

# CRAB VALUE CHAIN IN LAGOS LAGOON COMPLEX: IMPLICATIONS FOR FOOD SECURITY IN A RECESSION ECONOMY

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## ABSTRACT

This study aims at bridging the knowledge gap in respect of production and marketing of crab fisheries in Lagos lagoon complex of Lagos State, Nigeria. The data have been collated through specific survey carried out between August 2008 and April 2009 in each of the five lagoon systems of Lagos State including Badagry, Ologe, Lagos, Epe and Lekki lagoon. The production systems and targeted clientele of each lagoon differ greatly. The profit margin per unit weight retained at each stage of transaction was relatively low. The crab fishery was observed to be economically viable because of the large turnover and small size of individual operations. The crabs play a significant role in the livelihood of the fisher folks and are very important as export commodity in West Africa.

## INTRODUCTION

The crab fishery of Badagry, Ologe, Lagos, Epe and Lekki lagoon is dominated by two commercially important species namely *Callinectes sp.* and *Cadidosoma sp.* (Solarin and Kusemiju, 2003). There exists no exclusive traditional crab farming method in Lagos State, Nigeria in order to meet the growing demand in the international market, which is entirely dependent on the capture fishery. The over-arching objective of the study was to determine the value chain in the crab fisheries and document the social and economic value of crab fishery in Lagos lagoon complex. For most seafood products there are usually numerous intermediaries along the market, or value chain between the primary producer (fisher) and the consumer. Market chain analysis in the resource sector has historically been undertaken in the agricultural sector with information provided on profitability and margins experienced by the various intermediaries, hereinafter referred to as agents, along the market chain (Kaplinsky, 2000; Stevens, 2001). More recently, considerable research has been undertaken on price and margin relationships and transmission of price variability along European seafood chains, specifically cod and salmon (Hartmann *et al.*, 2000; Guillotreau, 2003). There is dearth of such studies dealing with crab fishing in Nigeria with the exception of the report by Adeogun, *et al.* (2006) which described a research framework for value chain analysis in aquaculture in Lagos State, Nigeria.

## MATERIALS AND METHODS

The lagoon system included Badagry, Ologe, Lagos, Lekki and Epe. For the community-based crab fisheries study, a multi-stage sampling technique was used. It involved selection of the five lagoon systems in Lagos State. The second stage of the sampling technique was the stratification of each lagoon system into two on the basis of importance of crab fisheries. From each stratum, two major communities involved in crab fishing were randomly selected for the exploratory study. The survey covered commercial fishermen, fish buyers, fishery-support business owners like transporters and financial institutions. Additional data were collected through observation and oral interviews using questionnaire for all the key actors in the chain. Interviews were conducted to locate major fishing grounds and learn about the different types of fishing gears used in the area. Direct observations were conducted at major fish landing sites to estimate the total catch landed each day and the species composition as well as information on fish prices and the marketing system.

## RESULTS AND DISCUSSION

Crab season varied according to location and species in the five lagoons (Table 1). *Callinectes sp.* was more abundant from April to October in Badagry, Ologe, Lagos and Lekki lagoons while *Cadidosoma sp.* was more abundant between October and March. In Lekki and Bayeku communities, *Cadidosoma sp.* can be seen all the year round. Men were predominantly crab fishers in all the lagoon systems. In few cases, women were also involved. An estimated 1072 fishers engaged in the crab fishery in all the lagoon systems, made up of 60% Beninois (Eguns) and 40% Nigerian (Yoruba). Catch rates for the five major gears (gillnet, castnet, lift net, stow net, ring net) showed some seasonal pattern. The average overall catch rate was highest around April and October.

Table 4: Average seasonal price (wholesale and retail) of *Callinectes sp.* and *Cadisosoma sp.*

Lagoon system	Water body	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Wholesale price (N)		Retail price (N)	
		High season	Low season	High Season	Low season												
Badagry	Yeketomi													High season	Low season	High Season	Low season
	Ajido													600/basket	800/basket	Cotonou/Lome Available) (Not	
	Agbalata																
Ologe	Oto Awori																
	Oworoshoki																
	Makoko																
	Badore																
Lagos	Ikosi																
	Ijede													120/dozen	160/dozen	200/dozen	300/dozen
	Bayeku																
	Osiriwon																
Lekki	Lekki																
	Ise																
Epe	Epe	No production												High season	Low season	High Season	Low season
Badagry	Yeketomi	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Not available			
	Seké													30/piece	50/piece	80/piece	100/piece
	Ajido													300/dozen	1000/dozen	400/dozen	1200/dozen
	Agbalata													Home consumption			
Ologe	Oto Awori													300/dozen	500/dozen	300/dozen	500/dozen
	Oworoshoki													Not available			
	Makoko													Home consumption			
Lagos	Badore													Not available			
	Ikosi													Not available			
	Ijede													150/dozen	200/dozen	300/dozen	500/dozen
Lekki	Bayeku													300/dozen	500/dozen	400/dozen	500/dozen
	Osiriwon													50/piece	100/piece		
Epe	Lekki													500/piece			
	Isc													Not available			
Epe	Epe													Not available			

(wholesalers) and retail markets including itinerant traders. Both species of crab were marketed in fresh form and in terms of trading, *Callinectes sp.* was traded both locally and internationally (Tables 3 & 4). The bulk (100 %) of *Callinectes* from Badagry and Ologe lagoons was exported to Cotonou and Lome. The crab was traded mainly whole and fresh without processing apart from sorting and packaging. More than 60 % of the total *Callinectes* catch in Lagos and Lekki ended up at the major local market in Makoko. The price of *Callinectes* varies according to size, weight, season as well as supply and demand. Prices also varied from markets to markets (Table 4). Prices in the town markets tend to be higher than in lagoon markets due to larger concentration of consumers and superior family income. Also, price from export markets Cotonou and Lome were higher than local markets. The unit weights of crab vary from lagoon markets to markets. In Makoko markets and other lagoon markets the crab is counted in dozen while those designated for export are bagged in basket of 6.3kg each (Tables 5).

It is evident that crab plays a crucial role in providing affordable protein source to local consumers as well as income generation to the community through its export and associated processing sector and marketing system. The emergence of export markets for such commodity is relatively new development, and it is evident that such markets are being developed. In this regard, it is important that all encouragement and opportunities be provided to sustain and improve current development, particularly for Lagos State. Perhaps regional initiatives are needed to further build upon existing capacities in the processing sectors related to such exports, especially in relation to ecolabelling and certification procedure.

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Table 4: Average seasonal price (wholesale and retail) of *Callinectes sp.* and *Callinotoma sp.*

Lagoon system	Water body	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Wholesale price (N)				
														High eason	Low season	High Season	Low season	
Badagry	Yeketomi													600/basket	800/basket	Cotonou/Lome Available)	(Not Available)	
	Ajido																	
	Agbalata																	
Ologe	Oto Awori																	
	Oworoshoki																	
Lagos	Makoko																	
	Badore																	
	Ikosi																	
	Ijede														120/dozen	160/dozen	200/dozen	300/dozen
	Bayeku																	
Lekki	Osiriwon																	
	Lekki																	
	Ise																	
Epe	Epe	No production												High season	Low season	High Season	Low season	
	Yeketomi														Not available			
Badagry	Seke														30/piece	50/piece	80/piece	100/piece
	Ajido														300/dozen	1000/dozen	400/dozen	1200/dozen
	Agbalata														Home consumption			
Ologe	Oto Awori														300/dozen	500/dozen	300/dozen	500/dozen
	Oworoshoki														Not available			
	Makoko													Home consumption				
Lagos	Badore													Not available				
	Ikosi													Not available				
	Ijede													150/dozen	200/dozen	300/dozen	500/dozen	
Lekki	Bayeku													300/dozen	500/dozen	400/dozen	500/dozen	
	Osiriwon													50/piece	100/piece			
	Lekki													500/piece				
Epe	Lekki													Not available				
	Ise													Not available				
Epe	Epe													Not available				

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It is evident that crab plays a crucial role in providing affordable protein source to local consumers as well as income generation to the community through its export and associated processing sector and marketing system. The emergence of export markets for such commodity is relatively new development, and it is evident that such markets are being developed. In this regard, it is important that all encouragement and opportunities be provided to sustain and improve current development, particularly for Lagos State. Perhaps regional initiatives are needed to further build upon existing capacities in the processing sectors related to such exports, especially in relation to ecolabelling and certification procedure.

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Table 2: Production zone and marketing of *Callinectes sp.*

Lagoon system	Water body	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Market
Badagry	Yeketomi													Cotonou/Lome
	Seke													
	Ajido													
	Agbalata													
Ologe	Oto Awori													
Lagos	Oworoshoki													Makoko and Cotonou
	Makoko													
	Badore													
	Ikosi													
	Ijede													
	Bayeku													
Lekki	Osiriwon													Makoko, Ijebu Ode, Shagamu, and Epe
	Lekki													
	Ise													
Epe	Epe													

Table 3: Production zone and marketing of *Cadiosoma sp.*

Lagoon system	Water body	<i>Cadiosoma sp.</i>												Market
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Badagry	Yeketomi													Local markets
	Seke													
	Ajido													
	Agbalata													
Ologe	Oto Awori													
Lagos	Oworoshoki													Local markets
	Makoko													
	Badore													
	Ikosi													
	Ijede													
	Bayeku													
Lekki	Osiriwon													Local markets
	Lekki													
	Ise													
Epe	Epe													

The crab fisheries can be officially classified into two categories: without or with engines. In the non-motorised category there is one type (small craft with paddle). In the motorised category there are 3 major types. The small boat with less than 8 HP engine, the half dugout boat with the 16 HP engines and the planked canoe are mostly used for fishing. The patterns in resource utilization varied with different requirements for operation of the gear and differences in target species. Also the catch composition and costs and benefits differed between gears (Table 2). Some villages have specialized in one or two gears for *Callinectes sp.* For example at Lekki lagoon, all the fishermen specialized in gill net while in Makoko and other parts of Lagos lagoon, the lifts net were generally used. In the other lagoon system, three gears were used and this included the lift net, stow net and ring net. The use of a mix-gear type by fishers in Lagos and Ologe lagoons can be attributed to target fisheries resources and tribes of the fishers.

Crab marketing in Lagos State was mainly a private sector operation run largely by women as wives and relations of the fishers. A large number of people were employed in the lagoon systems crab marketing chain as fishermen, processors, traders, transporters including women and children. The value chain from fishermen to consumers involved mainly primary (producers), secondary



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Ologe	Oto Awori													
Lagos	Oworoshoki													Makoko and Cotonou
	Makoko													
	Badore													
	Ikosi													
	Ijede													
	Bayeku													
Lekki	Osiriwon													Makoko, Ijebu Ode, Shagamu, and Epe
	Lekki													
	Ise													
Epe	Epe													

Table 3: Production zone and marketing of *Cadidosoma sp.*

Lagoon system	Water body	<i>Cadidosoma sp.</i>												Market
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Badagry	Yeketomi													Local markets
	Seke													
	Ajido													
	Agbalata													
Ologe	Oto Awori													
Lagos	Oworoshoki													Local markets
	Makoko													
	Badore													
	Ikosi													
	Ijede													
	Bayeku													
Lekki	Osiriwon													Local markets
	Lekki													
	Ise													
Epe	Epe													

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