7. *mchanga*: sandy sea floor
8. *mwanzo wa mkongwa*: the starting point of the small coral colony on the shore of the intermediate sea
9. *mkongwa*: small coral colony
10. *maji mengi*: deep water
11. *chakarawe*: pebbly sea floor
12. *mgogo*: sinker log
13. *chamba*: large submerged rock frequented by small fish
14. *mlima*: land

The geographical features of Eco-zone 2 are:

15. *mchanga*: sandy sea floor
16. *mwambani*: fringing reef
17. *utanga*: large holes in the fringing reef (coral pool)
18. *kanikani*: reef flat
19. *maji mengi*: deep water (coral reef slope)
20. *bahari kubwa*: open sea

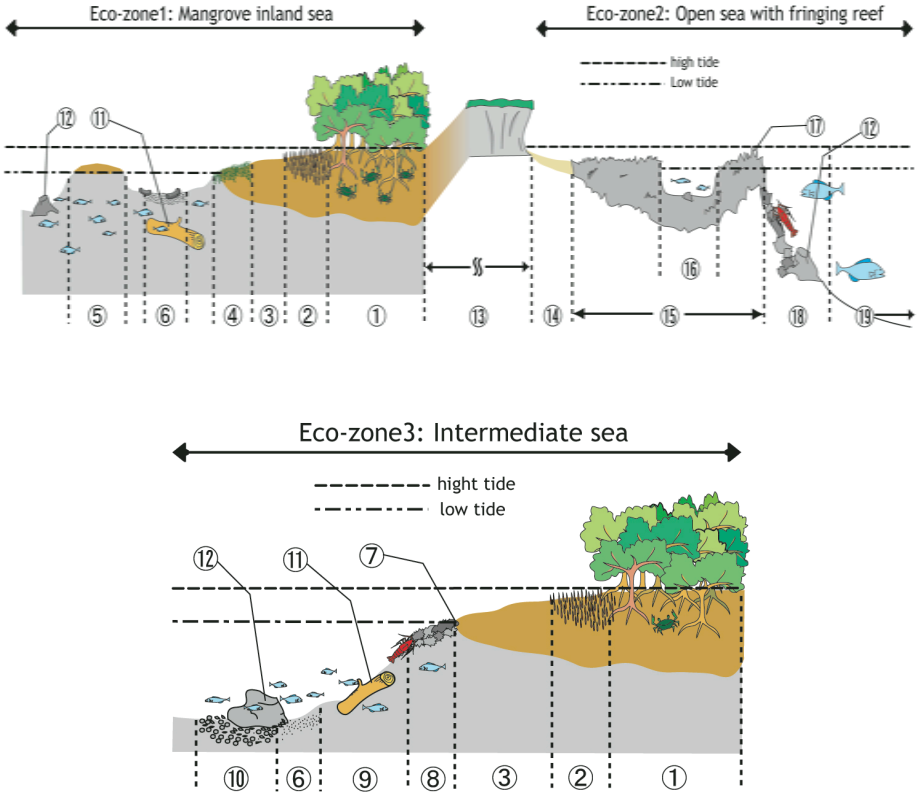


Figure 4 – Cross sections of various geographical characteristics of the three Ecological Sea Zones (based on Nakamura, 2008b: 33)

Ethnic Composition

The Islamisation of Kilwa Island dates back to the Kilwa Kingdom era (from the mid-10th Century) and the vast majority of inhabitants are pious Muslims (Sunni, al-Shāfi'ī) who practice daily, attend Friday worship sessions (*sali*), fast during Ramadan (*saumu*) and give to charities (*msaada* and *sadaka*). Reflecting its long history as an international trading port, Kilwa Island is a multi-ethnic Islamic society. During field research in 2005, 573 individuals from 28 different ethnic groups or identities organised in 101 different households were counted (Nakamura, 2008a: 155). However, as Swahili culture is fundamentally a mixture of African and Arabic, we can divide the ethnic composition into two main groups: the Bantu and those of Arab/Persia-descent (Figure 5). The Bantu includes 1) people of the Bantu ethnic group (*kabila*) and 2) people who do not claim their identities in a *kabila* but rather identify with the place where their ancestors (who were also ethnically Bantu) were born (eg Nos 14-23 in Figure 5). In this article, these two groups are collectively referred to as Bantu.

Of the 573 inhabitants counted during the course of this study, 463 (approximately 80%) were Bantu. Thirteen different Bantu *kabila* groups were identified (# 1-13 in Figure 5); the most numerous being the *mwera* (105 individuals or 18% of the total sample). On the other hand, there were 134 people (23.4% of the total sample size) who derive their identity from their ancestors' birthplaces. The most frequently mentioned origins were Malindi in Kenya (40 [6.7%]) and Pande located about 14 km south of Kilwa Island (36 [6.3%]). The group of Arab/Persian-descent consisted of 79 individuals, ie 13.8% of the total population sampled. Yemen was the most numerous point of origin (54 [9.4%]) cited. Some individuals claimed that their ancestors came from Shirazi in Persia (9 [1.6%]) (NB the Shirazi people are regarded as the builders of the historic Kilwa Kingdom). There were also 4 individuals (0.7%) of Comoro origin (people coming from Comoro claim their identity as Arab).

Group	Identity		Home Town	Num.	%	
The Bantu	1	Mwera	Kilwa region	105	18.3	57.4% (329 people)
	2	Matumbi	Kilwa region	39	6.8	
	3	Myao	around lake Malawi	36	6.3	
	4	Nyasa	around lake Malawi	33	5.8	
	5	Ngindo	around lake Malawi	32	5.6	
	6	Machinga	Mtwara region	30	5.2	
	7	Msongo	Songo Mnara Island	17	3.0	
	8	Nbana	Pande region	16	2.8	
	9	Makonde	Southern Tanzania	13	2.3	
	10	Makua	Southern Tanzania	3	0.5	
	11	Ngoni	around lake Malawi	3	0.5	
	12	Mbisa	around lake Malawi	1	0.2	
	13	Zaramo	around Dar es Salaam	1	0.2	
	14	Malindi	Kenya coast	40	6.7	23.4% (134 people)
	15	Pande	Pande region	36	6.3	
	16	Kisiwani	Kilwa Island	20	3.5	
	17	Lamu	Northern Kenya coast	12	1.8	
	18	Somali	Southern Somalia coast	8	1.4	
	19	Rufiji	Rufiji region	6	1.0	
	20	Somewhere on the Northern Swahili Coast		5	0.9	
	21	Mafia	Mafia Island	4	0.7	
	22	Mozambique	Northern Mozambique	2	0.3	
	23	Zanzibar	Zanzibar Island	1	0.2	
The Arab/ Persia	24	Yemen	Yemen	54	9.4	13.8% (79 people)
	25	Shirazi	Persia (Iran)	9	1.6	
	26	Mshihiri	Hadhramut	6	1.0	
	27	Dubai	United Arab Emirates	6	1.0	
	28	Comoro	Comoro Islands	4	0.7	
Unknown				31		5.4%
Total				573 people		

Figure 5 - Ethnic Composition
(*n*=573 people, in 101 houses, based on the field research conducted in 2005)

There is a clear economic gap between the two groups in Kilwa society. Depending on their occupation, some families are relatively wealthy, such as those of both groups who are owners of small shops, Islamic high school teachers and government employees; those of Arab-descent who manage the salt industry; and those Bantu who are

traditional medicine men (*mganga*). Families of Arab-descent are, generally speaking, wealthier because they are involved in more complex livelihoods, such as fisheries (Kilwa's primary industrial sector), the salt industry (secondary sector), and sea transportation (tertiary sector); while most Bantu people engage in self-sufficient livelihoods, particularly traditional fisheries and agriculture (families of Arab descent do not engage in agricultural work). The Bantu and those of Arab descent live in separate residential areas within the same village; families of Arab-descent live in the northern part of the island close to the harbor and the mosque whereas the Bantu live in the periphery behind them. According to aged Bantu informants, the Bantu once lived in Sanga village, which is located 2 km east of the present village, and only recently moved to where they reside today. Sanga village is now uninhabited. In the past there was a clearer separation of residential areas between them than at present. There is no electricity, water or drainage service on Kilwa. Most houses are small; a one-story house has four or five rooms and, in the case of Bantu homes, is built from mangrove poles, small rocks and mud and is thatched with palm leaves; these dwellings are called *nyumba ya udongo* ('mud houses'). On the other hand, all houses of the Arab-descended group are made from fossilised coral and lime and are called stone houses (*nyumba ya mawe*). The building cost of a stone house is much higher than that of a mud house.

Large Boats as a Symbol of Wealth

The wealth of Kilwa Island is notably symbolised by the possession of large boats. Along the Kilwa coastal region there are seven types of boats (Figure 6), five of which are found on Kilwa Island. In 2005 there were 46 boats that could be categorised as either small or large (Figure 6). Of these 46, 16 were large boats (*dau*, *mashua* and *boti*), which have a keeled plank structure. The *dau* and *mashua* have a Latin-rig, and the *boti* uses an outboard or inboard engine. Because of their keel, large boats can safely sail in the open sea. Small boats, of which there were 30, have no keel and are either dugout canoes (*mtumbwi*) or flat-bottomed boats (*bare*). They are suitable for use in the shallow inland sea and in the narrow creeks in the mangrove forest. The cost of building a small boat is relatively low. According to a boat builder (*fundi*) on the island, in 2005 it cost about US$150 to make a canoe or a flat-bottomed boat; whereas building a *dau* cost the equivalent of US$645. The cost of a *mashua* or a *boti* is much higher, about US$1,200. In the case of a *boti,* additional funds are needed to purchase the engine, which costs as much as building the *boti* itself - approximately US$1,200. More than half of all boats are small (30/46 [67%]) and it is not difficult for the fishers of Kilwa Island to obtain a small boat, although such a purchase requires planned savings. However, there are still many fishers who do not own a boat. Such fishers gather marine products from the shallow inland sea on foot or by participating in other fisheries. The income from the gathering fishery is enough to provide for daily consumption but fishers generally want to own their own boat even if it is small. In Kilwa society, one must possess a boat to be considered an adult. Young fishers are often expected to own a boat and a fishing net in order to be able to marry.

Considering that the salary of a subordinate government employee was around US$47 in 2004, it was very difficult to acquire a large boat; the price of a *dau* is about 14 times this salary and that of a *mashua* or motorboat is more than 25 times this salary. Therefore, owners of large boats are the wealthiest residents - those of Arab-descent who run the salt and sea transportation businesses, people who have a large fixed

income as employees, and independent businesspersons, such as shop owners (Figure 7). Only those of Arab-descent are owners of the most expensive motorboats. Using a motorboat they can operate not only their fishery but also a sea transportation business from Kilwa Masoko harbor to Mtandura harbour at Pande region. The income from the transportation business is often higher than that of a fishery.

Type	# in Kilwa Island*	# in Kilwa region**
Dugout canoe (*mtumbwi*)	21	294
Double outrigger (*ngalawa*)	0	52
Flat-bottomed boat (*bare*)	9	-
Dinghy (*dingi*)	0	-
Plank structure boat (*dau*)	7	65
Big plank structure boat (*mashua*)	3	31
Motorboat (*boti*)	6	23

Figure 6 - The type and number of boats found in the Kilwa Coastal Region

*based on the data collected from author's field research conducted in 2005
**based on the data from the Kilwa Masoko Fisheries Department statistics in 2001

Group	Type	Government Employee	Office Worker	Teacher	Shop Owner	Salt Industry	Trad. Healer	Total
Arab	*Dau*					1		1
	Mashua			1		1		2
	Boti		1	1		3		5
Bantu	*Dau*	2		1	1		2	6
	Mashua				1			1
	Boti							0

Figure 7 - Demographic distribution of the owners of large boats (in 2005) (Nakamura, 2007a: 10)

Fishing Grounds

Figure 8 shows the distribution of fishing grounds around Kilwa Island. Information on the distribution of fishing grounds and the condition of the sea floor (Figure 9) is based on field observation and interviews with the native fishers.

There are 66 fishing grounds surrounding Kilwa Island. Thirty of these (45%) are concentrated within the inland sea (Eco-zone 1), and Eco-zones 2 and 3 have 18 fishing grounds each (27.5%). The fishing grounds in the inland sea are a common space for fishers from Kilwa Island, the Mgongo region (the western bank of Kilwa Island) and the Pande. The fishers of the Kilwa coastal region (Kilwa Island, Kilwa Masoko, Mgongo, Sanje ya Kati Island, Songo Mnara Island and Pande) are not generally possessive about the fishing grounds as they consider the sea to be the property of Allah and therefore available to all as a common space (although there is an exception in the fishing ground of Eco-zone 3). The fishing grounds in the open sea are concentrated along the fringing reef and the strait between Kilwa Island and the mainland. The strait,

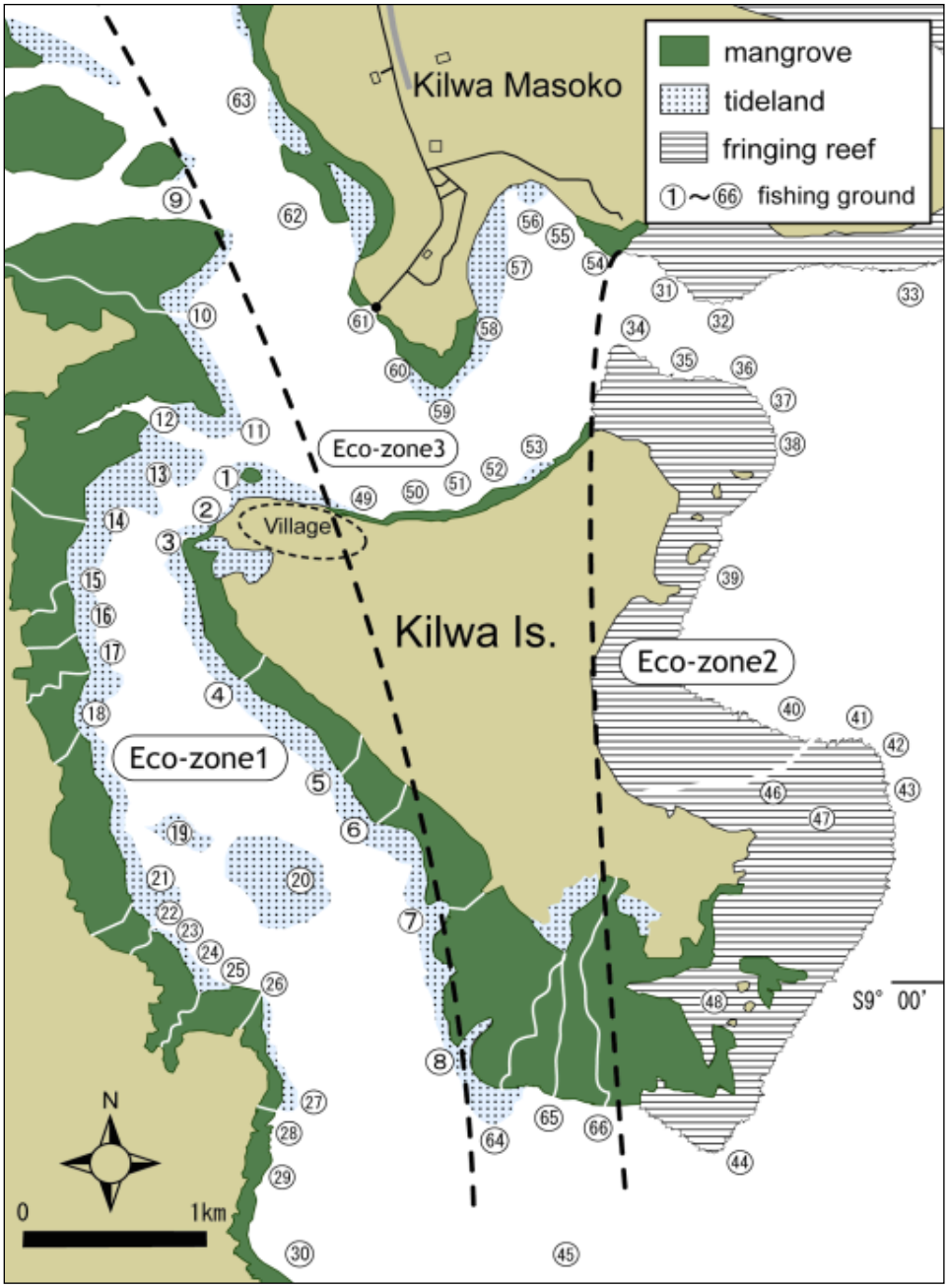


Figure 8 – Distribution of Fishing Grounds surrounding Kilwa Island (numbers refer to Figure 9) (based on Nakamura, 2008b: 40))

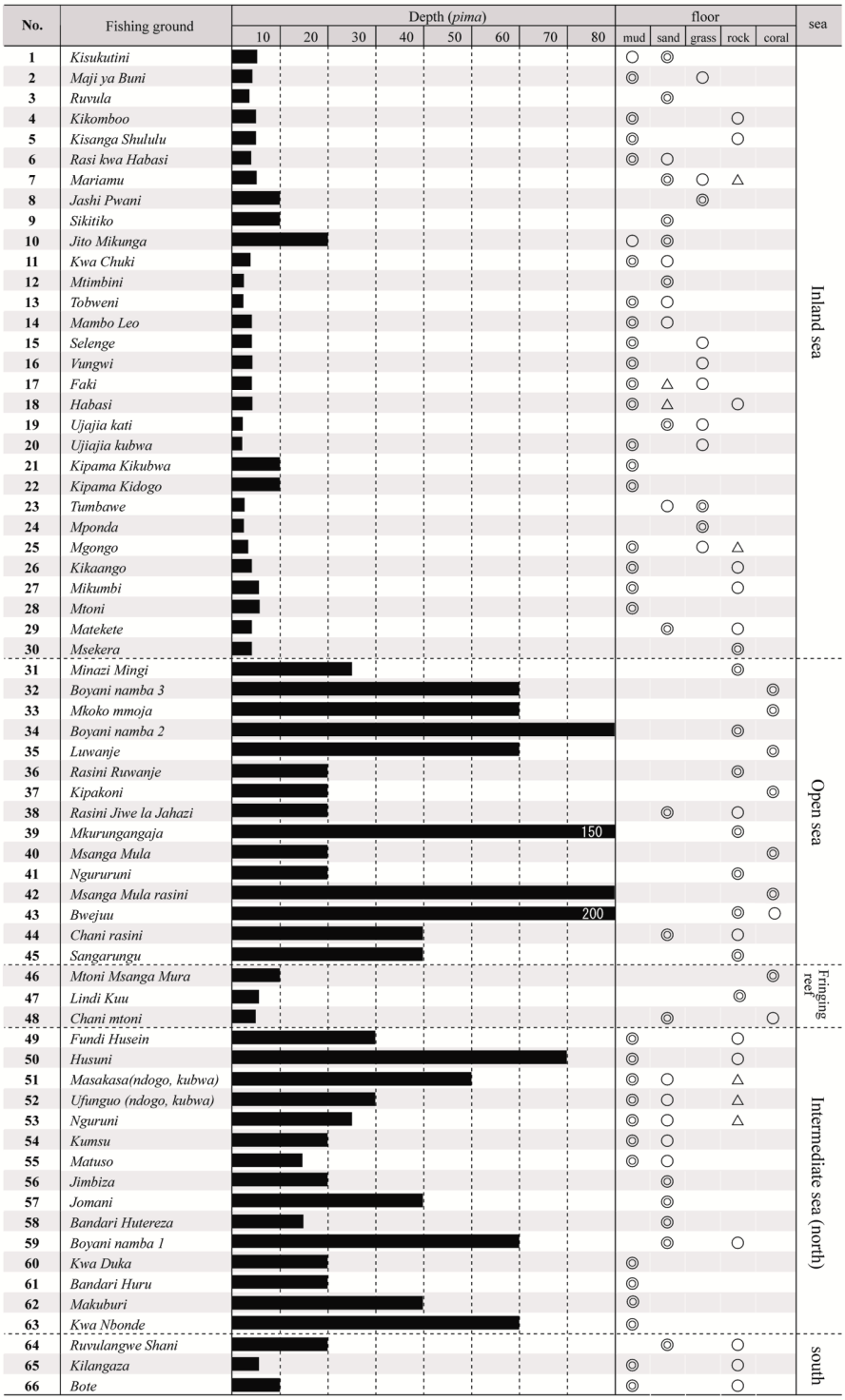
called *mlango* ('door'), is narrow and deep, allowing access to large vessels. Beyond this is the open sea, which is called *bahari kubwa* ('big sea') or *bahari nje* ('outside sea') by the residents.

Along the northern shore of Kilwa Island in the intermediate sea, five fishing grounds are 'owned' by certain Kilwa Island families and the title is succeeded to relatives. At these fishing grounds, traditional wooden fish-fence fishing (*wando*) is undertaken during the northern monsoon periods (*kaskazi*), between December to March, and is said to be the original form of fishing practiced by Kilwa Island fishermen. The fishers identify and confirm the positions of each fishing ground by using a map of the land (*ramani ya mlima*), which uses landmarks, such as stone remains, school buildings and tall coconut trees to confirm positions. Large rocks and fallen trees on the seabed are also used as position markers for the fishing grounds. This position-confirming method resembles one used by fishing communities in various parts of the world, such as the *yama-ate* (or *yama-tate*) technique used by several Japanese coastal fishing communities.

Local fishermen use the unit *pima* (which is equivalent to approximately 170–180 cm) to measure the depth of water. Based on depth, the fishing grounds can be separated into shallow and deep water fishing grounds. The depths shown in Figure 9 are based on the experience and TEK of the native fishermen. This depth chart is useful for daily fishing activities and for showing the relative depths between fishing grounds. In addition to depth, Kilwa fishers are also familiar with the quality of the sea floor at each fishing ground. The sea floor is primarily classified as mud, sand, sea grass, rock or coral. The depth and the sea floor quality of the fishing grounds indicate what type of marine products can be caught and what type of fishing method should be practiced, so this TEK is extremely important for the fishermen.

The depths of the fishing grounds of the inland sea, the fringing reef and along the shore are, on average, under 10 *pima*. The water depth of 25 fishing grounds of the inland sea can be as shallow as around 5 *pima*. Consequently, large tidelands are exposed in the inland sea as well as on the fringing reef during the ebb tide. The mangrove forest in particular is shallow and its mud surface is completely exposed during the ebb tide. In these shallow fishing grounds, fishermen gather and hook fish from small wooden canoes, flat-bottomed boats or on foot. All fishing grounds in the intermediate sea and in the open sea are over 10 *pima* in depth. The range of depths of the fishing grounds in the intermediate sea is between approximately 15-70 *pima* and the centre of the intermediate sea is deep enough for large vessels. The range in depths of the open sea fishing grounds is approximately 20-200 *pima*. In water of these depths, rough waves are often present, and the only fishers who can access such deep-water fishing grounds are those who use large boats.

Figure 9 (below) details the depth (in *pima* – ie 1.8 metres) and sea-floor characteristics of the fishing grounds (based on Nakamura 2008b: 41).


No.
Fishing ground
Depth (pima)
10
20
30
40
50
60
70
80
floor
mud
sand
grass
rock
coral
sea
1 Kisukutini
2 Maji ya Buni
3 Ruvula
4 Kikomboo
5 Kisanga Shululu
6 Rasi kwa Habasi
7 Mariamu
8 Jashi Pwani
9 Sikitiko
10 Jito Mikunga
11 Kwa Chuki
12 Mtimbini
13 Tobweni
14 Mambo Leo
15 Selenge
16 Vungwi
17 Faki
18 Habasi
19 Ujajia kati
20 Ujiajia kubwa
21 Kipama Kikubwa
22 Kipama Kidogo
23 Tumbawe
24 Mponda
25 Mgongo
26 Kikaango
27 Mikumbi
28 Mtoni
29 Matekete
30 Msekera
Inland sea
31 Minazi Mingi
32 Boyani namba 3
33 Mkoko mmoja
34 Boyani namba 2
35 Luwanje
36 Rasini Ruwanje
37 Kipakoni
38 Rasini Jiwe la Jahazi
39 Mkurungangaja
150
40 Msanga Mula
41 Ngururuni
42 Msanga Mula rasini
43 Bwejuu
200
44 Chani rasini
45 Sangarungu
Open sea
46 Mtoni Msanga Mura
47 Lindi Kuu
48 Chani mtoni
Fringing reef
49 Fundi Husein
50 Husuni
51 Masakasa(ndogo, kubwa)
52 Ufunguo (ndogo, kubwa)
53 Nguruni
54 Kumsu
55 Matuso
56 Jimbiza
57 Jomani
58 Bandari Hutereza
59 Boyani namba 1
60 Kwa Duka
61 Bandari Huru
62 Makuburi
63 Kwa Nbonde
Intermediate sea (north)
64 Ruvulangwe Shani
65 Kilangaza
66 Bote
south

Marine products of each Eco-zone

The marine products of Eco-zone 1 include many kinds of small or medium-sized fish and several species of sea cucumber (*jongoo maji*)[4] live on the muddy sea floor. During the southern monsoon periods (June to October), rays (*taa chuwii*: *Himantura uarnak*) move into the inland sea to eat the shellfish. Numerous aquatic animals are found in the mangrove forests, including prawns (*kamba prounzu*: *Fenneropenaeus indicus*), large mangrove crabs (*kaa gobesu*: *Scylla* spp.) and shellfish (*kombe*: *Anadara erythraeonensis*); while the mangrove prop roots support saddle tree oysters (*cheza)*[5]. In Eco-zone 2, medium-sized fish and sea cucumber inhabit the area around the coral reefs, octopus (*pweza*: *Octopus cyanea*) and giant clams (*gawagawa*: *Tridacna maxima*) live on the coral bed. The coral slope supports lobster (*kamba kochi*: *Panulirus ornatus*) and large fish. In the deep water beyond the coral slope, fish, such as coral grouper (*chewa*: *Cephalophlis miniata*) and bullhead parrotfish (*pono*: *Scarus sordidus*), can be found, while yellow-fin tuna (*jodari*: *Thunnus albacares*) and cobia (*songoro*: *Rachycentron canadum*) are found in the open sea. The products of Eco-zone 3 are also found in both Eco-zones 1 and 2. Small and medium-sized fish, squid (*ngisi gome*: *Sepia pharaonis* and *ngisi mwanzi*: *Sepioteuthis lessoniana*), and mangrove crabs are found in this zone, along with large fish, such as yellow-fin tuna and cobia, during the northern monsoon period. Lobster and several kinds of shellfish inhabit the small colonies of coral reefs along the coast.

Two Fishing Cultures

Fishing Methods

Forty-one fishing methods are practiced by the Kilwa Island fishing community (Figure 10) within three fisheries: the gathering fishery, fishhook fishery and net fishery. More than half of the fishing methods (21 [51%]) are used in the gathering fishery, while 15 methods (37%) are used in the net fishery and five methods (12%) are used in the hook fishery.

Type	Fishing Method *(Swahili name)*	Sea*					Type of Boat**				
		A	B	C	D	E	F	G	H	I	J
Net Fishery	Gillnet (for rays) *(Misadaka)*	○		○				△	○		
	Gillnet (using stick pressure) *(Nyavu za kupigia)*	○					○	○	○		
	Seine net (large) *(Juya)*	○		○			○				
	Seine net (small/medium) *(Kavogo)*	○					△	○	○		
	Ring net *(Kokoro)*	○					○	○	○		
	Cast net *(Kiniya)*	○		○			○	○	○		
	Ring net (pursuer) *(Msembwe)*		○				○	○			
	Ring net at coral reef *(Nyavu za mkondi)*				○		○				
	Fixed net *(Nyavu za kuzibia)*				○		○	○			
	Ring net (small) *(Uyoyo)*				○		○	○	○		
	Gillnet (fish) *(Soni)*			○		○				○	○
	Gillnet (shark) *(Siniya)*			○		○				○	○
	Trail net *(Iyari)*			○		○				○	○
	Seine net (from boat) *(Mtando)*			○		○				○	○
	Scoop net *(Nyavu za tandiyo)*		○				○				

Fish-hook Fishery	Hand line fishing *(Mshipi)*	○		○	○	○		○	○	○	○
	Hand line from sea shore *(Ulimasi)*	○			○		○				
	Long line (small) *(Matozi)*	○		○					○	○	
	Angling fixed to a pole *(Kocho)*	○		○					○	○	
	Long line (large) *(Rongoraini)*			○		○				○	○
Gathering Fishery	Fish fence (wood) *(Wando wa miti)*			○			○	○	○		
	Fish fence (wood and net) *(Wando wa nyavu)*			○			○	○	○		
	Fish fence (wood and canoe) *(Dufu)*	○						○			
	Fish fence (coconut fiber) *(Uriro)*	○					○				
	Fish basket (large, sinker) *(Dema ya kutosa)*	○		○				△	○		
	Fish basket (medium, fixed) *(Dema ya kufinga)*	○		○	○		○	△	○		
	Fish basket (small, lined) *(Dema ya kugongea)*	○		○				△	○	△	
	Sea cucumber diving *(Kuzamia Jongoo)*	○					○	○	○		
	Shellfish gathering *(Kuokota Kombe)*	○	○				○				
	Fish pot *(Ugonyo)*		○				○	○			
	Mangrove crab gathering with wire *(Kaa)*		○				○				
	Octopus gathering with a stick *(Pweza)*				○		○				
	Sea cucumber gathering *(Kukamata Jongoo)*				○		○				
	Fish fence (short pole) *(Kitipa)*				○		○	△			
	Fish fence (steel) *(Wando wa chuma)*				○		○	△			
	Lobster diving *(Kamba)*				○		○	○	△		
	Hitting fishing with a stick *(Kupotora)*				○		○	○	△		
	Poison fishing (prohibited) *(Josho)*				○		○	○	△		
	Bow fishing (prohibited) *(Mshere wa chuma)*				○		○	○	△		
	Grain (prohibited) *(Bunduki ya sumu)*				○		○	○	△		
	Dynamite fishing (prohibited) *(Baruti)*				○		—	—	—	—	—

Figure 10 - Fishing methods used in different fishing grounds (Nakamura, 2008b: 47)
*A: inland sea, B: mangrove forest, C: intermediate sea, D: fringing reef, E: open sea
**F: by foot, G: canoe, H: flat-bottomed boat, I: *dau*, J: *mashua* and *boti*

Figure 11 lists the types of fishing methods that are practiced in the different fishing zones around the island. The fisheries practiced in the shallow waters are the most diverse, with 18 fishing methods (44%) used in the inland sea, 17 (41%) around the fringing reefs and five (12%) in the mangrove forest.

Depth	Sea	Number and Percentage of Fishing Methods	
		Number	%
Shallow ↕ Deep	Mangrove forest	5	12
	Fringing reef	17	41
	Inland sea	18	44
	Intermediate sea	16	39
	Open sea	6	15

Figure 11 - Number and percentage of fishing methods practiced in the different seas. (Nakamura, 2008b: 61)

Boats and Fisheries

Figure 12 shows a breakdown of the fishing methods by type of boat. As indicated, most fishing methods are practiced with small boats such as canoes (59%) and flat-bottomed boats (44%) or by foot (66%). There are relatively few fishing methods where large boats (*dau* [22%], *mashua* and *boti* [15%]) are used because they are specific to limited types of fisheries, such as gill net fishing on the open sea.

Boat / Fishery	Canoe (#/ method)	Flat Bottom (#/ method)	*Dau* (#/ method)	*Mashua*/*Boti* (#/ method)	On foot (#/ method)
Net	53% (8/15)	40% (6/15)	27% (4/15)	27% (4/15)	60% (9/15)
Hook	20% (1/5)	60% (3/5)	80% (4/5)	40% (2/5)	20% (1/5)
Gathering	71% (15/21)	52% (11/21)	5% (1/21)	0	81% (17/21)
In All	59% (24/41)	49% (20/41)	22% (9/41)	15% (6/41)	66% (27/41)

Figure 12 - Number and percentage of fishing methods practiced with the different boats. (Nakamura, 2008b: 60)

Net fisheries on the open sea require a large investment because of the high price of a net and a large boat. In contrast, the gathering fishery is a simple fishing activity that does not require much investment capital in fishing gear. Shellfish gathering on the tideland during the ebb tide, for example, can be practiced without any fishing equipment. The materials needed for fish-fence fishing (*wando*) and fish-basket fishing (*dema*) are mangrove poles and coconut fibre, which can be obtained at little cost. The net fishery uses more modern equipment and techniques compared to the gathering fishery. According to the elders of Kilwa Island, the net fishery was recently introduced by Arab sailors.

Monthly Income of the Gathering and Net Fisheries

Although the gathering fishery is a simple one, the income generated is not significantly different from the income generated by net fisheries on the open sea. Figure 13 shows the monthly income of two fishers in November and December of 2003. Gathering sea cucumbers in the inland sea with a canoe generated a monthly income equivalent to US$115.40 while gillnet fishing on the open sea with a *mashua* generated US$130.30 per month, a difference of only US$14.90. The fishers earned enough income to support their families (in comparison the monthly income of a subordinate government official is about US$47). Although the incomes of fishers are similar, their working day is different. As indicated in Figure 13, gathering fishers engaged in fishing activities every day of the month, while gillnet fishers fished for 23 days. Moreover, gathering fishers collect marine products alone, while the gillnet fishers work with three or four partners. When not fishing, the gillnet fisher can provide sea transportation with his large boat to generate additional income, and some gillnet fishers also work in the salt industry. However, gathering fishers find it difficult to practice a side business because of lack of both time and equipment, thereby increasing the economic gap between the two types of fisheries.

Method	Fishing ground	Income (US$/per person)	Boat	Work Days	Spare Time
Gathering sea cucumbers by diving	Eco-zone 1 (inland sea)	115.40	Canoe (*mtumbwi*)	31	None
Gillnet	Eco-zone 2 (open sea)	130.30	Plank-structure boat (*mashua*)	23	Transportation, Salt industry

Figure 13 - Monthly income of fishermen gathering sea cucumbers and that of gillnet fishermen (Nakamura, 2008b: 153)

Origins of the Inland and Open Sea Fisheries

The fisheries of Kilwa Island shift from a gathering fishery to a net fishery as the water depth increases. Figure 14 shows the percentage of fishery types used in the different fishing zones.

• In the mangrove forest, three of the five fishing methods involve gathering (60%) and the remainder are netting (40%). This gathering fishery is practiced by Bantu fishers who possess small boats or who have no boat.

• On the fringing reef, 11 (65%) of the 17 fishing methods practiced are of the gathering type. Again, this gathering fishery is practiced by Bantu fishers.

• On the inland sea, 14 of the 18 fishing methods involve gathering and nets (39% each), while four methods use hook fishing (22%). All fisheries in the inland sea are practiced in a balanced way by Bantu fishers.

• On the intermediate sea, 6 of the 15 fishing methods use nets (44%), five involve gathering (31%) and four use hooks (25%). Each fishery is practiced in a balanced way by both Bantu and Arab fishers.

• On the open sea, 4 of the 6 fishing methods use nets (67%). This net fishery is practiced by the wealthier fishers who possess large boats.

The ethnic groups of Kilwa Island are easily categorised with reference two types of fisheries. The gathering fishery, which involves small boats or collecting by foot in the shallow sea, is practiced by Bantu fishers; whereas the net fishery of the open sea is represented by the fishers of Arab-descent who possess large boats. Of the boats used by the islanders, the keeled plank-structured boat is the most modern (Sassoon, 1970; Cucari and Angelucci, 2002). The keeled vessels supposedly originate from boats such as the *jahazi*, *sanbuk* and *boom* that were used for long-distance Indian Ocean trading by the Arabs and Persians (Agius, 2002) and are still seen in the northern part of Swahili Coast, around the Lamu archipelago. For Swahili maritime society, open sea fishing was impossible until the introduction of larger boats along the Swahili coast. Therefore the origin of the net fishery of the open sea is attributed to this long-distance ocean trading. On the other hand, the gathering fishery, which utilises small boats or fishing on foot in the shallow sea, has been practiced by the native Bantu of the Swahili coast for

centuries and is considered to be of Bantu origin. Fishhook fishing is a third type of fishing practiced on both the inland and open seas. Fishhook fishing methods appear to have had a long history along the Swahili coast as a few fish hooks made out of iron and shark bone dating back from the 9th Century have been excavated on Kilwa Island (Chittick, 1974b: 439, 445).

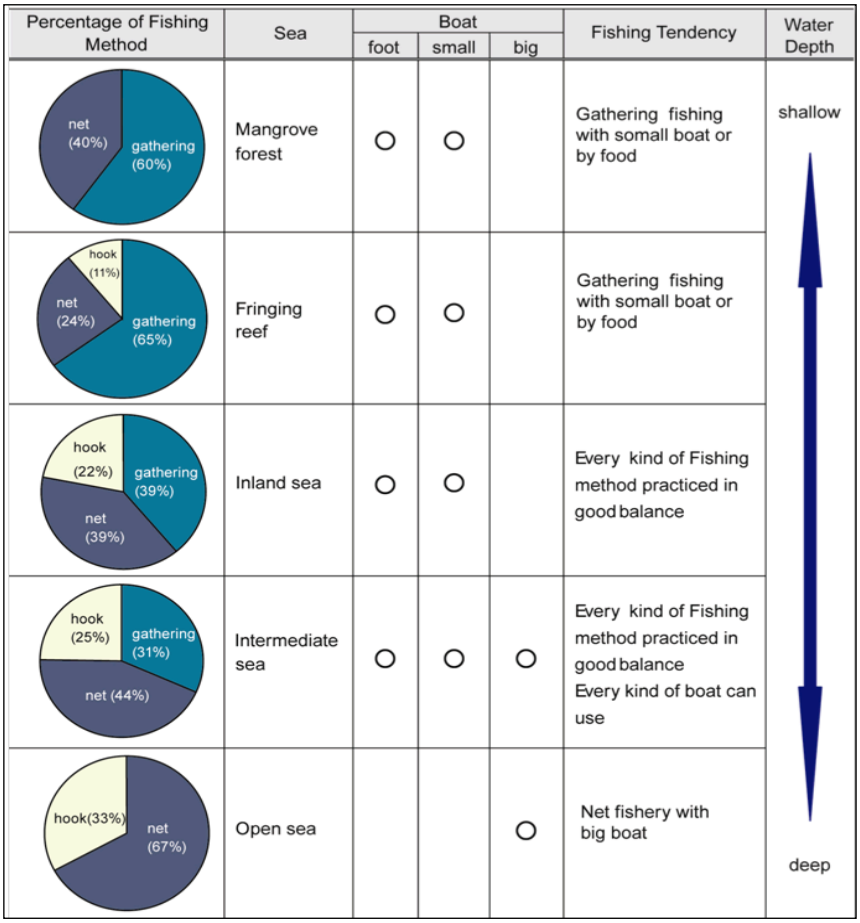


Figure 14 – The ratio of different fishing methods practiced within the seas (based on Nakamura, 2008b: 66)

Origin	Sea	Method	Targets	Boat
Bantu	Shallow water (mangrove inland sea, fringing reef)	Gathering	Small and medium sized fish, prawns, sea cucumbers, Mangrove crabs, shellfish etc.	Small boat, by foot
Arab	Open sea	Net	Big fish, lobsters	Large boat

Figure 15 – The principal fishing cultures found on Kilwa Island (Nakamura, 2008b: 67)

Conclusions

Basic Ecology and Multi-ethnic Coexistence in Kilwa Island

Kilwa Island, located at the mouth of three rivers, has two types of marine environments - a shallow inland sea with mangroves and a deep open sea with fringing reefs. The characteristics of the maritime environment can be separated into three ecological sea zones, which have resulted in the development of a diverse fishing culture on Kilwa Island. Figure 16 shows the association between the fishery practices and the ecological zones around Kilwa Island. The fishing grounds of the inland sea represent over 45% of all fishing grounds around the island. The local people on Kilwa Island have lived in close association with the maritime environment since the Kilwa Kingdom era and fishers are knowledgeable about each fishing ground's geographical features and marine products. The gathering fishery is well suited to the maritime environment of Kilwa Island. The Bantu fishers practice the gathering fishery in the mangroves of the inland sea. Gathering methods represent more than half of all fishing methods practiced by the island fishing community and the number of small boats used for the gathering fishery represents more than half of all boats used by fishers. In contrast, the net fishery of the open sea is practiced by wealthier people of Arab descent who possess larger boats with outboard engines and their families run the salt industry. Consequently, the fishery of the open sea needs substatial investment capital, expensive large boats and expensive fishing equipment.

Because of the distinctions between the two main fisheries, two fishing cultures have developed on Kilwa: the Bantu fishing culture, which is a gathering fishery that is practiced in shallow water with small boats or by foot, and the Arab fishing culture, which is a net fishery practiced on the open sea with large keeled-plunk-structure boats. The Bantu fishing culture has its origins along the Swahili coast, while the Arab fishing culture is relatively recent, being introduced through the Indian Ocean trade.

Although the gathering fishery is a simple one, its catches are rarely poor as the mangroves of the inland sea support a diverse assemblage of aquatic species. The Bantu, who form the largest group on Kilwa, have practiced gathering fisheries in the mangrove inland sea for centuries. Along the Swahili coast from the southern Somali coast to the northern Mozambique coast there are several areas of protected mangroves. Places, such as the Lamu archipelago, Mombasa and the Kilwa archipelago used to be Swahili trading ports, and some have developed into modern trading ports that still operate today. On these mangrove inland seas, the Bantu fishing culture has developed. This author proposes that the Swahili trading ports and the Swahili maritime culture were formed by the combination of the Bantu fishing culture with the Arab long-distance ocean trading culture (Nakamura, 2007a, 2010). The existence of the mangrove inland sea as a rich occupational space and a safe shipping port was the main ecological factor influencing the formation of the ancient Swahili trading ports, which is why many ancient Swahili trading ports, including in the Kilwa Kingdom, were located on the off-shore islands where the inland sea supported an extensive mangrove zone.

People of Bantu and Arab-descent coexist peacefully on Kilwa Island and tend to occupy different fishing grounds. Fishermen possessing large boats, represented by those of Arab-descent, fish on the open sea (Eco-zone 2) and intermediate sea (eco-

zone 3) but not on the inland sea and in the mangrove forests (Eco-zone 1); while most of the Bantu fishermen fish in Eco-zone 1 and coral pools (Eco-zone 3). Because each eco-zone has different sea products, the catches for the two ethnic groups are different. By occupying different maritime zones and targeting different species, the two fishing cultures of Kilwa Island enjoy a harmonious multi-ethnic coexistence. Thanks to the diversity of the marine resources around Kilwa Island, each ethnic group can monopolise its own fisheries, thus reducing conflict between fishing activities.

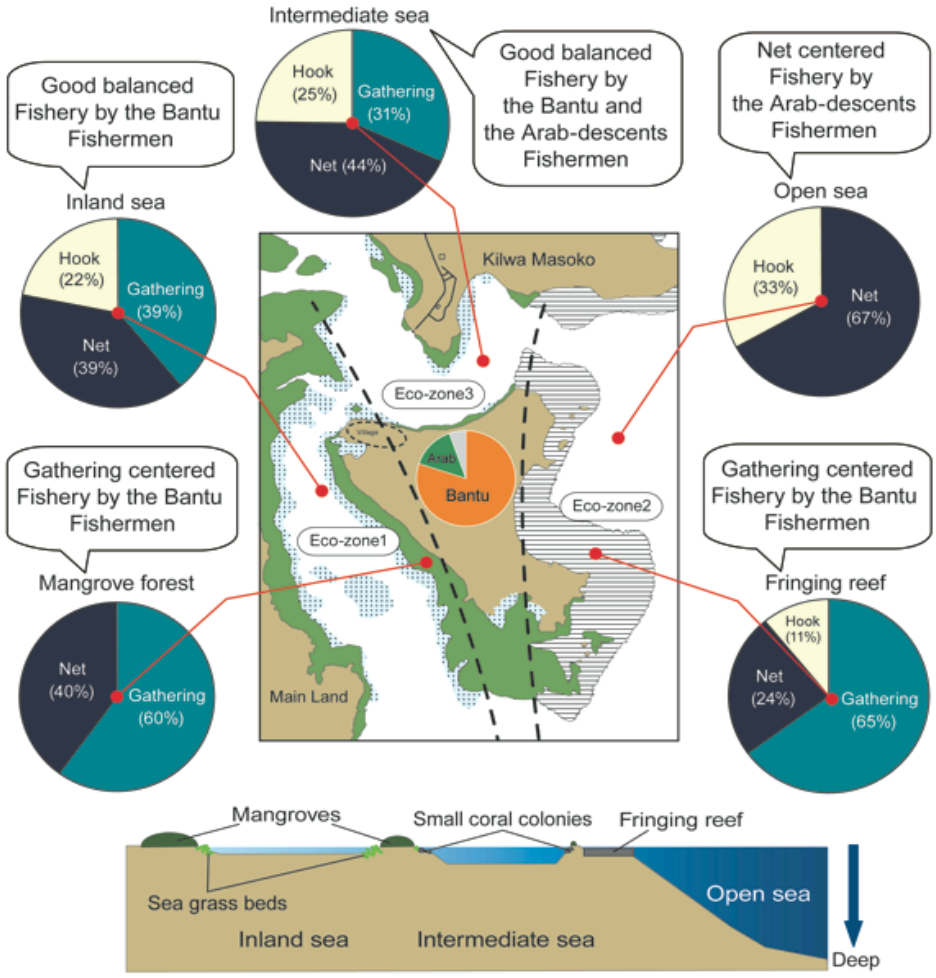


Figure 16 – Basic ecology and fishing around Kilwa Island

Perspectives for the comparative study of Swahili maritime societies

This article has examined the maritime environment and fishing culture of Kilwa Island. Maritime societies along the Swahili coast are diverse; each has its own natural environment and historical background. Consequently, we can categorise these societies based on geo-historical conditions (Shimada, 2007):

1) Societies located on the continental coast: Mogadishu in Somalia, Malindi in Kenya, and Tanga, Dar es Salaam, Bagamoyo, Kisiju and Kilwa Kivinje in Tanzania;

2) Societies located on off-shore islands (with mangrove inland seas): the islands of Pate, Manda, Lamu and Mombasa in Kenya, the islands of Kilwa, Songo Mnara and Sanje ya Kati in Tanzania and Ibo Island in Mozambique;

3) Societies located on islands isolated from the mainland (without mangrove inland seas): the islands of Pemba, Zanzibar and Mafia in Tanzania.

These three categories can be further divided according to their historical conditions of whether or not those of Arab/Persian-descent have remained.

The societies where many Arabs/Persians and Indians or their descendants currently reside and engage in economic activities have generally well-developed economies. In these cases, the ethnic composition tends to be heterogeneous with the recent entry and immigration of foreigners from the Middle East, Europe, India and China. In addition, the religious situation is more complex. This situation applies only in the north of Dar es Salaam, the largest city in Tanzania. To the south of Dar es Salaam, most of the Arab/Persian and Indian population have left for numerous reasons. The Tanzanian southlands lost their value as trading ports after the gold trade finished and the slave and ivory trades were prohibited (in the 19th Century). Mangroves have been restricted by cutting and the price of cashew nuts has fallen. In addition, because of the shallow water, large modern vessels cannot easily enter the ports in the south, and the poor infrastructure of the wetter region of the south makes development difficult.

Location / Ethnic Movement	Continental coast	Off-shore island	Islands distant from mainland
Most of the Arab/Persian and Indian descents have left	Kilwa Kivinje 1 Bagamoyo Kisiju	Kilwa Island 2 Songo Mnara Sanje ya Kati Ibo	Mafia 3
The Arab/Persian and Indian descents continue to reside	Dar es Salaam 4 Tanga Malindi Mogadishu	Mombasa 5 Lamu Manda Pate	Zanzibar 6 Pemba

Figure 17 - Geo-historical classification of Swahili Maritime Society
(Nakamura, 2008b: 209)

We therefore can identify six types of societies in the overall Swahili maritime society (Figure 17). Kilwa Island is a society of the second type. Based on these six classifications, a comparative study of the basic ecology and fishing cultures of each of

these societies should be undertaken to clarify the a full-length picture and socio-ecological diversity of the Swahili maritime society for the sustainable and future relationship between human and natural environment.

Acknowledgements

This article is based on field research conducted between 2001-2009. The field research was financially supported by fellowships from the Japan Society for the Promotion of Science (JSPS) and the Sasakawa Scientific Research Grant, the Japan Science Society (JSS).

End Notes

1. 'Inland sea' refers to areas of sea sheltered between islands and the adjacent coast.

2. See http://whc.unesco.org/en/list/144 - accessed January 2011.

3. *Rhizophora mucronata* (*mkoko*), *Bruguiera gymnorrhiza* (*mshinzi*), *Ceriops tagal* (*mkandaa*), *Avicennia marina* (*mchu*), *Sonneratia alba* (*mpira*), *Xylocarpus granatum* (*mkomafi*), *Heritiera littoralis* (*mkungu*) and *Lumnitzera racemosa* (*mkandaa dume*).

4. Including *Holothuria scabra*, *Stichopus*, *Bohadschia atra*, *Colochirus quadrangularis*, *Actinopyga echinites* and *Actinopyga miliaris*.

5. Of the species *Isognomon ephippium* and *Saccostrea cucullata*.

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