

ABALONE POACHING IN THE EAST LONDON AREA,
EASTERN CAPE PROVINCE, SOUTH AFRICA

by

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DECLARATION

I, Nobuhle Aurelia Nini, hereby declare that this dissertation, titled “Abalone Poaching in the East London Area, Eastern Cape Province, South Africa” is a result of my own effort and investigation except where stated, and that it has not been submitted for a degree at any University other than the University of Fort Hare.

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ABSTRACT

Abalone poaching is a major problem in South Africa. The South African abalone, *Haliotis midae*, rates as an extreme example of high levels of illegal harvesting. The research aimed at examining the role of the different role players in preventing poaching of the species in the East London area of the Eastern Cape Province of South Africa and determining the challenges the officers faced as there was an increase in poaching in the area. To achieve this aim, the research techniques including questionnaires, interviews and focus groups were used.

Fisheries compliance and enforcement faces challenges of the illegal harvesting of abalone since 1994. In the past 18 years (1994-2012), and more specifically in the past nine years (2004-2012), poaching of abalone has increased at an alarming rate along the East London coastline. The failure of the state to issue fishing rights and conduct effective sea-based compliance, combined with the incentives to fish abalone created the conditions for rapid emergence of illegal harvesting. The uncontrolled fishing had a dramatic effect on the stock, and the average size of abalone decreased significantly. The Eastern Cape Province abalone cultivation industries were developed due to the decline in harvesting of abalone. Government departments such as the Department of Agriculture, Forestry and Fisheries; the Department of Economic Development, Environmental Affairs and

Tourism; the South African Police Services together with the Eastern Cape Parks and Tourism Agency have conducted joint operations to combat the illegal harvesting of abalone. These operations have led to many arrests of abalone poachers along the East London coastline. The quantity of confiscated abalone has increased from 2007 to 2011. The positive results achieved by the departments during joint operations showcase robust efforts to eradicate the environmental transgression in the East London Coastline.

Joint operations are encouraged by all the departments to save the species for future generations. Workshops involving different stakeholders had to take place and the policies in place must have a bottom-up approach where communities are involved.

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List of Abbreviations

ATS	Antarctic Treaty System
CCAMLR	Convention on the Conservation of Antarctic Marine Living Resources
CIMEC	Centre for Investment and Marketing in the Eastern Cape
CITES	Convention on International Trade in Endangered Species
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DEAT	(National) Department of Environmental Affairs and Tourism
DEDEAT	(Provincial) Department of Economic Development, Environmental Affairs and Tourism
ECPTA	Eastern Cape Parks and Tourism Agency
EES	Environment Empowerment Services
EMP	Ecosystem Monitoring Programme
FCO	Fishery Control Officer
FPE	Fish Processing Establishment
GDP	Gross Domestic Product
GEAR	Growth Employment and Redistribution Strategy
HDIs	Historically Disadvantage Individuals
IDZ	Industrial Development Zone
MAS	Marine Administration System
MCS	Monitoring, Control and Surveillance
MLRA	Marine Living Resource Act (No.18 of 1998)
MPAs	Marine Protected Areas

NEMA	National Environmental Management Act (No. 107 of 1998)
NRCS	National Regulator for Compulsory Specification
SAPS	South African Police Services
SDI	Spatial Development Initiative
SPCA	Society for the Prevention of Cruelty to Animals
SSFM	Small Scale Fisheries Management
TURF	Territorial User Rights Fishery

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CHAPTER I

ABALONE POACHING IN THE EAST LONDON AREA,
EASTERN CAPE, SOUTH AFRICA

Introduction

In South Africa, for many years, marine resources have been exploited for subsistence purposes. Over the past few decades, the intensity of exploitation has increased as a result of human population growth, concentration of people into the areas along the coastline and the increasing rate of unemployment.

According to Harris et al., (2001), cited in Avis et al., (2004), subsistence fishers have been defined as “poor people who personally harvest marine resources as a source of food or to sell them meet the basic needs of food security; they operate on or near to the shore or estuaries, live in close proximity to the resource (within 20 km), consume or sell the resources locally, use low technology gear, and the kinds of resources they harvest generate only sufficient returns to meet the basic needs of food security” (p 9).

The ecological effects of subsistence exploitation of marine resources have been demonstrated in the eastern coast of the Eastern Cape Province, where indigenous coastal communities supplement their diets

with marine resources (Proudfoot, 2006). The target species are significantly reduced in areas of high exploitation. In the southern section of the Eastern Cape, abalone, on which my study focuses, is the most heavily exploited target species.

Illegal harvesting is a cause of concern in many of the world's fisheries. Several stocks of abalone worldwide have shown or continue to show severe decline as a result of illegal harvesting. For example, in New South Wales, Australia scuba diving for abalone is illegal and a free diving catch limit of two applies. In California, scuba diving for abalone is strictly prohibited and the taking of abalone is not permitted. In New Zealand, abalone poaching has been identified as a major industry with many thousand, often undersized, being taken illegally (Wong, 2001).

In South Africa diving for abalone (*Haliotis midae*) has been a recreational activity for many years, but stocks are currently being threatened by illegal commercial harvesting. Over the last decade, the abalone resource in South Africa has come under severe harvesting pressure, largely because of increased and unmitigated levels of poaching (Plaganyi, Butterworth & Burgener, 2011).

Abalone is the international name for the genus *Haliotis*, commonly known in South Africa as perlemoen. In South Africa, the name "abalone" is generally used to describe the species *Haliotis midae*

(Patterson, (Ed.) 2003). *Haliotis midae* has a high economic value and is harvested commercially, poached for sale and also collected for food. Perlemoen is one of the five abalone species that can be found in South African waters.

Five species of abalone (*Haliotis midae*, *Haliotis spadicea*, *Haliotis speciosa*, *Haliotis parva* and *Haliotis queketti*) are found along the Eastern Cape coast, with varying frequency (Branch, Griffiths, Branch and Beckly., 1994). *Haliotis spadicea* (the siffie) is utilized as a bait organism by rock and surf anglers, but it is *Haliotis midae* (perlemoen) which is most highly sought after, and utilized, of all the abalone species. *Haliotis midae* is the largest species of abalone in South Africa and occurs along approximately two-thirds of the country's coastline. It is a sea snail rather than having a spiral snail-like shell. However, it has a flattened ear shaped shell with a very wide opening and a row of holes through which water escapes after aerating the gills (Figure1) (Patterson, (Ed.) 2003).

Haliotis midae live in areas of strong wave action and the width of their shells reflects adaptation to the environment. The flatness of its body reduces resistance to waves while its strong muscular foot makes for firm attachment to rocky surfaces. This snail lives in shallow water and takes seven to nine years to mature. Abalone is a small to very large-sized edible sea snail, marine gastropod mollusc in the family Haliotidae and the genus *Haliotis* (Table1).



Figure 1. *Haliotis midae*-Front, top and underside views
Source: Patterson (2003, November). WildlifeTrade
Handbook. Traffic East/Southern Africa, Johannesburg, South
Africa, chapter 3, p.3-6

Table1. Classification of *Haliotis midae*

Classification		
Kingdom	:	Animalia
Phylum	:	Mollusca
Class	:	Gastropoda
Subclass	:	Prosobranchia-whinkles, whelks, limpets
Family	:	Helliotidae-ear-shaped shell
Genus	:	Haliotis
Species	:	midae
Common name	:	Abalone, Perlemoen

(Source: Wong (2001). Abalone diving in the Western Australia diving practices in 1999. (<http://archive.rubicon-foundation.org/7731>). South Pacific Underwater Medicine Society Journal, 31 (3).

Current Status of Marine Resources in South Africa

In shore commercial fisheries in South Africa comprise a legal and an illegal component; the legal component is limited to oyster, perlemoen and seaweed exploitation, while poaching of abalone, oysters, rock lobster, fish, prawns and crabs also occurs. Little is known about the genetic profile of abalone species along the South African coast, and so a precautionary approach is important when considering planning measures to conserve the species (Avis, Chalmers, Vormerk, Andrew, Scott, Ngwadla & Gwabeni, 2004).

Much of the information about the abundance and distribution of abalone species comes from the legal industry. While insufficient information does constrain the formulation of management protocols, urgent intervention is needed to save the South African stocks from collapse. Heavy poaching, particularly in the Western Cape, has led to abalone densities being severely depleted, and a decrease in the average size of abalone species to the extent that the reproductive capacity of the stock is threatened (Britz, De Waal & Godfrey, 2002).

High levels of fishing appear to have caused a decline in the emergent abalone population (population that has emerged from the juvenile habitat to more open, visible locations) and in the average size. The large specimens of abalone (*Haliotis midae*) are becoming increasingly scarce in areas outside the marine protected areas. The absence of

large specimens of abalone has caused poachers to advance their poaching techniques, with new skills and more sophisticated equipment (Serge, Raemakers & Britz, 2009). Most of the poaching operations take place late at night and in the early hours of the morning. The poaching of abalone is spread along the South African coastline from the Western Cape to the Eastern Cape. Most poaching takes place in the Western Cape where many poachers have been arrested. This has caused poachers to relocate to the Eastern Cape (Serge et al., 2009).

In 1997, the Eastern Cape was regarded as the major source for the illicit abalone trade. East London's coastal areas in the Eastern Cape Province are major poaching area for abalone. An initiative in 1998 to allocate experimental commercial quotas in the Eastern Cape coast was stopped due to the rising illegal harvesting of abalone. In 2002, a proposed Territorial User Rights Fishery (TURF) based management plan was implemented briefly in rural areas where subsistence fishers were targeting abalone. This plan was later terminated due to declining catch rates. In the Western Cape, recreational harvesting for abalone was stopped in 2003 (Serge et al., 2009).

By 2002, law enforcement agencies confiscated more illegally harvested abalone per year than legitimate commercial harvested fish in South Africa. The Eastern Cape Provincial Department of Environmental Affairs and Tourism; Department of Agriculture, Forestry and Fisheries;

South African National Parks and South African Police Services initiated joint operations in 2003 (Steinberg, 2005) having discovered a well-established and organized crime network.

The Role of the National Department of Environmental Affairs
and Tourism in terms of Fishing Rights

In response to the escalating poaching activity, the South African government allocated long-term (10-year) commercial fishing rights in 2003 and announced a new policy to underpin the allocation process. Although this policy was intended as a Territorial User Rights Fishery (TURF) system, in which fishers were allocated rights to exploit their own local areas, its efficacy was undermined by the granting of access rights to members of spatially disjoint communities (Edwards & Plaganyi, 2008).

The Eastern Cape Provincial Department of Environmental Affairs and Tourism attempted to meet the needs of subsistence fishers but with only limited success. Annual subsistence permits were allocated to previously disadvantaged fishers. The permits allowed the fishermen to catch and sell a bag of abalone per day and a tag system was devised to prevent multiple daily bag sales. Mr. R. Zakho of the Eastern Cape Department of Agriculture, Forestry and Fisheries (DAFF) observed that it is the responsibility of the DAFF inspectorate to check the daily harvest of perlemoen along the East London coastline (R. Zakho, personal

communication, March 7, 2010). According to Sunday Times reporter C. Kgosana, the Department of Agriculture, Forestry and Fisheries awarded a tender worth R800 million to Sekunjalo Holdings to combat illegal fishing along South Africa's coastline. In the report it was not mentioned when the tender was awarded and for how long, but there was a challenge to the decision which was taken to court as none of the bidders had met the minimum requirement of 80% functionality (Kgosana C., February 19, 2012).

Economic Value of the Inshore Resources in the Eastern Cape

The fishing industry in the Eastern Cape employs many people and generates much needed foreign exchange from the export of fish products. The commercial sector and the recreational fishing sector spend thousands of Rand, and an average of R200.00 per kilogram as the catching fee. The catching fee comprises of diesel, vessels, labour, commissions on the amount of resources caught and other tourism related activities. The prices charged depend on the value of Rand and dollar, price of fuel and payments to the fishing crew (T. Madyaka, personal communication, March 2, 2012).

The focus of this research is on abalone poaching along the East London coastline since 1994. A decrease in abalone poaching will protect the species from extinction.

Literature Review

Abalone is ordinarily found in the cold ocean waters of several regions, including Australia, New Zealand, South Africa, Japan and parts of the Western United States. Areas like California in the United States and South Africa attract divers and treasure hunters searching for abalone, but there are strict regulations on harvesting due to the rapid depletion of this resource (Wong, 2001).

There are about 100 species of abalone distributed throughout the world's oceans. Large abalone are mainly distributed in the temperate zone, while the smaller types are typically found in the tropics and the cold zones. Ten species are considered to have commercial value, and mainly occur in Korea, Japan, Mexico, South Africa, Southern Australia, New Zealand, United States and China (Wong, 2001).

The abalone poaching problem is not restricted to South Africa. Abalone fisheries elsewhere are threatened and some have closed, for example, in the United States and Canada. The North American abalone fisheries have been closed for more than ten years (DEAT, 2008). Due to concerns about overharvesting, many nations have limits on the quantity of abalone that may be taken. These limits are often exceeded. In July 2004, two men in Sydney were arrested for being in possession of 375 abalone, and 317 of those were undersized (McEwen, 2006). Another case was reported in December 2004 in Sydney where

two men were arrested and 427 live abalone and dive gear were seized (McEwen,2006). After these arrests, in 2004, the State Government in Sydney took poaching very seriously and the bag limit in areas open for abalone became two per person. Possession limits are in place to ensure a fair share of fishery resources among the community, to encourage responsible fishing, to reduce the chance of overfishing, and to ensure that stocks remain at a suitable level for future harvesting (McEwen, 2006). In June 2010, the Department of Fish Game in California devised means to stop abalone poaching when they discovered that poaching was placing increased pressure on the resource. Abalone poached in South Africa is smuggled into the neighbouring states of Namibia, Mozambique, Zimbabwe, Lesotho, Botswana and Swaziland from where it is exported. It is believed that Chinese managers use illegal immigrants from Mozambique and Zimbabwe to clean and package the abalone for export (Jordan, B., June 17, 2007). After packaging the abalone in tins, they are imported into neighbouring countries with false documents and exported by air (Jordan, B., June 17, 2007).

The dried shellfish were trucked from coastal safe houses in South Africa to illegal warehouses in Gauteng and then smuggled across the border by road to the neighbouring countries. Abalone was smuggled out of South Africa in two phases: phase 1 involved gangs in the Western Cape and a middleman who acted as the go-between for poachers and

the Chinese organized crime network, who handled phase 2, which entailed air transport to the Far East (Jordan, B., June 17, 2007).

Many arrests of individuals in possession of poached abalone smuggled from South Africa confirmed that neighbouring countries played a role in poaching. For example, in 2010, several arrests were made in a number of neighbouring countries. Mozambican customs officers seized over two tons of abalone smuggled into the country from South Africa on 12 March 2010 (Mozambican Customs Seize Smuggled Abalone, 2010).

The South African Coastline

South Africa has the Atlantic Ocean to the West and the Indian Ocean to the East. South Africa's east coast is influenced by the warm, nutrient-poor Mozambique current which flows southwards from the tropical latitudes off Mozambique and Madagascar. On the west coast the cold waters of the Benguela current system flow from South to North.

The productivity of abalone on the west coast is exceptionally high, fuelled by upwelling of nutrients from deep waters (DEAT, 2001). The two oceans support a wide range of people who depend on fishing for a living, from large commercial trawling companies to families who live near the coast and take daily catches for subsistence purposes. South Africa is rich in marine and coastal resources which provide important economic and social opportunities for the human population. In South

Africa, people have developed a strong reliance on coastal resources for commercial opportunity and gain, food, recreation and transport. The marine and coastal resources have facilitated job creation and economic upliftment for the population along the coastline (DEAT, 2006).

Population along the South African Coastline

Thirty percent of the population of South Africa lives within 60 km of the coast (Glazewski, 2000). The diverse environmental characteristics and conditions found along the coast, largely due to the influence of the Indian, Atlantic and Southern Oceans, have influenced human settlement patterns and land use activities in the coastal zone. More people have been attracted to the east and south coast due to warm water and moist climate; hence development and population pressure are more evident there than on the arid west coast with its cold water and dry climate (DEAT, 2001).

Development in the major coastal towns and cities of South Africa has been rapid. Small towns and rural areas make up 90% of the population in the coastal area (Glavovic, 2000). The coastal region is therefore experiencing not only growth but also increasing levels of poverty and inequality (Karshorte, 2003). According to the White Paper on Sustainable Coastal Development (2000) (cited in DEAT, 2006), increasing poverty levels along the coast inflict huge pressure on coastal and marine resources. In 2000, the estimated value of the direct benefits derived from all coastal goods and services in South Africa was

approximately R168 billion, with indirect benefits contributing a further R134 billion.

Abalone Fishing and Fishing Rights in South Africa

Abalone fishing in South Africa was uncontrolled until the Government realized the need to regulate it because abalone was threatened with commercial extinction. Unrestricted commercial harvesting of abalone began in South Africa in 1949 in the Gans Bay area. By the mid-1960s, many tons of abalone were taken from the sea annually. In a bid to stem overexploitation and protect the resource, seasonal quotas were introduced in 1970. A legislative framework was put in place to manage the industry as well as to enforce compliance (Steinberg, 2005).

Abalone commercial and recreational fishery in the Western Cape Province had been stable for many years (Tarr, 2003), but since the mid-1990s traditional management measures to sustain a rights-based fishery have been rendered increasingly ineffective by rampant illegal fishing. Abalone fishery supports many historically disadvantaged individuals (DEAT, 2002).

Between December 2001 and June 2002 the Department of Environmental Affairs and Tourism (DEAT) allocated fishing rights to fishers from disadvantaged communities in the Western and Northern Cape Provinces in order for the Department of Environment Affairs and

Tourism to be in a better position to monitor and control inshore fishing activities. The fishing rights entitle each recipient to catch and sell limited quantities of abalone: a resource that fetches a high price and is easily harvested using small fishing boats.

DEAT's decision to allocate limited commercial fishing rights to west coast abalone fisheries was motivated by a desire to address the legitimate demands of disadvantaged fishers who depend on fishing for their livelihoods (DEAT, 2002). Applications were then invited for "medium-term rights" for 2002-2005, with the intention of introducing longer-term rights (up to 15 years) in 2006. Medium-term rights have subsequently been allocated for most other fisheries (Branch & Clark, 2006).

Abalone Farming

The abalone poaching crisis has led to the establishment of abalone farms worldwide. Beginning in 1990s, there have been many increasingly successful endeavours to commercially farm abalone for purposes of consumption. Overfishing and poaching have reduced wild populations to such an extent that farmed abalone now supplies most of the abalone meat consumed in the world. The principal abalone farming regions are China, Taiwan, Japan and Korea. Abalone is also farmed in Australia, Hawaii, Canada, Chile, France, Iceland, Ireland, Mexico,

Namibia, New Zealand, South Africa, Thailand and the United States [Abalone farming information (n.d.)].

South Africa became involved in abalone farming in the 1990s following the awareness of initiatives in New Zealand and California, U.S.A. According to Genade et al., (1988) (cited in Troel et al., 2006), South African abalone showed successful spawning and rearing in captivity. Initial research also indicated that growth rates in captivity were much faster than in the wild and sufficient quantities of abalone feed were available for the stock (Hahn, 1989).

In South Africa several abalone farms were already in production. South Africa's abalone cultivation industry is now the largest producer outside Asia. With the rapid decline in wild abalone fishery, farming now dominated the abalone export market in South Africa. Kelp constitutes the major feed for farmed abalone in South Africa, but this resource was approaching its limits of sustainable harvesting in areas where abalone farms were concentrated (Troel et al., 2006).

Most abalone farms were located in the Western Cape Province, but some existed as far north as Port Nolloth (in the Northern Cape Province) and the Eastern Cape Province. Farming brought employment opportunities to lower income groups in the remote coastal communities, thereby alleviating poverty. An average South African farm employed 60

people and the total industry employed about 1 390 people in 2004 (Troel et al., 2006).

Four abalone farms were located in the Eastern Cape at Houghan Park, at Marsh Strand and two in East London. According to Britz et al., (2001) (cited in Avis et al., 2004), the production of each farm was expected to reach 80 tons per annum, with an estimated value of R22,4 million in 2001. The Centre for Investment and Marketing in the Eastern Cape (CIMEC) promoted the planning of another abalone farm for Qolora in the eastern part of the Eastern Cape, as a community/public/private/ partnership (Britz et al., 2001). Two farms were established along the East London coastline where young abalone were grown. The farm owners were permitted to collect a certain quota of abalone from the sea for breeding purposes (Warrant Officer Brussow, personal communication, April 11, 2011).

Research Aims

The Provincial Department of Economic Development, Environmental Affairs and Tourism (DEDEAT); the South African Police Service; the Department of Agriculture, Forestry and Fisheries; the Eastern Cape Parks and Tourism Agency (ECPTA); and the National Department of Environmental Affairs and Tourism (DEAT) were the departments responsible for managing and protecting plant and animal species in the marine environment of East London in the Eastern Cape Province at the

time of this research in 2011 to 2012. This study was conducted to examine the role of the different role players in preventing abalone poaching along the East London coastline.

Abalone poachers have been arrested in the western and eastern part of the Eastern Cape. This study aimed to discover how the arrests were made in East London, when were the arrests made and what processes were followed?

Research Objectives

The objective of my study was to determine the challenges environmental officers face given that there was an increase in abalone poaching along the East London coastline and to discover how successful they have been in stemming abalone poaching.

Another objective of this study was to identify the hotspots for abalone poaching along the East London coastline, and to investigate the role of the law enforcement officers in patrolling the East London coastline.

A further objective of this study was to examine the statistics of the reported cases after 1994, looking specifically at the years when abalone poaching escalated. For example, starting from 2001 to 2011 the poaching activity showed escalation along the East London coastline. The study also focused on which people were involved in abalone

poaching in terms of gender, race and age group and to establish how many illegal abalone were confiscated per year.

Research Questions

Given that abalone poaching along the East London coastline escalated from 1994 to 2011, the study seeks to determine how abalone was poached, and for whom? How were poachers compensated? What were the quantities poached by individual poachers per month?

There are two abalone farms situated along the East London coastline, the Seatek abalone farm in the East London Industrial Development Zone and the Wild Coast abalone farm in the Cintsa area of East London. The two farms were fully operative. The study also investigated who granted the licences to farm abalone? For how long were these licences valid? On what conditions were the licences given and do the farm owners comply with the conditions for abalone farming?

Research Methodology

Different stakeholders, including government departments, were consulted for the purposes of this study. Different research methods were used to gather information from various stakeholders. Interviews were conducted and questionnaires delivered to the South African Police Service in East London harbour and the Department of Agriculture, Forestry and Fisheries. Interviews were conducted with Siani Tilney, the

marine biologist at the East London Aquarium. A telephonic interview was conducted with the permit Administration Officer in Cape Town.

According to Parfitt (2005) questionnaires are frequently used as tools for data collection in Geography and related areas of research. The questionnaire technique is an indispensable tool when primary data are required about people, their behaviour, attitudes and opinions and their awareness of specific issues.

In some cases the explanatory power of questionnaires can be limited; hence, questionnaires were complemented by one-on-one interviews. Interviews were conducted with officials from the National and Regional Department of Agriculture, Forestry and Fisheries; the “Green Scorpions” of the Department of Economic Development, Environmental Affairs and Tourism of the Eastern Cape Province; the South African Police Services; the marine biologist in the East London Aquarium; residents along the East London Coastline and rangers from Double Mouth Nature Reserve. All parties interviewed played active roles in the management of the marine environment in the East London area of the Eastern Cape Province. Local residents engaged in abalone poaching were chosen from among those who lived in abalone poaching hotspots along the East London coastline.

According to Eyles (1988) (cited in Valentine, 2005), an interview is a conversation with a purpose. The aim of the interview is to understand how individual people experience life and make sense out of it. Emphasis is on considering the meanings people attribute to life and the processes which operate in a particular social context. This study used interviews as a data collecting technique to obtain real life insight into perceptions and meanings of those involved in abalone poaching. Interviewees were allowed to construct their own accounts by describing and explaining their experience in their own words. The interviews offered the chance for the researcher and the interviewees to have wide-ranging and in-depth discussions.

In interviews, issues can be thoroughly explored. The interview technique allowed respondents to raise issues that were not anticipated, yet relevant to the research. The fact that the interviews were unstructured and conversationally fluid allowed each respondent to express him or herself personally and resulted in rich and multi-layered data.

One interview was conducted telephonically with the Administration Officer based in Cape Town where permits to harvest abalone were issued. One interview was also conducted with Warrant Officer Brussow in the East London harbour who patrolled the East London coastline from Hamburg to the Kei Mouth. Follow up interviews were also

conducted with five police officers at the East London harbour station on 28 October 2011.

A one-on-one interview was conducted with marine biologist Siani Tilney at the East London Aquarium on 12 April 2011. Tilney is a specialist in the identification of marine species. Police Officers take confiscated marine resources to Tilney for identification. Tilney also identifies confiscated species for the court.

A one-on-one interview with Fishery Control Officer Mvulo of the Department of Agriculture, Forestry and Fisheries was conducted on 12 April 2011. Follow up interviews were conducted with six enforcement officers on 31 October 2011 at the DAFF offices in East London.

On 29 and 30 October, 2011, one-on-one interviews were conducted with twenty five residents along the East London coastline. The interviews were conducted in hotspot areas for abalone poaching, namely; Hamburg, Khiwane, Gulu, Leaches Bay (Orange Grove), Nahoon Point, Gonubie, Glen Gulf (Glengariff), Matchstrand (Haga Haga) and Kei Mouth along the East London coastline. The selection of interviewees was random. The only disadvantage occurring with the use of the interview technique is that personal bias on the part of both interviewer and respondent cannot be ruled out.

Focus groups are useful in providing researchers as a way of gaining insight into a spectrum of views that individuals hold regarding a particular issue. A focus group is not just a way of collecting individual statements, but rather a means to negotiate meanings through intra- and inter-personal debates. Focus groups allow one to explore the gap between what people say and what they do. A focus group environment does not allow each participant's perspective to come through equally. Some participants in a focus group have more to say than others and some contribute little to the discussion (Conradson, 2005).

The researcher selected and assembled a group of Enforcement Officers in the Department of Agriculture, Forestry and Fisheries to discuss and comment on abalone poaching along the East London coastline. The researcher facilitated and moderated this focus group of six participants on the topic. The study used the focus group technique and recorded the conversation using a recorder. The result was a rich qualitative record of the focused group conversation.

In conclusion, the research techniques used in this research including interviews, questionnaires and focus groups involved a total of thirty eight persons. The total number of persons interviewed was made up of twenty five coastal residents, six officers from the Regional Department of Agriculture, Forestry and Fisheries, five officers from South African Police Services stationed at East London harbour, one administration

officer from National DAFF in Cape Town and one marine biologist from East London Aquarium. The use of these techniques to the above sets of different persons enabled the researcher to get views from different individuals at different levels in the workplace. The researcher was also able to interact directly with individuals. More information was gathered from the interactions such as the roles the different officers played in managing the marine environment along the East London coastline. For example, some officers enforced compliance on the ground and some patrolled in water. There were also officers who were specializing in abalone poaching investigations. The combined information received from the different groups gave the researcher more insight on the study.

Research Location

The study was conducted along the East London coastline in the Eastern Cape Province of South Africa. The city of East London is found in the Buffalo City Metropolitan Municipality in the Amathole Region. East London is one of the cities in South Africa that has shown fast economic growth since the 1980s (DEAT, 2006). The Amathole Region has two Department of Agriculture, Forestry and Fisheries stations namely; the East London station and the Centane station. The East London station area extends from Fish River to Kei River Mouth and the Centane station area extends from Kei River Mouth to Mthatha River Mouth.

The study's focus is on the East London station. The distance between Fish River Mouth and the Kei River Mouth is 180km. Officials of the Department of Agriculture, Forestry and Fisheries (DAFF) stationed in East London in the Amathole Region patrol and monitor the East London coastline (Figure 2).



Figure 2. East London area in the Amathole District of the Eastern Cape Province
(Source: Amathole District Municipality, 2012)

In Khiwane the community was black and had access to the sea. In the Gulu area the community was black as well and the area is surrounded by farms and informal settlements. The population in Orange Grove came from the rural areas around the Eastern Cape in the hope of securing jobs. In Leaches Bay, the informal settlement is called Orange

Grove. The black community in this area also outnumber the coloured and white communities. The community of Orange Grove has access to the sea. In Nahoon Point the community is mainly white while in Gonubie, the informal settlement is called Santini. The community of Santini is black and has access to the sea. Glengariff has a white community with access to the sea. In Matchstrand, the focus area is Haga Haga. Haga Haga is surrounded by white owned farms. The last hotspot, Kei Mouth has farms and holiday resorts. The community of the informal settlement at Morgan's Bay, found in Kei Mouth, has access to the sea (Figure 3).

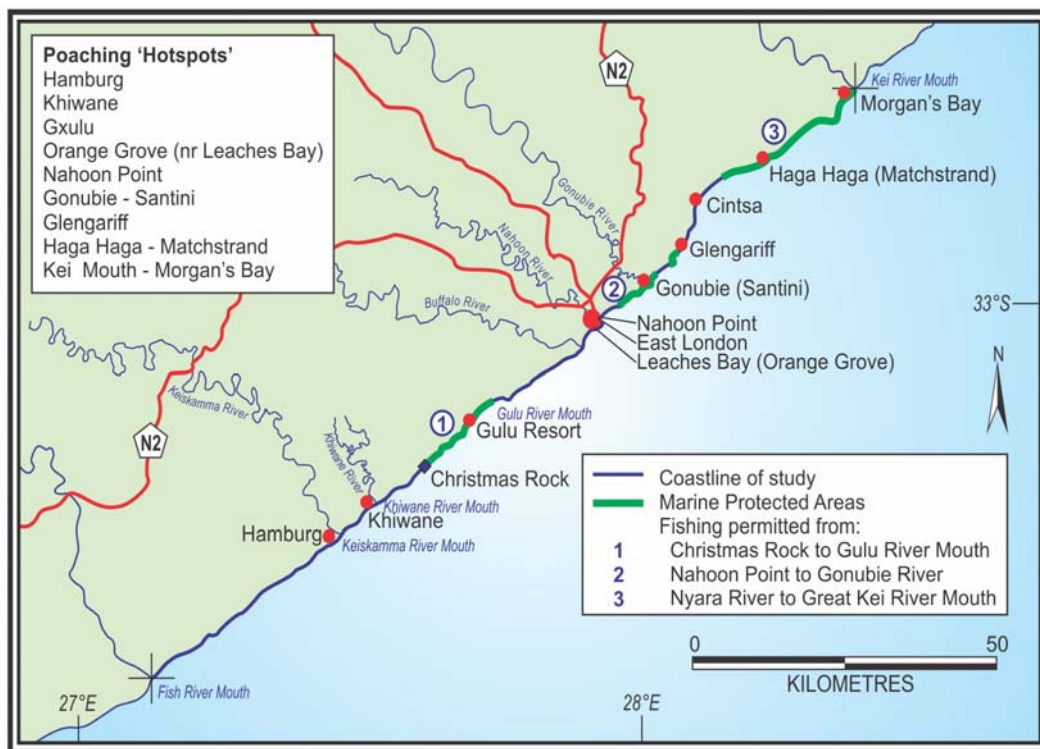


Figure 3. East London area showing the hotspots for abalone poaching (Source: Amathole District Municipality, 2012)

The two local municipalities, Ndlambe and Great Kei, Buffalo City Metropolitan Municipality as well as the Eastern Cape Parks Board and Sea Border Police manage and monitor the coastal areas for illegal harvesting of marine resources in the Eastern Cape Province. These municipalities had boat launching sites with boats entering the sea. These boat launching sites are absent at the Ngqushwa Municipality, hence nothing was mentioned about the Ngqushwa Municipality's role in as far as the monitoring and managing the coast against illegal harvesting of marine resources is concerned.

The region south-west of East London is not as popular with residents of the city as east coast resorts such as Morgan's Bay, Haga Haga and Cintsa. Here the coastal area has great aesthetic appeal and contains marine and estuarine environments that offer a range of sporting and recreational activities. The eastern coast of East London experiences influxes of holiday-makers during the peak vacation seasons, thereby putting pressure on small holiday towns such as Morgan's Bay, Haga Haga, Cintsa and the surrounding environment (Avis et al., 2004). To the south-west a number of overutilized coastal areas are found. East London, although developing as an industrial centre, has remained a picturesque city with an abundance of open space, coastal forests, rolling savanna and coastal grasslands (Lubke, 2000).

The East London coastline was chosen as the research area because of the high level of illegal harvesting of abalone in the area. The local newspaper, Daily Dispatch, reported a number of cases (six in January 2011 alone) of illegal abalone harvesting along the East London coastline. On the 24th of January 2011 the local newspaper reported that three suspects were arrested carrying bags with shelled abalone in East London. On the 9th of February 2012, ECPTA rangers on patrol in Dwesa Nature Reserve came across abalone poachers. The five men escaped into the forest dropping a bag of abalone they had been carrying. Rangers waited near the bag as they believed that suspects would return to collect the bag. About 2am on the 10th of February 2012, the suspects returned. Poachers started attacking and shots were fired. The rangers fired back to defend themselves and one suspect estimated to be between the age of 35 and 40 was killed and the other four fled the scene.

Those individuals involved in abalone poaching did not reside permanently in East London but come from places like Port Elizabeth (South African Police Services Journal, 25 February, 2010). Three men arrested at Leaches Bay on 25 February 2010 for abalone poaching were from Port Elizabeth. The South African Police Service in the surrounding villages conducted crime prevention operations and arrested a number of suspects (South African Police Service Journal, 3 March, 2010). Illegal abalone harvesting along the East London

coastline escalated after 1994 and became a serious problem in 2001 when an Organized Crime Unit started operations (Officer Brussow, personal communication, April 11, 2011). The Daily Dispatch of the 15th of May 2012 reported that abalone poaching along East London coastline was on the rise after four women were arrested for abalone poaching near the East London harbour. This suggested a serious problem relative to abalone poaching in the Amathole Region.

Rational for the Study

Poachers have been arrested and abalone confiscated in South Africa from the Years 1994 to 2012. The illegal abalone harvesting targeted the South African coastline cities including Cape Town, Durban and East London, which is included in my study area. Yet illegal abalone harvesting continues to increase along the coastline. Also, there are no known studies of illegal abalone harvesting along the East London coastline, a gap this research seeks to address.

If the different departments involved in coastal management do not act in concert to prevent abalone poaching, the abalone stocks will be depleted. Information concerning the arrests made and the charges issued against poachers as discussed in the study will help to mitigate poaching.

Conclusion

Abalone poaching is the activity that many people in the East London area of the Eastern Cape Province engaged in. The Department of Economic Development, Environmental Affairs and Tourism, the Regional Department of Agriculture, Forestry and Fisheries, the South African Police Services and the Eastern Cape Parks and Tourism Agency, patrol the coast and nature reserves to combat abalone poaching in the East London area. Well trained officers were deployed to patrol the reserves and along the coast as the poachers were always armed in order to fight back when caught. Operations conducted along the East London coastline led to arrest of many abalone poachers.

The discussion in Chapter II of this research focuses on the background of the study area. This chapter will focus specifically on the characteristics that made the East London area prone to poaching, and the socio-economic status of the population along the East London coastline. Chapter III focuses on the legislation and policies that govern abalone harvesting especially along the East London coastline, and their strengths and weaknesses. In Chapter IV the discussion focuses on the data collected and the analysis thereof. In Chapter V the discussion centres on the findings and Chapter VI presents the recommendations and conclusion of this research.

CHAPTER II

BACKGROUND OF THE STUDY AREA

Introduction

Thirty percent of the South African population lives along the coast. The natural population growth of the South African coastal areas is compounded by a net in-migration of job seekers, as well as people retiring to the coast and those seeking a better quality of life. Development policies and initiatives such as the Rural Development Framework, Growth Employment and Redistribution Strategy (GEAR) and Spatial Development Initiatives (SDIs) have encouraged migration to coastal areas (DEAT, 2006).

The Eastern Cape coastline is approximately 821km in length and is diverse in biological species influenced by the warm waters of the Mozambique current. The Eastern Cape waters have a high oceanographic variability and relatively high species diversity (Durham & Pauw, 2000). The coastline, stretching from the Tsitsikamma National Park in the south to the Mtamvuna River in the north, is highly diverse in physical, biological and socio-economic qualities. This coastline is not at all uniform and can be divided into different regions with different physiographical forms, geology, climates and other notable features. The types of rocks, soil and topography have an influence on the nature

of estuaries, the shoreline and even the intertidal and marine ecosystems. Also the sea currents, tides and ocean temperatures have an influence on marine and estuarine organisms (Lubke, 2000).

Characteristics of the Eastern Cape Coastline

The shoreline is characterized by alternating sandy beaches and rocky headlands, together providing a wide variety of habitats for in shore marine organisms. The ecological and biological diversity of the East London coast makes it attractive for residential, holiday and recreational purposes. The coast is densely populated in the Amathole and Cacadu Districts (Figure 4), with residential and industrial activities concentrated in the two largest cities, Port Elizabeth and East London (Avis et al., 2004).

The Eastern Cape is rich in natural resources. Heavy minerals, sea salt, lime, rock and dune sand deposits of economic importance are also found along the Province's coastline. A wide variety of sedentary and migratory marine living resources are exploited for pleasure, financial gain or as a source of food. These include hake, line fish, rock lobster and abalone (Avis et al., 2004).

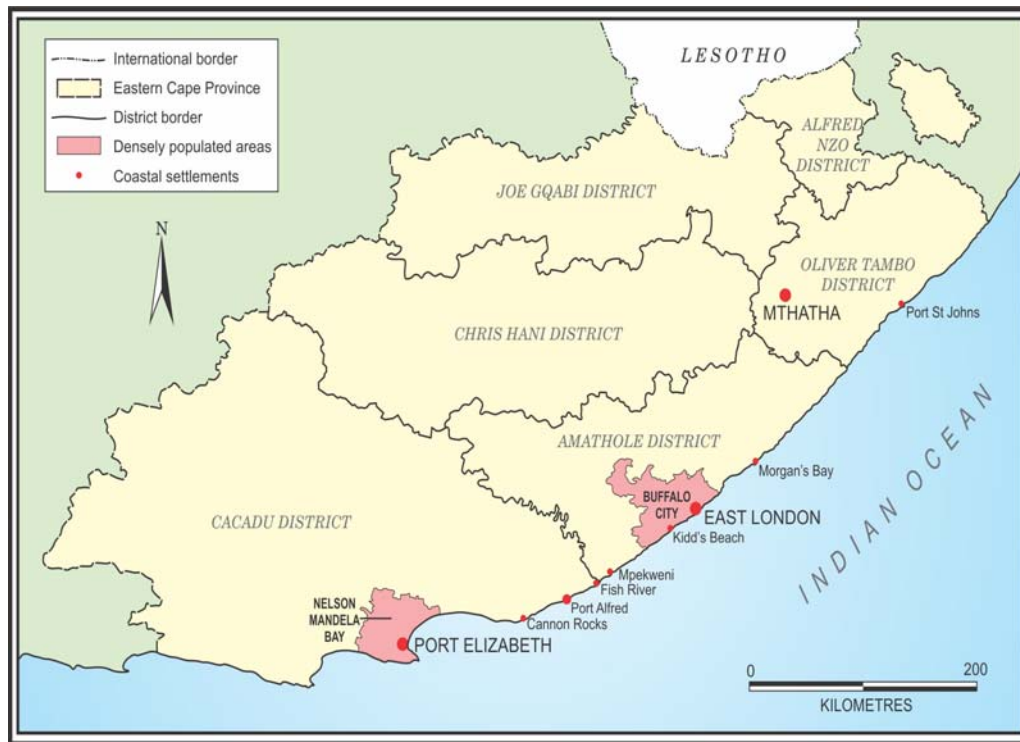


Figure 4. District Municipalities of the Eastern Cape Province

(Source: Amathole District Municipality, 2012)

Poverty is severe in the Eastern Cape, with almost 40% of households living in poverty and over 70% of children living in poor households. The central part of the Eastern Cape is predominantly rural (70% of the population) and incorporates the eastern and western coast. Annual household income levels of the population living along the East London coastline was very low and highly unequal, and it was clear that poverty was a problem for the population (Glavovic & Boonzaier, 2007).

Coastal rural residents and farm residents depended very heavily on marine resources for food. The residents in small villages and farms found employment at the East London holiday resorts, farms and shops along the coast. Port Elizabeth and East London attracted migrant workers from the rural areas of the Eastern Cape. The employment rate in the region was low, with more than 40% of people unemployed. In rural areas, along the eastern coast of the Eastern Cape, an average of between 30% and 40% of households relied on pensions and government grants as a source of income (Glavovic & Boonzaier, 2007). However, fishing in the Eastern Cape contributed only about one percent of South Africa's gross national product and therefore was not seen to be a high priority sector by the government (Shipton et al., 2001).

Role of Department of Agriculture, Forestry and Fisheries and
South African Police Service in Abalone Poaching along East
London Coastline

In recent years the Department of Agriculture, Forestry and Fisheries Inspectorate and the South African Police Service have cooperated very closely to curb poaching of abalone along the East London coastline. Poachers pose a huge problem to the law enforcement bodies. The Border Police used their vessels and a helicopter to patrol certain areas although they were not authorized to act in terms of the Marine Living Resource Act (MLRA) No.18 of 1998. The Border Police were not trained to identify marine resources. Consequently they took confiscated marine resources to the Marine Biologist in the East London Aquarium

for identification (Capt. Loubsher, personal communication, April 18, 2011).

Fishing in the East London Coastline

The majority of the local population practised fishing and gathering of other living marine resources in the intertidal zone, including abalone poaching. Many of the people that were found along the East London coastline were uneducated, unemployed and lived in informal settlements. The unemployment rate along the East London coastline, particularly among the rural (black) Africans, caused many children to drop out of school to help their parents to survive. The increasing population growth and unemployment rate in the Eastern Cape put increased pressure on the utilization of abalone (*Haliotis midae*) (Kashorte, 2003). In October 2002, 133 subsistence permits were issued in Hamburg to facilitate and control fishing between the Fish and Chalumna Rivers which are part the East London coastline. Processing and marketing of the harvested fish species was carried out by Siyaloba and other Companies in Port Elizabeth, and Christy and Sons Company in Humansdorp (Avis et al., 2004).

Population in East London

East London has shown a dramatic growth in population over the past 50 years and residential development has moved eastwards into the towns of Gonubie and Beacon Bay which are scenically situated around estuaries with attractive, well laid settlements. The metropolitan area of

Buffalo City has a population of 1,4 million while East London itself has 400,000 residents (DEAT, 2006). It is the second largest city in the Eastern Cape Province. The population increase was mainly due to the influx of employment seekers. Beginning in 1994, the post-1994 government withdrew subsidies in the border industrial areas. Firms relocated from the Eastern Cape border industrial area because it was no longer profitable for them to remain in the area. Beginning in 1994, some factories relocated from Dimbaza Township to East London, and their workers also moved to keep their jobs.

Protected Areas along the East London Coastline

In some areas in the marine and coastal environment of South Africa, special regulations apply for conservation, fishery management and the promotion of tourism. These include closed areas declared under Section 77 of the Marine Living Resource Act No. 18 of 1998. Fishing is restricted entirely in specified areas. In the Marine Protected Areas, declared under Section 43 of the Marine Living Resource Act, no fishing, construction work, pollution or any form of disturbance is allowed unless the Minister of Water and Environmental Affairs has granted written permission. In the East London Coastline, there are three marine protected areas (Figure 4). National Parks, declared under the Protected Areas Act, can include marine and estuaries [Fishing Eastern Cape (n.d.)].

In Buffalo City, fishing from the shore is only allowed in the following three areas:

1. Between Christmas Rock and Gxulu River mouth extending three nautical miles seawards from the high-water mark.
2. Between Nahoon Point and Gonubie Point, extending three nautical miles seawards from the high-water mark, and
3. Between Nyara River mouth and Great Kei River mouth, extending three nautical miles seawards from the high-water mark (Figure 5). [Fishing Eastern Cape (n.d.)].

All the marine reserves along the East London coastline were under the management of the Department of Agriculture, Forestry and Fisheries. The Marine Protected Areas along the East London coastline have been identified as hotspots for abalone poaching due to a large number of informal settlements in these areas. Poor residents from the surrounding farms and the unemployed from informal settlements started poaching to support their families (B. Mvulo, personal communication, April 11, 2011).

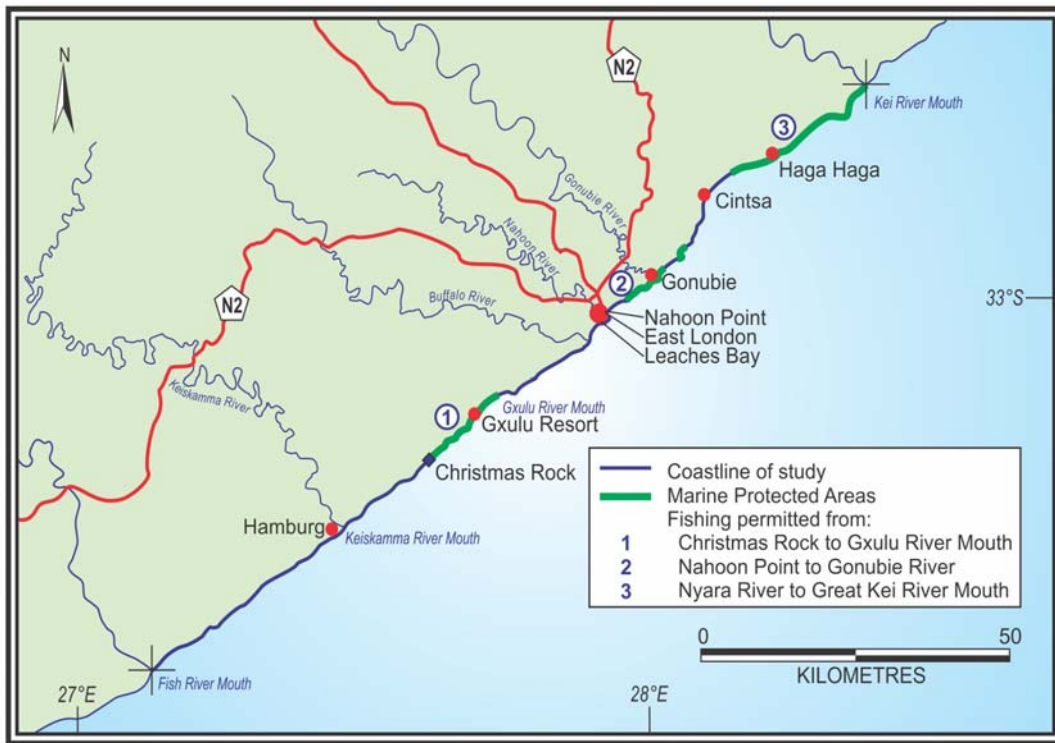


Figure 5. Marine Protected Areas along the East London Coastline

(Source: Amathole District Municipality, 2012)

Characteristics of the East London shoreline

The following characteristics of the unspoilt Buffalo City coastline make it a suitable habitat for *Haliotis midae*. These characteristics include estuaries, conservations, natural heritage sites, rocky shores, many golden sandy beaches and warm waters. The temperature of the water is important for reproduction purposes as the *Haliotis midae* species release their sperms and eggs into the water for fertilization. Abalone grows well at a water temperature of above 20 degrees Celsius. Seaweed, to feed abalone, abounds along the East London coastline.

Rocky shores can be found in most areas along the East London coastline for attachment of the abalone species (Avis et al., 2004). Also, relatively high densities and large sizes of marine species were found in marine protected areas along the East London coastline, while low densities and small sizes prevail near densely populated areas (Proudfoot, 2006).

Conclusion

Along the East London coastline the population has grown and the most of the individuals were unemployed. The policies in place encouraged migration to the coastal areas and this caused the East London coastline to become densely populated. The large number of persons with low or no education, together with the higher levels of joblessness and poverty, led to the increase of abalone poaching. The characteristics of the East London coastline including warm waters, rocky shores and sandy beaches were found to be suitable environments for the abalone to grow. The abalone poachers had targeted protected areas along the East London coastline for their activity. This caused the Regional Department of Agriculture, Forestry and Fisheries to conduct operations in the targeted areas on a daily basis. These operations were successful due to information provided by the community.

CHAPTER III

NATURAL MARINE RESOURCES: THEMATIC BACKGROUND

Introduction

National and international policies, agreements and legislative documents have been formulated to regulate the management and use of natural resources in South Africa. A number of these apply to the governance of inshore coastal resources in the Eastern Cape (Avis et al., 2004). At the national level, policies concerned with biodiversity and resource management have historically been concerned with the terrestrial rather than the marine environment (Durham & Pauw, 2000). This chapter focuses on these policies and the coastal communities' compliance with them.

International Environmental Treaties and Conventions

Treaties and Conventions applicable to Integrated Coastal Management (ICM) along the Coastal Regions of South Africa include the Convention on International Trade in Endangered Species (CITES) of Wild Fauna and Flora and the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) (Van der Linde & Feris, 2010).

The Convention on International Trade in Endangered Species of Wild Fauna and Flora was signed on 03 March 1973 and became effective on

15 July 1975. The main objectives of this Convention were the protection of endangered species prominent in international trade through appropriate trade control measures and monitoring the status of such species. Under this Convention, South Africa has adopted measures to combat smuggling of the abalone species, the perlemoen, to protect its biodiversity and also to ensure its sustainable utilization. The other obligation for South Africa was to regulate the trade in endangered species, for example abalone, and also to keep in touch with parties worldwide that are engaged in the conservation of endangered species (Van der Linde & Feris, 2010).

The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) was opened for signature on 01 August 1980, and entered into force on 07 April 1982. The Convention is a key element of the Antarctic Treaty System (ATS) and constitutes an important part of South Africa's commitment to the ATS. The Convention is unique among the international fisheries agreements as it advocates an ecosystem approach to fisheries management. Thirty-one nations were signatory parties to the Convention, South Africa included. South Africa is, at present, the only African signatory of the Convention. The Convention seeks to manage and regulate the exploitation of Antarctic marine living resources. The main goal of the Convention is to ensure the conservation of the marine living resources. The chairperson for the Scientific Committee in 2011 was a South African scientist

(<http://www.seaweb.org/resources/briefings/gorvenance.php>).

In 1985, the Convention on the Conservation of Antarctic Marine Living Resources set up an Ecosystem Monitoring Programme (EMP) to further monitor the effects of fishing and harvesting of abalone species internationally, South Africa included. The National Department of Environmental Affairs and Tourism (DEAT) contributes to the Ecosystem Monitoring Programme. Contracting parties to the Convention meet once a year to review technical and scientific matters relevant to the management of the exploitation of marine living resources and to formulate management measures. South Africa has attended meetings on a regular basis. South Africa has also taken a leading role in the various scientific issues addressed during a number of inter-sessional meetings (<http://www.seaweb.org/resources/briefings/gorvenance.php>).

Van der Linde & Feris (2010) stated that there are three principles of conservation which any harvesting activities must respect:

1. Prevention of decrease in size of any harvested population to levels below those that ensure its stable recruitment;
2. Maintenance of the ecological relationships between harvested dependent and related populations, and
3. Restoration of depleted populations; and the prevention of changes or minimization of the risk of changes in the marine ecosystem which are not potentially reversible over two or three decades.

The above two conventions are important for this study as their main goal is to conserve marine living resources.

Marine Policy in South Africa

South Africa has a set of policy documents that constitute a firm foundation for the sustainable management of living marine resources. A dedicated fisheries inspectorate and scientific capacity to manage these resources exists. Funds to finance research, management and law enforcement are available through the Marine Living Resources Fund, and a number of provincial and local bodies are authorized to assist with monitoring, control and surveillance (MCS) duties in terms of the Marine Living Resources Act (No.18 of 1998).

According to DEAT(1998) (cited in Van der Linde & Feris, 2010), some of the national legislation relevant to the in-shore Coastal Regions of the Eastern Cape are the Marine Living Resource Act (No.18 of 1998) and the Integrated Coastal Marine Resource Act (No. 24 of 2008). The Marine Living Resources Act has equity, sustainability and stability as three guiding principles, and promotes a broadening in the focus of the management of marine resources to include more socio-economic benefits to coastal communities.

The Marine Living Resource Act (No.18 of 1998)

The Marine Living Resource Act (No.18 of 1998) recognizes the importance of conserving biodiversity and maintaining the population of all species at levels that are consistent with their roles in the ecosystem. Fisherpersons, for example, should not exploit a species in a manner that will negatively affect other marine species in terms of food availability or other components of ecosystem interaction (Britz et al., 2001). South Africa's marine resources are considered to be a national asset, and as such, are managed at a national level.

According to Van der Linde & Feris (2010) the Marine Living Resource Act mandated legislative authority over resources below the high water mark to the Department of Environmental Affairs and the Department of Agriculture, Forestry and Fisheries, but there are numerous provincial rules and regulations, and local government by-laws that apply to the coastal zone. The Act deals entirely with fish and fisheries, and the objectives and principles behind the utilization, conservation and management of marine living resources. According to DEAT (1998) (cited in Van der Linde & Feris, 2010), the Act highlights the need to protect whole systems, preserve marine biodiversity and minimize marine pollution, as well as comply with international law and agreements, and the restructuring of the fishing industry. In this regard this Act provides that the control over marine living resources be exercised in a fair and equitable manner, to the benefit of all the citizens.

Objectives and Principles of MLRA (No.18 of 1998)

According to Van der Linde & Feris (2010) the Minister of Water and Environmental Affairs and any organ of state must, in exercising any power under this Act, have regard to the following objectives and principles:

1. The need to achieve optimum utilization and ecologically sustainable development of marine living resources;
2. The need to conserve marine living resources for both present and future generations;
3. The need to apply precautionary approaches in respect of the management and development of marine living resources;
4. The need to utilize marine living resources to achieve economic growth, human resource development, capacity building within fisheries and marine culture branches, employment creation and sound ecological balance consistent with the development objectives of the national government;
5. The need to protect the ecosystem as a whole, including species which are not targeted for exploitation;
6. The need to preserve marine biodiversity; and
7. The need to restructure the fishing industry to address historical imbalances and to achieve equity within all branches of the fishing industry.

These objectives and principles also hold good for the conservation of the marine living resources in my study area. It is important for the population along the East London coastline to know the objectives and principles of the Act if they are to comply with them.

Application of the MLRA (No.18 of 1998)

The Marine Living Resource Act shall apply to all persons, whether or not South African and to all fishing vessels and aircrafts, including foreign fishing vessels and aircraft, on, in or in the air space above South African waters. This Act also applies to fishing activities carried out by means of local fishing vessels or South African aircraft in, on, or in the air space above waters outside South African waters, including waters under the particular jurisdiction of another state. This Act, including any applicable regulation, shall have extraterritorial application, unless the context indicates otherwise. This Act shall not apply in respect of fish found in water which does not at any time form part of the sea (Van der Linde & Feris, 2010).

Establishment of the Advisory Forum for the Fishing Industry

According to Van der Linde & Feris (2010) it was the responsibility of Minister of Water and Environmental Affairs to establish a five member Consultative Advisory Forum that is involved in the management and development of the fishing industry, including issues relating to the total allowable catch, marine living resources management and related

legislation and the establishment and amendment of operational management procedures, including the management plans. There was no term of office for the office bearers. The Forum must act in keeping with the Marine Living Resource Act (No.18 of 1998). Any opinions of the Forum are brought to the attention of the Minister quarterly, via a report.

Register of Access Rights in terms of MLRA (No.18 of 1998)

Van der Linde & Feris (2010) stated that the Director-General shall keep a register of all rights of access, other rights, permits and licences granted or issued in terms of this Act. The Minister of Water and Environmental Affairs may prescribe the format of the register and any registration system that she deems necessary. The register shall be available for inspection by the public at prescribed places and times.

Permits for Abalone harvesting

According to Van der Linde & Feris (2010), no person shall be allowed to exercise any right granted or perform any other activity in terms of the Marine Living Resource Act unless the Minister of Water and Environmental Affairs has issued a permit to such a person to exercise that right or perform that activity. The Minister approves the permit issued for abalone harvesting. The Minister determines the conditions and fees of any permit issued for a specified period not exceeding one year. The holder of the permit shall at all times have that permit

available for inspection at the location where the right or activity in respect of which the permit has been issued, is exercised. A permit to exercise an existing right in terms of this Act may be refused if the conditions of a previously issued permit had not been adhered to.

The information received during the interview with the administration officer from the National Office in Cape Town revealed that the National Department of Environmental Affairs has set an overall quota of 150 tons over a period of five years of all the marine species starting on 01 June 2008 to 01 June 2013 and has 303 right-holders for harvesting. A right-holder's permit is for a certain period and the submission of harvested species is required to obtain a new permit. The Department works in terms of the figures of allocated quota per person, and the figures the right-holders submit. Accordingly, if a right-holder was issued a permit to harvest 20 tons in a year and only 10 tons have been harvested, then the permit holder will not be re-issued with a permit to harvest 20 tons, but less.

The harvesting of marine resources was subject to a permit system. In accordance with the Marine Living Resource Act (No. 18 of 1998) any persons wishing to utilize marine resources, abalone in this case, must obtain a permit. The National Department of Agriculture, Forestry and Fisheries office in Cape Town issued permits for harvesting abalone. The Provincial Department of Agriculture, Forestry and Fisheries had

started to issue permits for abalone harvesting in the Eastern Cape in 2012. A permit for a three year experiment was signed on 18 June 2012, with the fishing season starting on 01 June 2012 to 31 October 2012. The permit was issued under the following conditions;

1. No fishing in the Marine Protected Areas (MPAs);
2. Permit holder must notify Fishery Control Officer (FCO) when harvesting;
3. Harvesting must take place only on weekdays, between 07h00 and 16h00;
4. Only three collecting bags will be allowed per vessel;
5. Harvesting was allowed for catch quota with the different quotas totaling 31,5 tons per year;
6. A vessel monitoring system must be in place linked to DAFF's operations room;
7. Abalone may only be landed at designated launching sites and abalone must be whole, 114mm minimum in size;
8. Only divers with permits may dive;
9. Catch must be weighed and data supplied to the FCO at landing site; and
10. The transport permit has conditions - follow shortest route and no stopping between landing area and Fish Processing Establishment (FPE); marked trucks, proof of mass

(Department of Agriculture, Forestry and Fisheries [DAFF]. (2012). *Permit Conditions: Abalone Experimental Fishery in the Eastern Cape*. Small scale fisheries management (SSFm)).

Integrated Coastal Management Act (No.24 of 2008)

According to Van der Linde & Feris (2010), the Integrated Coastal Management Act establishes a system of integrated coastal and estuarine management in the Republic of South Africa, including norms, standards and policies. This system was established in order to;

1. Promote the conservation of the coastal environment;
2. Maintain the natural attributes of coastal landscapes and seascapes and
3. Ensure that the development and use of natural resources within the coastal zone are socially and economically justifiable and ecologically sustainable.

This system also defines rights and duties in relation to coastal areas and determines the responsibilities of organs of state in relation to coastal areas. It furthermore prohibits incineration at sea, controls dumping at sea, pollution in the coastal zone, and inappropriate development of the coastal environment. Finally the Act gives effect to South Africa's international obligations in relation to coastal matters.

Van der Linde & Feris (2010) further noted that the objects of this Act are to determine the coastal zone of the Republic; to provide, within the framework of the National Environmental Management Act, No. 107 of 1998, for the coordinated and integrated management of the coastal zone by all spheres of government in accordance with the principles of

cooperative governance; to preserve, protect, extend and enhance the status of coastal public property as being held in trust by the State on behalf of all South Africans, including future generations; to secure equitable access to the opportunities and benefits of coastal public property; and to give effect to the Republic's obligations in terms of international law regarding coastal management and the marine environment. Van der Linde & Feris added that when a conflict relating to coastal management between a section of this Act and any other legislation arise, this Act takes precedence.

The Chief Directorate of Environmental Affairs maintains and improves the functioning of the natural environment and safeguards the beneficial interaction between humans and the natural resources. The Chief Directorate discharges this role through the organized Directorates and Regional offices. These Directorates are the Integrated Environmental Management Directorate and Biodiversity and Coastal Management Directorate, which are also responsible for the management of most of the nature reserves in the Eastern Cape Province (Avis et al., 2004).

Management of Protected Areas

The Provincial Chief Directorate of Environmental Affairs which manages the eastern part of the Eastern Cape and the Eastern Cape Parks and Tourism Agency (ECPTA) which manages the central part of the Eastern Cape reserves, were also involved in the management of protected

areas. These entities managed both the commercial aspects of tourism and the wildlife contained in these reserves (Avis et al., 2004).

A lack of substantiated scientific information on the abalone stocks of the Eastern Cape has always been a constraint to effective management, and their conservation status was not known. Very little abalone habitat has been identified within any of the marine protected areas along the Eastern Cape coast, and there was a serious lack of adequate information on this resource [Hamburg, Eastern Cape (n.d.)].

The information on the abalone stocks in the Eastern Cape was lacking and this resulted in less effective management of abalone and their unknown conservation status.

Conclusion

The Marine Living Resource Act (No.18 of 1998) and the Integrated Coastal Management Act (No.24 of 2008) were applicable to the provinces and local municipalities in South Africa at the time of this research (2011 to 2012). The main objective of these two environmental Acts was to promote the conservation of the coastal environment, including the marine resources.

South Africa has all the fundamentals necessary for protecting its marine resources. South Africa has an equitable, well thought out set of policy

documents that constitute a firm foundation for the sustainable management of living marine resources. A number of provincial and local bodies are authorized to assist with monitoring, control and surveillance (MCS) duties in terms of the Marine Living Resources Act (No. 18 of 1998).

With respect to institutional and legal imperatives, there is a need to strengthen state capacity, build robust social institutions; develop vision and leadership; create an enabling legal environment; maintain a clear strategic focus, a flexible programme and reflective practice; facilitate government-civil society partnerships and authentic participation by poor people; and adopt longer programme and project timeframes for abalone harvesting.

The next discussion will focus on findings, presentation and analysis of the data collected.

CHAPTER IV

DATA PRESENTATION AND ANALYSIS

The data presented relate to the East London coastline area stretching from the Fish River to the Kei Mouth. The data were collected from the abalone poaching hotspots along the coast, namely Hamburg, Khiwane, Gxulu, Orange Grove near Leaches Bay, Nahoon Point, Gonubie, Glen Gulf (Glengariff), Haga Haga and Kei Mouth (Figure 6). The information was collected from the local coastal communities, officers from DAFF, SAPS and DEDEAT who were exposed to the poaching of abalone.

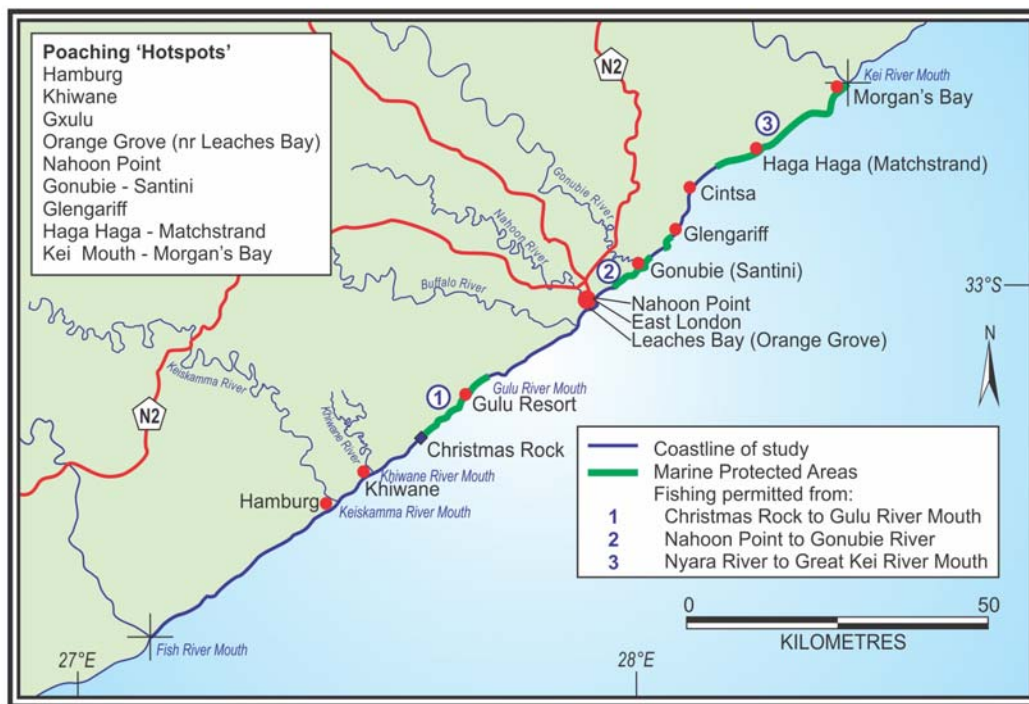


Figure 6. Hotspot areas for abalone poaching along the East London Coastline
(Source: Amathole District Municipality, 2012)

Abalone Poaching - Selected East London Coastline Residents' Perspectives

Interviews were conducted with twenty-five residents in different areas along East London coastline. Six of the respondents were from Orange Grove, two from Gulu, four from Khiwane, three from Hamburg, two from Nahoon, two from Glen Gulf (Glengariff), two from Gonubie, two from Haga Haga and two from Kei Mouth. The communities in most of the coastal areas that were regarded as hotspots for abalone poaching along the East London coastline were not originally from those areas. They were from the rural areas in the East Cape Province. They came to East London coastline for different reasons. Some moved with the companies for which they worked, some came to their families and some came to look for work. Females outnumbered males in the East London coastal areas, thus more females than males were interviewed. Of the fifteen females interviewed, about 20% of them had stable jobs while the remaining 80% depended on their male partners for support. Most of the interviewees in the coastal areas were between 18 years and 50 years of age, and comprised of economically active ages, yet they were jobless.

Amongst the Xhosa married females remain in their rural areas to look after their families while the males go off to work in urban areas. Due to poverty in the rural areas, females left their rural homesteads to join their husbands along the East London coastline. This resulted in an increase

in the number of unemployed females. Most females were self-employed, selling wood and beadwork along the East London coast.

The East London coastline was characterized by great poverty, low standards of education, limited access to facilities (health), high unemployment levels amongst the largely (black) population, and the lack of infrastructure. All these variables combined to make reliance on marine resources great. Of the twenty-five (black African) individuals interviewed, thirteen had secondary education and twelve had primary education. Most of the areas along the coast were farm lands which provided jobs for most of the coastal communities. In Kei Mouth, individuals working on farms earned nine hundred Rand a month. They worked extra (long) hours (in excess of the normal eight per day) and were not compensated for over-time work. They found it difficult to support their families (ECPTA Ranger, personal communication, June 14, 2011).

Forty-four percent of the interviewed individuals had lived in the area for a period of 16 to 25 years, while 56% had lived there less than 16 years. Some interviewees, aged between 25 and 50 years, worked in East London in industries or at hotels and holiday resorts.

All twenty-five interviewees agreed that there was poaching of abalone along the East London coastline and that the individuals involved did not

have special equipment for poaching. The people involved in abalone poaching were good swimmers and divers, and simply depended on these skills for poaching abalone. Responses to the frequency of abalone poaching along the East London coastline varied amongst the 25 interviewees. Five of the twenty-five interviewees responded that abalone poaching was a daily activity, twelve individuals said the activity was performed twice a week, six individuals said the activity was performed four times a month and two individuals had no idea of the frequency of abalone poaching.

Sixty percent of the interviewees believed that the abalone was poached for white residents in the area. They believed that it was mostly coloured and white persons, rather than black people, who engaged in this activity. The 25 interviewees presented their responses regarding who benefitted from the poached abalone. Four of the interviewed individuals believed that people poached abalone for themselves and their families; another four believed that abalone was poached for people outside East London. Two of the interviewees had no idea for whom the abalone was poached. Fifteen interviewees agreed that there were people from outside the East London area who came to the coast and requested local residents to poach abalone for them. This information was in keeping with news of arrests in the area of people from Port Elizabeth and Cape Town for being in possession of abalone. According to SAPS Journal published on 11 March (2010), on 25 February 2010 three Port

Elizabeth men were arrested for abalone poaching in Leaches Bay in East London. On 03 March 2010, Mooiplaas Police conducted crime prevention operations in Bola Location along the East London coastline and three suspects from Port Elizabeth were arrested for being in possession of abalone (Daily Dispatch, 03 March, 2010). Three interviewees believed that no outsiders came into the areas to request the local residents to poach abalone for them. Seven interviewees had no idea where the poachers of abalone were from.

The discussion above revealed that abalone poaching was a growing activity along the East London coastline. Also, people from outside East London used the local residents to poach for them.

The data collected showed that 80% of the interviewees along the East London coastline agreed that harvesters were paid cash for abalone poaching while 20% of the interviewees did not know how the poachers were compensated. According to a report published in the local newspaper, Daily Dispatch (dated 15 May 2012), the fresh abalone could cost the end user about R1 228,00 to R1 639,00 per kg. The data collected showed that most of the abalone was poached during the summer season at full moon and at low tide. During low tides the rocks are exposed and the abalone visible, thus making harvesting easy.

Twenty-eight percent of the residents interviewed said that an individual poacher harvested quantities of abalone worth more than R500.00 in the course of a month. Twenty-four percent said it was worth R200.00 per month, while forty-eight percent had no idea of the value of abalone poached per person per month. The poached abalone was kept in refrigerators in the village for a period of two to three days. If there were no refrigerators available, the abalone was kept for a day in the village. About 20% of the interviewees said the abalone was kept two to three days in the village, another 20% said it was kept for less than a day in the village and 16% of the interviewees said it was kept for one day in the village before it was transported from the coastal locations of East London. Forty-four percent of the interviewees had no idea how long the poached abalone was kept in the village before it was transported out of the East London area.

The above discussion is in support of the fact that abalone harvesters were compensated for harvesting and most of them were paid cash. The summer season at full moon and low tide was regarded as the most favourable abalone poaching season. The poached abalone was kept in refrigerators in the villages before it was transported out of East London.

The amount paid for poached abalone depends on the size of the abalone and the number collected. The larger abalone cost more than the smaller abalone. Forty-eight percent of the interviewees agreed that

R2000.00 is paid per 10kg bag; 32% had no idea of how much the harvested abalone cost and 20% said it was between R500.00 to R1000.00 for a 5kg bag depending on the number and size of abalone. Ninety-six percent of the interviewees along the East London coastline believed that the principal purchasers of abalone were persons from the Eastern Cape, while one of the 25 interviewees said the main purchasers were from outside the Eastern Cape.

Marine police officers patrolled the East London local coastal areas for the poaching of abalone. Ninety-six percent of the interviewees agreed that marine police officers were visible in the local areas. Fifty-six percent of the respondents agreed that marine police officers were visible on a daily basis while 32% reported that they were only seen twice a week and 12% said that they were visible every week-end. Ninety-six percent of the interviewees said the abalone poachers had no permits and had never spoken about them. Four percent of the interviewed people said abalone poachers had permits. Marine police officers patrolled the local areas for poaching of abalone because abalone poachers had no permits to harvest.

All twenty-five of the respondents had no idea of the quantities of abalone that were permitted to be harvested per day and they did not know where the licences were to be purchased. All the interviewees were unaware whether the harvesters abided by the rules and

regulations regarding the quantity of abalone that were harvested. Women mainly engaged in abalone poaching. Seventy-six percent of the interviewees said women were the most arrested for abalone poaching, although marine police officers confirmed that it was not easy to search women. In many cases, however, women arrested for abalone poaching were found to work for men. Twenty-four percent of the interviewees said men were the ones that were engaged in abalone poaching and most of the arrested poachers were males.

The abalone harvesters did not know that they must have permits to harvest abalone and did not know where a permit was purchased. Women were mainly engaged in abalone poaching. Divers collected the abalone illegally along the coast, assisted by lookouts and informants who warned the poachers if marine law enforcement officers were nearby.

Responses on Abalone Poaching and the Law Enforcement Officers

On 22 April 2010 an interview was conducted with five Law Enforcement Police Officers at the East London harbour. In the interview the researcher established that there were about thirty marine police officers in the law enforcement section at the East London harbour police office. The thirty marine police officers were responsible for enforcing the law along the Eastern Cape coast from Hamburg to Port St Johns. They conducted their patrols every second week, during spring tide and at

night. The interview on 22 April 2010 revealed that an average of two prosecution cases were opened on a monthly basis in regards to abalone poaching. Also, marine police officers had secured convictions for abalone poaching. Fines of R400.00 to R500.00 for trespassing into the East London harbour were issued in terms of the Criminal Procedure Act.

The Department of Agriculture, Forestry and Fisheries determined the fines for abalone poachers. When abalone poachers were caught in possession of many abalone or undersized abalone without a permit, no fines were issued but the abalone poachers were detained. The court of law took a ruling for unpaid fines. Marine Police Officers also agreed that the arrests made of people in possession of abalone along the East London coastline included people from outside East London. Some of the arrested people came from Port Elizabeth and Cape Town.

The South African Police Services focused mostly on arresting the abalone poachers, although one of the five law enforcement officers who was interviewed said the focus was on preventative measures. The five respondents from the SAPS believed that the levels of abalone poaching along the East London coastline had decreased due to the depletion of abalone stocks.

One of the five marine police officers interviewed stated that during the Years 2009 and 2010 about five hundred thousand abalone had been harvested along the East London coastline. Two of these respondents said syndicate bosses usually recruited local people who dived for the abalone and dried it up before being transported to Johannesburg during the evenings using vehicles and, on odd occasions, trains or buses. Three of the five marine police officers were not aware of how the abalone was transported out of the Eastern Cape.

The strategies that the marine police officers engaged in to help curb illegal harvesting of abalone included operations at certain hotspots. It was the responsibility of the Department of Agriculture, Forestry and Fisheries to monitor and guard against the poaching of abalone. It was only when there were transgressions that marine police officers in conjunction with the Eastern Cape Parks and Tourism Agency; Provincial Department of Economic Development, Environmental Affairs and Tourism; and National Department of Environmental Affairs conducted operations against abalone poaching. The marine police officers said they gathered information from informers and the public residing along the coast.

The Compliance and Enforcement Officer from the provincial Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) in the Eastern Cape with responsibility for the Amathole Region, confirmed that the DEDEAT Compliance and

Enforcement Unit (also known as “Green Scorpions”) had no mandate for the management of any of the marine resources. Nevertheless, the Compliance and Enforcement Officers of the Provincial DEDEAT worked very closely with the officials from the Department of Agriculture, Forestry and Fisheries, as necessary. Also, individuals reported cases of abalone poaching to DEDEAT. Thus, the Officer indicated that Megan Loxton of the Society for the Prevention of Cruelty to Animals (SPCA) reported a case of dead abalone, illegally dumped at the Berlin disposal site, to the DEDEAT office in East London on 4 March 2010.

Department of Agriculture, Forestry and Fisheries’
responses to Abalone Poaching

Interviews conducted with six officials from the Department of Agriculture, Forestry and Fisheries: Compliance and Enforcement Section, revealed that there were twenty enforcement officers in this Section. The Compliance and Enforcement Officers patrolled the coastal area from the Fish River to the Kei Mouth on a daily basis, in the morning and at night, and during and after spring tide. Four of these officers agreed that one prosecution case was opened on average per month in regards to abalone poaching, while two of the officers said it rarely happened.

Three officers stated that there had been less than eight convictions and that two to five fines were issued, and that people from outside the East

London area had been arrested for illegal possession of abalone. Three respondents said that the Department focused on preventative measures against abalone poaching. Five of the six respondents reported that the levels of abalone poaching had decreased over the last three years (2008-2010) due to the help of the South African Police Services and local informants, while one contended that it had increased.

The approximate value of abalone harvested illegally within the Eastern Cape in 2010 was estimated to be R200 000.00 (Chief Marine Conservation Inspector, personal communication, April 11, 2010). The officers contended that vehicles were used to transport abalone out of the Eastern Cape to Port Elizabeth and Cape Town, and then to China. Two officers said operations, road blocks and the execution of search warrants were strategies used to curb the illegal harvesting of abalone. The other two officers contended that the recruitment of observers and close cooperation with other law enforcement agencies, the South African Police Services, the Compliance and Enforcement Officers from the Department of Agriculture, Forestry and Fisheries and the Provincial Department of Economic Development, Environmental Affairs and Tourism, helped to curb abalone poaching. The last two of the officers highlighted that the coastal patrols were not successful as they were conducted during office hours and there were too few officers to patrol the East London coastline.

Abalone Poaching responses of Officers from the Regional

Department of Agriculture, Forestry and Fisheries

A total of six enforcement officers, five males and one female in the Regional Department of Agriculture, Forestry and Fisheries stationed in East London were interviewed on the role of the Department on abalone poaching. One of the six was the Chief Marine Conservation Inspector, two were Senior Marine Inspectors and three were Fishery Control Officers.

From 2007 to 2011, 43 cases of abalone poaching were reported along the East London coastline. The 43 cases comprised of 50 offenders, five in 2007, three in 2008, ten in 2009, thirteen in 2010 and nineteen in 2011. In the total of 50 offenders, 33 were males and 17 were females. From 2007 to 2009 the offenders were blacks and from 2010 to 2011 coloured and white persons joined the crew. The offenders were of different age groups, ranging between aged 31 years and 45 years in 2007, between 29 and 40 in 2008, between 23 and 40 in 2009, between 23 and 50 in 2010 and between 25 and 52 in 2011 (Table 2).

The following statistical report of cases of abalone poachers was obtained from the Regional Department of Agriculture, Forestry and Fisheries in East London in respect of the abalone poaching along the East London coastline from 2007 to 2011 (Table 2).

Table 2. East London Coastline Abalone cases from 2007 to 2011

Year	Series Number	Number of offenders	Male	Female	Number of confiscated items	Race	Age
2007	1	1	X		40	B	33
	2	1		X	1	B	44
	3	2		X	62	B B	29 32
	4	1	X		15	B	32
Total		5	2	3	118		
2008	Series Number	Number of offenders	Male	Female	Number of confiscated items	Race	Age
	1	1		X	1	B	30
	2	2		X	639	B B	35 39
	3	Abandoned	N/A	N/A	58	N/A	N/A
	4	Abandoned	N/A	N/A	29	N/A	N/A
Total		3	0	3	727		
2009	Series Number	Number of offenders	Male	Female	Number of confiscated items	Race	Age
	1	1	X		119	B	39
	2	1	X		16	B	22
	3	1		X	105	B	29
	4	1	X		13	B	24
	5	1	X		54	B	29
	6	1	X		94	B	42
	7	1	X		70	B	36
	8	1	X		93	B	32
	9	1		X	354	B	29
	10	1		X	60	B	30
	11	Abandoned	N/A	N/A	503	N/A	N/A
Total		10	7	3	1481		

2010	Series Number	Number of offenders	Male	Female	Number of confiscated items	Race	Age
	1	1	X		43	C	39
	2	1	X		27	B	24
	3	1	X		74	B	29
	4	1		X	8	B	35
	5	2		X	144	B	25 33
	6	1	X		150	B	41
	7	2	X		755	B B	41 49
	8	2	X		6	C W	39 46
	9	1	X		45	B	28
	10	1	X		9	B	24
Total		13	10	3	1261		
2011	Series Number	Number of offenders	Male	Female	Number of confiscated items	Race	Age
	1	1	X		301	B	52
	2	1	X		25	B	33
	3	Abandoned	N/A	N/A	79	N/A	N/A
	4	1	X		92	B	34
	5	1		X	57	B	30
	6	1		X	60	B	31
	7	1	X		118	B	39
	8	1	X		147	B	42
	9	1	X		413	B	31
	10	3		X	33	W	37 32 41
	11	1	X		9	B	26
	12	2	X		36	B	37 30
	13	2	X		104	B	39 37
	14	3	X		178	W	36 44 48
Total		19	14	5	1652		

(Source: Eastern Cape Department of Agriculture, Forestry and Fisheries, East London, 2012).

There was an increase in the number of confiscated items from 118 items in 2007 to 1 652 items in 2011 (Table 2). In most cases the number of confiscated items increase with the increase in the number of offenders but it is not always the case. From the total of 5 239 confiscated items from 2007 to 2011, 669 was abandoned, that is, the items were found lying on sand or in bushes and were not attached to anyone (Table 2).

The National Department of Agriculture, Forestry and Fisheries
and Abalone Poaching in the Eastern Cape Province

The interview conducted with an administrative staff member of the National Department of Agriculture, Forestry and Fisheries revealed that permits for commercial abalone harvesting along the South African coast were issued in Cape Town. He added that he was not aware of any permits issued for abalone harvesting in the East London area. Abalone permits were issued for a period of nine months per annum for the harvesting season from 01 November to 31 July. The permits for the harvesting season were issued for a quota of a minimum of five to ten tons per annum. The harvesters of abalone to whom licences were issued needed to be solely dependent on abalone. The Department issued licences for a quota of one hundred and fifty tons of harvested abalone for a period of five years to right-holders. This official advised that the permits for harvesting abalone were awarded in terms of the regulations of the Marine Living Resources Act (No.18 of 1998). The Minister of Agriculture, Forestry and Fisheries approved the permits

issued for abalone harvesting. The Department has a system called the Marine Administration System (MAS) which captures information on all permits that were issued.

There are many women along the East London coastline who could not find stable employment. Most of them were casually employed and earn R30.00 per day or less (2007). Women employed on a monthly basis earned R900.00 in 2007 with an increase of 20% over a period of two years (Ranger, personal communication, January 5, 2013). The amount they earned was not enough to support their families. Any offer of paid work was welcomed. There was a need for additional income and they engaged in illegal harvesting of abalone. The summer was the season when most poaching of abalone took place.

The poachers collecting abalone did not keep to the maximum daily allowance for a bag. All available abalone, including those undersized, were collected. Poachers harvested as much as they were able to. The fact that abalone was not kept in the villages for more than three days after being poached suggested that the local communities were aware that it was illegal to be in possession of these resources. There was no standard price paid for harvested abalone and this implied they did not know the value of the resource. The principal purchasers of abalone were mostly from the Eastern Cape. The people from the Eastern Cape together with the poachers from the Western Cape were largely

responsible for the increases in abalone poaching along the East London coastline. Poachers from the Western Cape relocated to the Eastern Cape because of the excessive policing along the Western Cape coastline. Most of the harvesters had no permits and harvested the abalone illegally.

The enforcement capacity in both the SAPS and DAFF was insufficient to implement the Marine Living Resource Act (No. 18 of 1998) in the Eastern Cape. The patrolled area was too large for the number of staff assigned, and this made it impossible for them to perform effectively their duties along the East London coastline. This had negative implications for the management of the East London coastline. The findings revealed a low number of prosecution cases, on average two per month. This suggested that most of the illegal abalone harvesters were fined. The poachers in this case were fined and not arrested. A large number of abalone had been successfully moved out of the East London area. Fines of R400.00 to R500.00 compared to R1000.00 poachers earned per 5kg bag of poached abalone in the Eastern Cape did not serve as an adequate deterrent to abalone poachers. Some of the abalone poachers who were arrested along East London coastline were from outside the East London area which meant that these poachers found that there was no excessive policing along the coastline.

Joint operations to eradicate poaching along the

East London Coastline

The Provincial Department of Economic Development, Environmental Affairs and Tourism's (DEDEAT's) Compliance and Enforcement Unit known as "Green Scorpions" engaged in relentless efforts to eradicate poaching operations along the East London coast, and so made a major contribution towards exposing environmental crimes such as the illegal harvesting of natural resources in the Eastern Cape. For example, the Compliance and Enforcement Unit of the Provincial Department of Economic Development, Environmental Affairs and Tourism within Mkambathi at the Dwesa-Cwebe Nature Reserve engaged in joint operations with the South African Police Service (SAPS) and Eastern Cape Parks and Tourism Agency (ECPTA) Reaction Unit to eradicate poaching operations. The DEDEAT, DAFF, SAPS and ECPTA were committed to the collective efforts in joint operations. These operations resulted in a number of arrests of illegal abalone poachers. The involvement of the public in reporting offences also increased. After the joint operations there was a decline in illegal abalone harvesting in the areas. The joint operations involved engagement with community members who could at times be hostile at the actions of DEDEAT and SAPS.

These engagements were opportunities to educate the communities about the need to ensure compliance with the rules and regulations of

abalone harvesting by obtaining necessary permits in order to ensure sustainable utilization of resources. In most cases the communities became watchdogs and provided information on the illegal abalone operations occurring in their locations.

The local newspaper, Daily Dispatch of 12 July 2012, reported that the Trade and Industry Minister declared in the Government Gazette the introduction of compulsory specification for live aquacultured abalone. Also the National Regulator for Compulsory Specifications (NRCS) had to formally regulate live aquacultured abalone as a food product and this began in September 2012. The NRCS believed that the new regulation allowed the industry to come back to life as the government banned it in February 2008. The National Regulator for Compulsory Specifications would be responsible for monitoring and testing the product and also for issuing health guarantees for export purposes.

Conclusion

The population along the East London coastline came mainly from rural areas of the Eastern Cape to look for work and some came with the companies for which they worked. These movements contributed to the high unemployment rate in the East London areas as the industries were unable to employ all of the people along the coastline. For many poaching became a viable but illegal economic activity for which they received cash payments.

The South African Police Services (SAPS) played a major role in the success of the joint operations along the East London coastline by spotting abalone poachers. However, the competent authority for abalone harvesting was the Department of Agriculture, Forestry and Fisheries. The SAPS immediately apprehended the suspects and opened cases for further Investigations. This was also reinforced by the presence of Eastern Cape Parks and Tourism Agency who are the custodians of natural resources in Eastern Cape Province and the provincial DEDEAT. The competent authority for abalone harvesting along the East London coastline was DAFF. National DAFF issued permits to harvest abalone. Forty three cases of abalone poaching had been reported from 2007 to 2011 and a total of 5 239 abalone were confiscated.

CHAPTER V

DISCUSSION OF FINDINGS

Poverty, high level of illiteracy, lack of infrastructure maintenance and overcrowding are the characteristics of informal settlements along the East London coastline. Poverty and high level of illiteracy contributed to the rise in abalone poaching amongst black people along the East London coastline, many of them were found selling wood, beadwork, fruit and vegetables on the streets and on the roads. Those employed were found to work on farms and at holiday resorts along the East London coastline.

The interviews with coastal community members of the areas along the East London coast revealed long working hours for the workers over weekends and the holidays. Jobless black individuals in areas along the coast were found to engage in illegal abalone harvesting.

The Chief Director of Marine Resources Management at the Department of Agriculture, Forestry and Fisheries believed that locals were aware that abalone was an endangered species, but because money was easily made from poaching, many of the locals left their day jobs to pursue poaching. This became evident after four women were arrested for abalone poaching near East London harbour (Boya, S., May 15,

2012). The Chief Director felt that there was need for an integrated approach where awareness was created and there was training on environmental management. Also, the Chief Director added that there was a need for the people to be sensitized to the market value of abalone as against the monetary value they receive as poachers, so that they can be encouraged to follow the correct procedures of harvesting and selling abalone.

The statistical report of illegal abalone harvesting cases reported along the East London coastline obtained from regional DAFF office showed a drastic increase from 2007 to 2009. In 2007, four cases were reported and the number of confiscated abalone was 118, in 2008, four cases were reported and the number confiscated abalone was 727, and in 2009 eleven cases were reported and the number of confiscated abalone increased to 1 481. In 2007 abalone were confiscated from three black females, aged between 28 years and 45 years and two black men between 31 years and 34 years. In 2008, abalone was confiscated from three black females, aged between 29 years and 40 years. From the total of 727 abalone confiscated in 2008, 87 were abandoned. They were found lying in the bushes during a search along the coast and no one was arrested. In 2008, 640 abalone were confiscated from three black females aged between 29 years and 40 years. In 2009, abalone was confiscated from seven black males and three black females. Of the total 1 481 confiscated abalone in 2009, 503 were found in the

bushes along the coast, three black females aged between 28 years and 31 years were found with 519 abalone, and seven black males aged between 21 years and 43 years were found with 459 abalone. The offenders with small numbers of confiscated abalone were often arrested and they presented information which led to the arrest of offenders with large numbers of abalone. The operations and tight control measures in the Western Cape in 2007 had caused abalone poachers to relocate from the Western Cape to the Eastern Cape (Papp, 2007). The relocation of abalone poachers from the Western Cape caused abalone poaching along the East London coastline from 2007 to 2009 to reach its peak. This alarming increase of abalone poaching in East London from 2007 to 2009 raised concern amongst the departments responsible for environmental management in the East London area, including the regional DEDEAT, ECPTA, regional DAFF, the National DEAT and SAPS. It was during this time that East London's SAPS, the regional DEDEAT and the regional DAFF started to revisit control measures against abalone harvesting. The regional DEDEAT and the Environmental Empowerment Services unit started awareness campaigns to empower the East London coastal communities. The unit also engaged the coastal communities in projects to fight poverty (DEDEAT Environmental Officer, personal communication, October 23, 2012).

The initiation of the different stakeholders working together in the East London area against illegal abalone poaching was a success as the confiscated abalone dropped from 1 481 in 2009 to 1 261 in 2010. Although there was a decrease in 2010 in terms of confiscated abalone and the number of reported cases, in terms of race, some coloured and white persons were amongst the poachers. This indicated a new trend towards the involvement of other race groups in illegal abalone harvesting. There was no increase in female offenders from 2009 to 2010, the increase was noted in 2011 with the involvement of three white females in illegal abalone harvesting. Thirteen offenders in 2010 consisted of seven black males, aged between 23 years and 50 years, two coloured males, aged 39 years, one white male aged 46 years and three black females, aged between 24 years and 36 years (Table 2). Of the total of 1 261 confiscated abalone, 1 060 were from the black males, 152 from the black females, 43 from a coloured male and six involving a joint operation by one coloured male and one white male.

The number of confiscated abalone, the number of cases reported as well as the number offenders had increased from 2010 to 2011. There were nineteen offenders in 2011, including six white persons (three females and three males), and thirteen black persons, comprising eleven males and two females. Abalone poaching had increased from 1 261 in 2010 to 1 652 in 2011. The high unemployment rate amongst black people in the Eastern Cape, and in the East London coastal areas, had

caused abalone poaching to increase as the statistics obtained from regional Department of Agriculture Forestry and Fisheries indicated. The total number of offenders from 2007 to 2011 in the East London area consisted of fourteen black females, twenty seven black males, four white females, three white males and two coloured males. The large number of black people engaged in abalone poaching was attributed to the high unemployment rate amongst black people in the East London area.

In terms of age, most of the offenders, that is, forty six of the total of fifty reported cases were below 45 years of age, three offenders were above 45 years but below 50 years and one above 50 years of age. The ages from 19 years to 44 years of most of the offenders confirmed that they were still active individuals in the communities (Figure 8).

The success in regards to the total number of poachers arrested achieved in 2010 had caused the different stakeholders engaged in marine environment management in the Amathole region to drop their guard in terms number of officers monitoring and time of monitoring. The coastal areas were not monitored effectively in 2011. Nine men were arrested after being caught allegedly poaching abalone at Kei Mouth on 20 March 2011 following a tip-off the police received, and 142 abalone were confiscated. Stakeholders' lack of knowledge around the management, importance and protection of abalone has led some of the

community members to continue poaching abalone. An increase of 391 of confiscated items had been noted during 2011, that is, from 1 261 in 2010 to 1 652 in 2011 (Figure 7). The changes in the control measures of the different stakeholders, for example, fewer patrolling hours and a reduction in number of law enforcement officers employed in South African Police Services, Department of Agriculture, Forestry and Fisheries and Department of Economic Development, Environmental Affairs and Tourism to patrol the East London coastline contributed to the increase (B. Mvulo, personal communication, April 12, 2011).

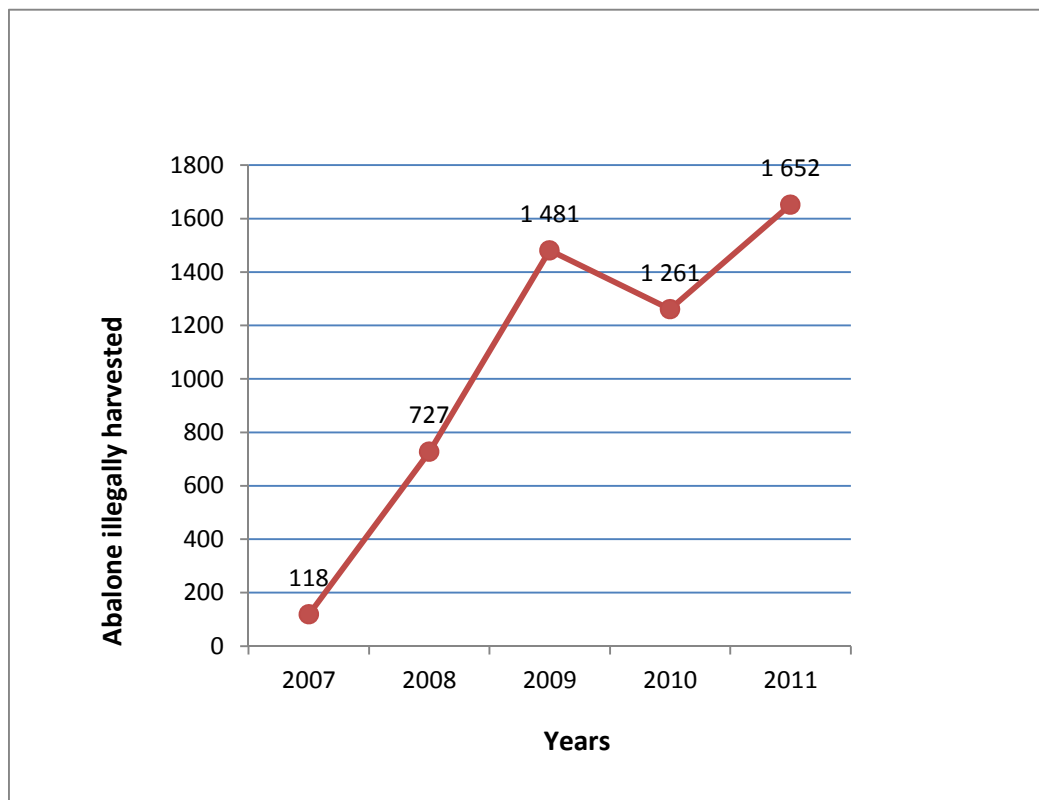


Figure 7. Illegal abalone poaching trends in East London area (2007 to 2011)

(Source: Department of Agriculture, Forestry and Fisheries, East London, 2012)

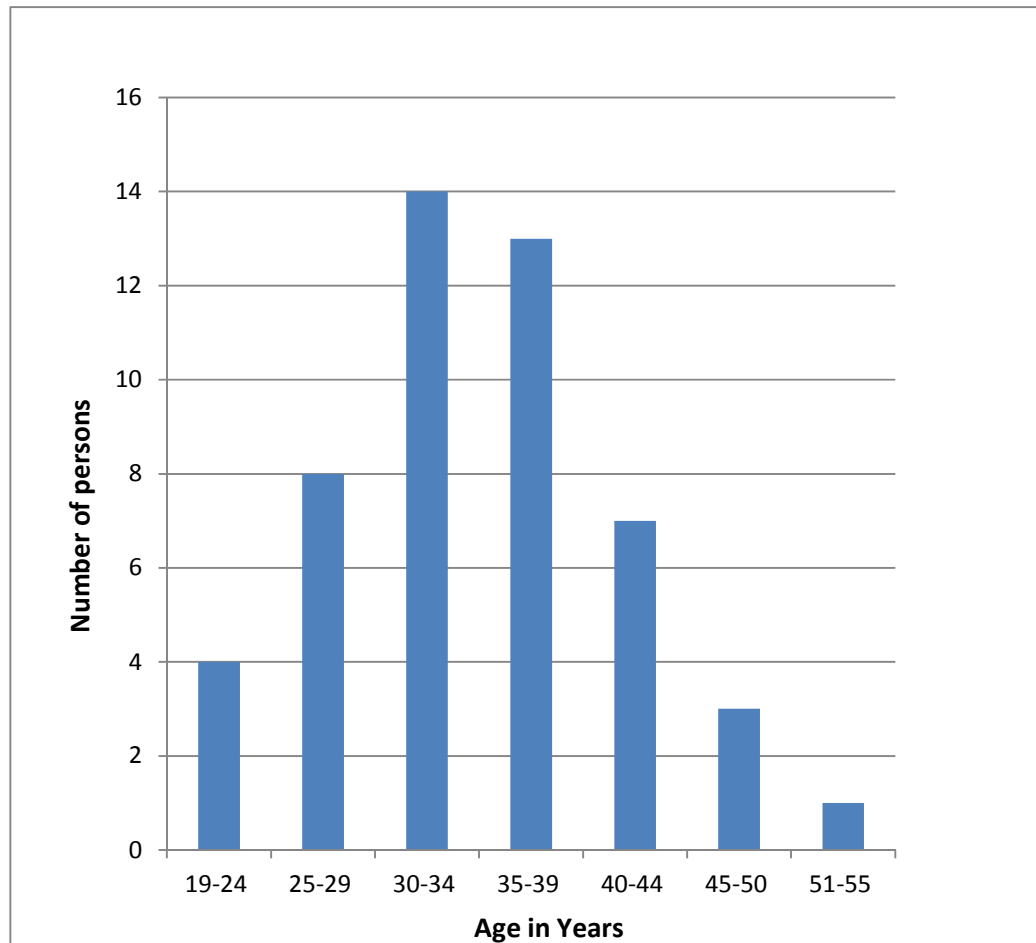


Figure 8. Number of persons involved in abalone poaching by age group (East London area)
(Source: Department of Agriculture, Forestry and Fisheries, East London, 2012)

The total number of abalone poachers in East London from 2007 to 2011, as indicated in the statistics obtained from regional DAFF, was fifty individuals. A total of fifty abalone poachers in the reported cases consisted of forty five black people, two coloured males and three white people. Black people had a large percentage of offenders as compared

to coloured and white persons in East London. Offenders from age 30 years to age 34 years were the most common age involved in abalone poaching along East London coastline.

The research revealed that most of the individuals residing along the East London coastline knew about abalone, and of arrests made, but they did not know about the permits that regulated harvesting of abalone. They did not know where to go to apply for permits to harvest abalone. This is one of the crucial findings this study has highlighted. The other important finding that had been identified was the lack of education amongst the coastal communities on the significance of abalone in the marine environment. The Department of Agriculture, Forestry and Fisheries needs to play a leading role in educating the local coastal communities about the marine resources along the coast. For as long as the Department of Agriculture, Forestry and Fisheries does not conduct workshops, engage in talk shows on radio and television and distribute pamphlets, and have the information in local newspapers, abalone poaching is likely to continue along the East London coastline. Awareness, education and training initiatives will need to be undertaken on an on-going basis, and be tailored to meet the specific needs of the East London coastal communities. In addition the programmes must be monitored.

The number of officers from the South African Police Services (SAPS) and the regional Department of Agriculture, Forestry and Fisheries (DAFF) responsible for coastal management was too small, and the officers patrolled the coast mostly during office hours. Given that patrolling of the coastal areas did not occur regularly outside office hours provided the opportunity to poachers to harvest abalone in the East London coastal areas. The Fishery Control Officer of DAFF said day-to-day coastal operations were taking place during office hours along the East London coastline. Some twenty officials were responsible for patrolling the coast. Of these twenty, nine officials were responsible for enforcement on the ground, six officials were responsible for the enforcement over water surfaces and five did special investigations. The Fishery Control Officer also highlighted the hotspot areas identified for abalone poaching along the coast namely, Hamburg, Khiwane, Gulu, Orange Grove, Nahoon Point, Gonubie, Glen Gulf (Glengariff), Matchstrand (Haga Haga) and Kei Mouth. Although these areas were closer to the East London coastline, the coastline itself covered an extensive area and it was extremely difficult for the law enforcement officers to adequately cover the entire coastline against abalone poaching.

In April 2010, the researcher established that the South African Police Service had thirty marine police officers that patrolled the coast from Hamburg to Port St Johns. During the interviews with the law

enforcement officers it was learnt that the number of marine police officers was not enough to manage the coast effectively. The marine police officers confirmed that some areas were not patrolled and that they worked both during the day and night. They were stationed in East London which was too far from some abalone hotspots. There was only one station for the East London coastline that extended from Hamburg to Port St Johns. The Warrant Officer of the SAPS stationed in the East London harbour highlighted that before 2004 they were called the Border Police and patrolled the whole coastline. Towards the end of 2004 they were changed from Border Police to Protection and Security and they were restricted to the harbour. This change curtailed their activities in respect of the surveillance against abalone poaching.

The National Department of Agriculture, Forestry and Fisheries (and not the regional office in East London) issued permits for harvesting abalone. The National Department was based in Cape Town. Consequently applications for permits to harvest abalone had to be submitted to Cape Town. First time applicants for harvesting abalone were not considered in Cape Town. In general, the permit process did not cater for people along the East London coastline and they simply became illegal abalone harvesters. The result was that a large number of abalone harvesters along the East London coastline harvested abalone without permits. In effect, they were illegal harvesters of abalone.

The study revealed that there were nine hotspot areas for abalone poaching along the East London coastline. The residents in most hotspot areas were black. In Hamburg, abalone poaching was concentrated in the Mthana River. The Mthana River was surrounded by white owned farms. The farm workers around the Mthana River were not the ones only involved in abalone poaching as the local Hamburg residents also poached in the river.

In all the hotspot areas of abalone poaching, people were cooperative and helped the researcher to understand their communities. At first they were reluctant to cooperate thinking that the researcher was working for the police but after the researcher had shown them that she was a student doing research, they participated fully. The research revealed that abalone poaching took place along the East London coastline. The coastal communities knew about abalone and that being in possession of it could lead to arrest. They knew that abalone harvesters were in theft of the resource, and that individuals collected the abalone during the night when the likelihood of arrest was minimal. They did not understand though why people found in possession of abalone were arrested.

The black population was in the majority along the East London coast. Black people along the coast were poor and lived mainly in informal settlements. There were no schools for children near the informal

settlements. There were no health facilities for the sick. To access social services they had to travel to East London or to the nearby small towns with facilities. In these conditions, a natural resource, such as abalone that was freely available to those willing to harvest it was a welcome means for survival. However, these residents need to be better educated to change and to gain their support in anti-poaching efforts. The local poachers did not realize that poaching contributed to the depletion of the abalone resource. An integrated approach where awareness is created via training was needed. Local poachers needed to be sensitized to the illegal abalone market and that for as long as the market existed, there will be poaching. In this regard, we note that the Minister of DEDEAT made an appeal to the public to be vigilant and work closely with the Provincial Department of Economic Development, Environmental Affairs and Tourism in the fighting to protect the natural marine resources (DEDEAT Media Release, 17 January, 2012).

CHAPTER VI

CONCLUSION AND RECOMMENDATIONS

The East London coastal area has attracted migrant workers from rural areas around the Eastern Cape and this migration contributed to the high population in the coastal area. Employment opportunities in the region were low, which encouraged more people to poach abalone. Different departments, including provincial DEDEAT, regional DAFF, national DEAT and the ECPTA worked to prevent abalone poaching in the area. In joint operations from 2007 to 2011, many abalone poachers were arrested and abalone confiscated. Environmental Acts, MLRA (No.18 of 1998) and ICMA (No. 24 of 2008) were in place to promote the conservation of the coastal environment. Infrastructure provision along the East London coastline where black people reside was poor. Marine resources were harvested and used for cultural, social, food and economic purposes.

This research has shown that the population along the East London coastline was aware of the marine environment and abalone, but did not realize that if they carried on poaching the abalone, this resource would soon be unavailable to them. They dive into the water and picked the abalone for the people from outside the East London area. The divers

were paid cash for poaching abalone. Clearly then, to counter the threat to abalone due to increased poaching, environmental awareness campaigns and training need to be conducted. It is the responsibility of the Provincial Department of Agriculture, Forestry and Fisheries to identify strategies that will make the coastal communities manage and protect their marine resources. In the final analysis, it is the responsibility of the communities to manage their marine resources and not to exceed sustainable levels of harvesting. The implementation should include the participation of various stakeholders to drive the process of protecting and managing the marine resources in the East London area and the rest of the Eastern Cape Province. Stakeholder workshops and training initiatives for environmental management should be on-going.

It is further recommended that the capacity of the Compliance and Enforcement Officers of the Regional DAFF patrolling the sea and land be increased. The number of patrolling vessels should also be increased. More equipment, diving gear and skilled personnel are also needed to combat the poaching of abalone along the East London coast. The Department should consider extending the patrolling hours especially at night when most poaching takes place. The National Department of Agriculture, Forestry and Fisheries should also consider giving new applicants permits to harvest abalone and not only consider those who have harvested previously. All South African citizens must be

given equal opportunities to harvest abalone resources.

This research along the East London coastline enabled the researcher to relate to different groups of people, young and old, educated and less educated, working and not working. The researcher was able to get a sense of what they feel to be less educated and not working, not having a proper place to stay and not knowing what they were going to eat at the end of the day. Poverty for people living along the East London coastline contributed to the poaching of abalone so as to secure food for their families. Given their low standard of education, the only work they obtained was in the surrounding farms and holiday resorts in the area where they received low incomes.

The findings further suggest that the Eastern Cape Department of Education should work in partnership with the Department of Agriculture, Forestry and Fisheries, South African Police Services and the Eastern Cape Parks and Tourism Agency to manage marine environment. This partnership should help manage abalone poaching along the East London coastline. Schools, primary and secondary, must be accessible to all who reside along the coast and the inclusion of Environmental Studies as a compulsory subject in the curriculum is also recommended. This will contribute to success in regards environmental management along the East London coastline as the school children will pass the knowledge gathered from school to the people in the coastal communities.

It is recommended that the regional Department of Agriculture, Forestry and Fisheries (DAFF), regional Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) and in particular the Environmental Affairs with Environmental Empowerment Services Directorate (EES) work with local schools. The EES needs to focus on educating different stakeholders in the communities, including school children on environmental crimes and engage the communities in projects to fight poverty. The engagement of departmental officers will enhance people's understanding of their environment. The visibility of the officials from the Department of DAFF, DEDEAT and SAPS in conducting workshops on environmental management among the coastal communities and schools will help to reduce the number of illegal activities that impact on the marine environment.

The marine police officers of the Department of Safety and Security patrolled at night and worked in shifts. They were not trained to identify marine resources including abalone; hence following arrest the confiscated marine resources were taken to the marine biologist at the East London aquarium for identification. It is recommended that the marine police officers be trained to identify marine resources along the East London coast. It is also recommended that adequate night sights be available for the officers to detect and arrest abalone poachers along the coast.

It is further recommended to employ female marine police officers and female enforcement officers in addition to male officers since many persons who engaged in abalone poaching along the East London coast were women. The marine police officers of the South African Police Services and the enforcement officers of the Department of Agriculture, Forestry and Fisheries were all male. Male officers found it difficult to search female abalone poachers at the scene at night. Trained female police officers and enforcement officers during patrols will be able to more easily and readily search and arrest the female abalone poachers.

Marine police officers stationed at East London patrol the East London coastline from Hamburg to Port St Johns. The East London station is too far from the rest of the eastern part of the Eastern Cape. It is therefore recommended that another station be established in the eastern part of the Eastern Cape. One station would be responsible for the Amathole District Municipality and the other station for the O. R. Tambo District Municipality. During periods of high abalone poaching, especially during summer when a large number of people visit the East London coastal areas, the two police stations can work together to combat poaching of marine resources. The visibility of these stations and officers along the coast will contribute to the decline in illegal harvesting of abalone. Although some progress in combating abalone poaching along the East London coastline has been made in the recent

past, the 'counter-poaching' measures suggested in the above discussion will only be effective in stopping the poaching of abalone if the Departments involved adopt an integrated, holistic and adaptive management strategy.

Abalone farm owners in the East London area must comply with the legal conditions that govern abalone farming. Management and control measures were in place to reduce and prevent contravention of the laws but they were not properly implemented. The National Department of Environmental Affairs and Tourism (DEAT) must take responsibility and improve the situation. The Regional Department of Agriculture, Forestry and Fisheries' offices are closer to the farms and to the coast and were in position to take decisions immediately when cases on the illegal harvesting of abalone were reported. The Regional offices should be mandated to act when necessary and not wait for the arrival of officials from the National Office in Cape Town to pursue action against persons in contravention of the laws governing marine resources.

APPENDIX

Appendix A

1.1 Researcher's introduction

I am Nobuhle Nini, a student at Fort Hare University, East London Campus. I am currently conducting research on illegal abalone harvesting along the East London coastline, Eastern Cape Province, South Africa. This research will contribute towards the effectiveness of the policy on conservation and regulation of this resource. I am kindly requesting your permission to allow me to ask you some questions that will assist in informing the research. Please be advised that you are free to tell me if you do not feel safe to participate in this research. However, if you accept to be interviewed, the information that one will give will be treated confidentially.

1.2 Personal information

An interview questionnaire conducted with the Department of Agriculture, Forestry and Fisheries (DAFF): Administration Section.

NAME (OPTIONAL)		SEX	MALE		FEMALE	
		POSITION HELD				

1. Are there any permits issued for abalone harvesting?

2. For how long are they issued?

3. What are the requirements for the applicants?

4. How much do you charge for each type of permit?

5. Are there any regulations governing the issuing of these permits?

YES

NO

6. If YES, briefly mention any of the regulations provided above.

7. Who approves these permits? (Assistant Director, Director, Chief Director)

8. For how many years does your office have records for the permits that have been issued?

Appendix B

1.1 An interview questionnaire conducted with the Department of Agriculture, Forestry and Fisheries: Compliance and Enforcement section.

1. How many compliance and enforcement officers do you have in your section?

2. Which marine areas are patrolled by the above officers?

3. How often in the week do the compliance and enforcement officers conduct operations along the coast?

4. When do operations take place (morning/afternoon/evening/night).

5. How many prosecution cases on monthly basis do you open in regards to abalone poaching?

6. How many convictions do you secure in a year in terms of abalone poaching?

7. How many J534s do you issue on monthly basis?

8. Do you ever arrest people from outside the East London area in possession of abalone along the East London coastline?

9. Does your Department/ Section engage in activities geared towards arresting persons engaged in abalone poaching OR does your section focus more on preventative measures (eg., workshops with the communities: educational programmes for communities) Briefly explain.

10. From the work that your office performs in regards to abalone poaching, do you think that the levels of abalone poaching along the East London coastline have increased or decreased over the last three years? Briefly explain your response.

11. What is the approximate value of the abalone that is harvested along the East London coast in the course of a given year, say 2009 or 2010?

12. If the abalone is removed or transported out of the Eastern Cape, where is it sent to? How is it removed?

13. What strategies are the enforcement officers engaging in to help curb the harvesting of abalone, illegally? How successful have these strategies been. Briefly explain.

Appendix C

The Law Enforcement Officers (SAPS) and Abalone Poaching

Five male SAPS marine police officers, 3 Warrant Officers and 2 Constables stationed at the East London harbor were interviewed on 11 April 2011 on abalone poaching.

1.1 An interview questionnaire conducted with the South African Police Services of the Department of Safety and Security.

1. How many marine police officers do you have in your section?

2. Which marine areas are patrolled by the above officers?

3. How often in the week do the compliance and marine officers conduct operations along the coast?

4. When do operations take place (morning/afternoon/evening/night).

5. How many prosecution cases on monthly basis do you open in regards to abalone poaching?

6. How many convictions do you secure in a year in terms of abalone poaching?

7. How many J534s (fines) do you issue on monthly basis?

8. Do you ever arrest people from outside the East London area in possession of abalone along the East London coastline?

9. Does your Department/ Section engage in activities geared towards arresting persons engaged in abalone poaching OR does your section focus more on preventative measures (eg., workshops with the communities: educational programmes for communities) Briefly explain.

10. From the work that your office performs in regards to abalone poaching, do you think that the levels of abalone poaching along the East London coastline have increased or decreased over the last three years? Briefly explain your response.

11. What is the approximate value of the abalone that is harvested along the East London coast in the course of a given year, say 2009 or 2010?

12. If the abalone is removed or transported out of the Eastern Cape, where is it sent to? How is it removed?

13. What strategies are the marine officers engaging in to help curb the harvesting of abalone, illegally? How successful have these strategies been. Briefly explain.

Appendix D

An interview questionnaire conducted with the local communities of the identified hotspots for abalone poaching along the East London coastline.

1.1 Personal information

Name(Optional)	Sex: Male Female
Age: Below 18yrs from 18 to 30yrs from 30 to 50yrs Above 50yrs	
Education: Primary Secondary None Other	
For how long have you lived here?	

1. How is abalone poached in the area in which you live?

2. How often do persons poach abalone in this area and for whom is the abalone harvested?

3. Do you get people from outside East London requesting you to poach abalone for them?

4. If yes, how are you compensated?

5. During which season in the year is most abalone poached?

6. What quantities of abalone are poached by an individual harvester in the course of a month?

7. How long is the abalone kept in the village before it is purchased and removed to another location?

8. What are the prices persons pay for the poached abalone?

9. Who are the principal purchasers of the abalone (a) are they persons from the Eastern Cape? _____OR (b) are the persons from the foreign nationals? _____.

10. Do the marine police officers patrol the local area and check on the poaching of abalone? If yes, how often?

11.(a) Do persons who harvest abalone in the area have licences for abalone harvesting? YES/NO

(b) What quantities of harvests are permitted per day in the licence?

(c) Where do local villages purchase the licences for abalone harvesting?

(d) Do local persons who harvest abalone normally abide by the rules / regulations regarding the quantity of abalone that can be harvested? Briefly explain your answer.

(e) Which sector of the population are mainly engaged in abalone poaching?

(i) Men _____ (ii) Women _____

(iii) School children _____ (iv) Youth _____

Briefly explain your response

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