THE ILLEGAL EXPLOITATION OF CERTAIN MARINE SPECIES AS A FORM OF ENVIRONMENTAL CRIME IN THE WESTERN CAPE

by

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SUPERVISOR: PROF S J JOUBERT

NOVEMBER 2001
I declare that THE ILLEGAL EXPLOITATION OF CERTAIN MARINE SPECIES AS A FORM OF ENVIRONMENTAL CRIME IN THE WESTERN CAPE is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

........................................
Mr F J W HERBIG

2001.11.30
DATE
CALLS FOR OCEAN PROTECTION

“There may have been a time when it was legitimate to question whether there was conclusive evidence that the oceans were being over-fished, but that time has long since gone. There is overwhelming evidence that, not just the fish stocks but the vast bulk of renewable resources of the oceans are being over exploited.”

His Royal Highness, the Duke of Edinburgh, Prince Phillip marking the beginning of the International Year Of The Ocean at a news conference in London by calling for a change in the way human use of the environment is managed.

ACKNOWLEDGEMENTS

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Degree: Master of Arts
Subject: Criminology
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SUMMARY

Conservation criminology as a derivative of environmental criminology is considered in this dissertation through a strategic/empirical investigation of the illegal exploitation of a cross-section of certain, essentially fiscally attractive marine resources, as a form of environmental crime in the Western Cape province.

Through primarily qualitative and quantitative interviewing techniques, augmented by the application of a survey questionnaire, significant and pragmatic insight was obtained from knowledgeable functionaries.

The study elucidates the purview and dynamics of the marine crime phenomenon by focussing specifically on issues such as modus operandi, crime scenes, causation, operational efficacy, and social/biological repercussions.

Deficient policing capacity and concomitant lack of deterrence, compounded by institutional limitations, emerge as fundamental proclivities impeding proficient marine resource conservation.

It is envisaged that this study will broaden the frontiers of marine crime knowledge, contributing not only to the implementation of effective mitigation programmes but also to enriching the criminological discipline as a whole.

KEY TERMS:
Conservation criminology; Marine fishing industry; Marine resource/environmental/ecological crime; Marine and Coastal Management; Fishery control officer; Policing effort; Illegal/over exploitation; Poaching; Greed; Fiscally attractive marine species; Deterrence; Resource guardianship; Crime attractors; Sustainable harvesting; Biotic diversity.
# TABLE OF CONTENTS

## CHAPTER 1: ORIENTATION AND BACKGROUND – METHODOLOGY

1.1 Introduction .................................................. 1
1.2 Rationale ..................................................... 2
1.3 Aim of the study ............................................ 4
1.4 Assumptions .................................................. 6
1.5 Research Design ............................................. 7
   1.5.1 Data Gathering ......................................... 8
1.6 Data Processing and Construal ............................. 12
1.7 Validity and Reliability .................................... 13
1.8 Definition of Key Concepts ................................. 14
1.9 Layout of Chapters ......................................... 18
1.10 Conclusion .................................................. 20

## CHAPTER 2: TARGET SPECIES OF MARINE CRIME – BIOLOGICAL AND ECOLOGICAL CHARACTERISTICS

2.1 Introduction .................................................. 21
2.2 Biological And Ecological Background of the Relevant Species ........................................ 22
   2.2.1 Abalone (Haliotis midae) ............................. 23
   2.2.2 Demersal Fishes: Shallow-Water Hake (Merluccius capensis); Deep-Water Hake (Merluccius paradoxus); and Kingklip (Genypterus capensis) ........................................ 25
   2.2.3 Inter-Tidal Zone Organisms: Black Mussels (Chromytilus meridionalis); White Mussels (Donax serra); Periwinkles (Oxystele spp.), and Limpets (Patella spp.) ........................................ 28
   2.2.4 Pelagic Fish: Sardine/Pilchard (Sardinops ocellata); Anchovy (Engraulis capensis); and Round Herring/Red-Eye (Etrumeus whiteheadi) ........................................ 31
   2.2.5 Rock Lobster (Jasus lalandii) ......................... 34
   2.2.6 Shore Angling Fishes: Galjoen (Dichistius capensis); Hottentot (Pachymetopon blochii); Elf/Shad (Pomatomus salatrix);
Dusky Kob (*Argyrosomus japonicus*); Blacktail/Dassie (*Diplodus sargus capensis*); White Steenbras (*Lithognathus lithognathus*)

2.3 Summary and Conclusion 40

**CHAPTER 3: THE NATURE OF MARINE CRIME – MODUS OPERANDI AND CRIME SCENES** 43

3.1 Introduction 44

3.2 The Abalone Fishery 44

3.2.1 Modus Operandi 47

3.2.1.1 Rights Holder Sector 47

3.2.1.2 Subsistence Sector 50

3.2.1.3 Recreational Sector 51

3.2.1.4 Dedicated Poacher Sector 52

3.2.2 Crime Scenes 54

3.2.2.1 Rights Holder Sector 55

3.2.2.2 Subsistence Sector 55

3.2.2.3 Recreational Sector 55

3.2.2.4 Dedicated Poacher Sector 56

3.3 Demersal Fishes 56

3.3.1 Modus Operandi 59

3.3.1.1 The Demersal Trawling Industry 59

3.3.1.2 The Longlining Industry 61

3.3.2 Crime Scenes 61

3.4 Inter-Tidal Zone Organisms 62

3.4.1 Modus Operandi 64

3.4.2 Crime Scenes 66

3.5 Pelagic Fishes 68

3.5.1 Modus Operandi 70

3.5.2 Crime Scenes 72

3.6 Rock Lobster 72

3.6.1 Modus Operandi 74

3.6.1.1 Rights Holder (Commercial) Sector 74

3.6.1.2 Recreational Sector 76
TABLE OF CONTENTS: Page iii

3.6.1.3 Subsistence Sector 78
3.6.1.4 Dedicated Poacher Sector 79
3.6.2 Crime Scenes 83
  3.6.2.1 Commercial Rights Holder Sector 83
  3.6.2.2 Recreational Sector 83
  3.6.2.3 Subsistence Sector 84
  3.6.2.4 Dedicated Poacher Sector 85
3.7 Recreational Shore Angling 86
  3.7.1 Modus Operandi 88
  3.7.2 Crime Scenes 90
3.8 Summary and Conclusion 91

CHAPTER 4: AETIOLOGY OF MARINE CRIME — CAUSATIONAL AND MOTIVATIONAL ASPECTS 92
4.1 Introduction 93
4.2 Causes of Illegal Abalone Exploitation 93
  4.2.1 Greed as a Causational Factor 94
  4.2.2 Opportunities (Lack of Control/Guardianship) as a Causational Factor 94
  4.2.3 Topical Law Enforcement Issues 96
4.3 Causes of the Illegal Exploitation of Demersal Fishes 100
4.4 Causes of the Illegal Exploitation of Inter-Tidal Zone Organisms 102
  4.4.1 Recreational Harvesting 102
  4.4.2 Dedicated Poaching 104
4.5 Causes of the Illegal Exploitation of Pelagic Fishes 106
4.6 Causes of the Illegal Exploitation of Rock Lobster 107
  4.6.1 Commercial Sector 108
  4.6.2 Recreational Sector 110
  4.6.3 Subsistence Sector 112
  4.6.4 Dedicated Poacher Sector 112
4.7 Causes of the Illegal Exploitation of Shore Angling Fishes 113
4.8. Summary and Conclusion 116
CHAPTER 5: THE EXTENT OF MARINE CRIME - LAW ENFORCEMENT AND CONTROL ISSUES

5.1 Introduction 118
5.2 Law Enforcement Statistics 119
5.2.1 West Coast Region: Situational and Statistical Information 120
5.2.1.1 Yzerfontein 121
5.2.1.2 Saldanha Bay 121
5.2.1.3 St Helena Bay 122
5.2.1.4 Laaiplek 123
5.2.1.5 Elands Bay 124
5.2.1.6 Lamberts Bay 125
5.2.1.7 Doring Bay 126
5.2.2 Consolidated Prosecution Statistics for the West Coast (1998 – 1999) 127
5.2.3 Evaluation and Discussion of West Coast Prosecution Statistics 128
5.2.4 South West Coast Region: Situational and Statistical Information 129
5.2.4.1 Sea Point 129
5.2.4.2 Hout Bay 130
5.2.4.3 Kommetjie 130
5.2.4.4 Kalk Bay 131
5.2.4.5 Gordon’s Bay 132
5.2.4.6 Hermanus 133
5.2.4.7 Gans Bay 134
5.2.4.8 Struisbaai 135
5.2.4.9 Arniston (Waenhuiskrans) 136
5.2.4.10 Still Bay 137
5.2.4.11 Mossel Bay 138
5.2.4.12 Knysna/Plettenberg Bay 139
5.2.5 Consolidated Prosecution Statistics for the South West Coast (1998 – 1999) 140
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.6 Evaluation and Discussion of South West Coast Prosecution Statistics</td>
<td>146</td>
</tr>
<tr>
<td>5.2.7 Consolidated Prosecution Statistics for the Western Cape (1998 – 1999)</td>
<td>147</td>
</tr>
<tr>
<td>5.2.8 Evaluation and Discussion of Western Cape Prosecution Statistics (1998 – 1999)</td>
<td>148</td>
</tr>
<tr>
<td>5.3 Role of the South African Police Services (SAPS) in Combating Marine Crime</td>
<td>149</td>
</tr>
<tr>
<td>5.3.1 Operation Neptune</td>
<td>150</td>
</tr>
<tr>
<td>5.4 Summary and Conclusion</td>
<td>151</td>
</tr>
<tr>
<td><strong>CHAPTER 6: SURVEY QUESTIONNAIRE – EMPIRICAL FINDINGS – EXTENT OF MARINE LAW ENFORCEMENT/CONTROL AND RELATED INSTITUTIONAL DYNAMICS</strong></td>
<td>153</td>
</tr>
<tr>
<td>6.1 Introduction</td>
<td>154</td>
</tr>
<tr>
<td>6.2 Structure of Survey Questionnaire</td>
<td>154</td>
</tr>
<tr>
<td>6.3 Response to Questions</td>
<td>156</td>
</tr>
<tr>
<td>6.4 Evaluation and Discussion of Survey Questionnaire Response</td>
<td>169</td>
</tr>
<tr>
<td>6.4.1 Respondent Demographics/Characteristics</td>
<td>169</td>
</tr>
<tr>
<td>6.4.2 Marine Law Enforcement Effort</td>
<td>171</td>
</tr>
<tr>
<td>6.4.3 Motivational Aspects</td>
<td>174</td>
</tr>
<tr>
<td>6.4.4 Judicial Involvement in Administration of Justice Process</td>
<td>178</td>
</tr>
<tr>
<td>6.4.5 The Role of Environmental Education in Combating Crime</td>
<td>179</td>
</tr>
<tr>
<td>6.4.6 Additional Comments by Fishery Control Officers</td>
<td>180</td>
</tr>
<tr>
<td>6.5 Summary and Conclusion</td>
<td>180</td>
</tr>
<tr>
<td><strong>CHAPTER 7: EFFECT OF MARINE CRIME – BIOLOGICAL AND SOCIAL IMPLICATIONS</strong></td>
<td>182</td>
</tr>
<tr>
<td>7.1 Introduction</td>
<td>183</td>
</tr>
<tr>
<td>7.2 Biological Implications</td>
<td>184</td>
</tr>
<tr>
<td>7.2.1 Ecosystem Functioning</td>
<td>184</td>
</tr>
<tr>
<td>7.2.2 Biotic Diversity</td>
<td>186</td>
</tr>
<tr>
<td>7.3 Social Implications</td>
<td>190</td>
</tr>
<tr>
<td>7.3.1 Socio-Economic Effects</td>
<td>190</td>
</tr>
<tr>
<td>7.3.2 Perpetuation and Intensification of Marine Crime</td>
<td>193</td>
</tr>
</tbody>
</table>
7.3.3 Community Dynamics – Escalation and Diversification of Crime 196

7.4 Summary and Conclusion 198

CHAPTER 8: SUMMARY, CONCLUSION AND RECOMMENDATIONS 201

8.1 Introduction 202

8.2 Summary of Findings 202
  8.2.1 Marine Species 202
  8.2.2 Exploitation 203
  8.2.3 Causes and Motivations 204
  8.2.4 Policing and Control 205

8.3 Conclusion 206

8.4 Recommendations 208
  8.4.1 Expansion of Operational Capacity 209
  8.4.2 Sensitising the Public to Marine Resource Protection (Marketing) 210
  8.4.3 Establishment of Environmental/Conservation Orientated Courts 211
  8.4.4 Outsourcing of Monitoring and Related Functions 213
  8.4.5 Wider Powers for Fishery Control Officers 214
  8.4.6 Expansion of Marine Protected Area Initiative and Use as an Enforcement Mechanism 215
  8.4.7 Cooperation and Liaison with Government Agencies/Stake Holders and Other Entities 216
  8.4.8 Establishment of Effective and Comprehensive Prosecution Data Base 217
  8.4.9 Adjustment of the Minimum Age for Permit Acquisition 218
  8.4.10 Environmental Education and Extension 218

8.5 Suggestions for Further Research 219

REFERENCES 259
## LIST OF APPENDICES

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Description</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendix 1</td>
<td>Survey questionnaire distributed to all operational fishery control officers in the Western Cape province.</td>
<td>221</td>
</tr>
<tr>
<td>Appendix 2</td>
<td>Example of interview schedule used during interviews with Marine and Coastal Management (M&amp;CM) scientific personnel.</td>
<td>232</td>
</tr>
<tr>
<td>Appendix 3</td>
<td>Correspondence from Mr N. Daniels (M&amp;CM Deputy Director: Support services – logistics and finance) confirming the lack of accurate statistics regarding permits sold for the various (recreational) harvesting sectors as well as fiscal contributions to the Marine Living Resources Fund.</td>
<td>251</td>
</tr>
<tr>
<td>Appendix 4</td>
<td>Correspondence from Mr V. N. Mayisela (M&amp;CM Deputy Director: Inshore resource management – control and surveillance) regarding the branch’s inability to supply comprehensive prosecution statistics.</td>
<td>256</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>PAGE NO.</td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>Table 1: Summary of the relevant marine species.</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>PAGE NO.</td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>Figure 2.1: Abalone (<em>Haliotis midae</em>) feeding.</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Figure 2.2: West coast rock lobster or crayfish (<em>Jasus lalandii</em>) in its natural environment.</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>Figure 2.3: Viewed from this angle rock lobster resemble a form of sea spider.</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Figure 3.1: Commercial abalone harvesting zones.</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Figure 3.2: Route along which poached abalone is believed to be illegally exported to the Far East.</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>Figure 3.3: Stern trawling for demersal fish.</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Figure 3.4: Cod-end of demersal trawl net shortly after being retrieved from the ocean.</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Figure 3.5: Over exploitation of inter-tidal zone organisms.</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>Figure 3.6: Purse-seining of pelagic fish.</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>Figure 3.7: A commercial rock lobster trap.</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Figure 3.8: Ring or scoop net.</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>Figure 3.9: Paper tags used by subsistence fishers to mark their catch.</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td>Figure 3.10: Poachers brazenly harvesting rock lobster in broad daylight within a proclaimed rock lobster reserve.</td>
<td>82</td>
<td></td>
</tr>
<tr>
<td>Figure 3.11: A typical rock and surf-angling scene along the Western Cape's coastline.</td>
<td>89</td>
<td></td>
</tr>
<tr>
<td>Figure 5.1: Prosecution statistics for the period 1998 to 1999 – Yzerfontein</td>
<td>122</td>
<td></td>
</tr>
<tr>
<td>Figure 5.2: Prosecution statistics for the period 1998 to 1999 – Saldanha Bay</td>
<td>123</td>
<td></td>
</tr>
<tr>
<td>Figure 5.3: Prosecution statistics for the period 1998 to 1999 – St Helena Bay</td>
<td>124</td>
<td></td>
</tr>
<tr>
<td>Figure 5.4: Prosecution statistics for the period 1998 to 1999 – Laaiplek</td>
<td>126</td>
<td></td>
</tr>
<tr>
<td>Figure 5.5: Prosecution statistics for the period 1998 to 1999 – Elands Bay</td>
<td>127</td>
<td></td>
</tr>
</tbody>
</table>
Figure 5.6: Prosecution statistics for the period 1998 to 1999 – Lamberts Bay 128
Figure 5.7: Prosecution statistics for the period 1998 to 1999 – Doring Bay 129
Figure 5.8: Consolidated prosecution statistics for the period 1998 to 1999 – West Coast 130
Figure 5.9: Prosecution statistics for the period 1998 to 1999 – Sea Point 133
Figure 5.10: Prosecution statistics for the period 1998 to 1999 – Hout Bay 134
Figure 5.11: Prosecution statistics for the period 1998 to 1999 – Kommetjie 135
Figure 5.12: Prosecution statistics for the period 1998 to 1999 – Kalk Bay 136
Figure 5.13: Prosecution statistics for the period 1998 to 1999 – Gordon’s Bay 137
Figure 5.14: Prosecution statistics for the period 1998 to 1999 – Hermanus 138
Figure 5.15: Prosecution statistics for the period 1998 to 1999 – Gans Bay 139
Figure 5.16: Prosecution statistics for the period 1998 to 1999 – Struisbaai 140
Figure 5.17: Prosecution statistics for the period 1998 to 1999 – Arniston 142
Figure 5.18: Prosecution statistics for the period 1998 to 1999 – Still Bay 143
Figure 5.19: Prosecution statistics for the period 1998 to 1999 – Mossel Bay 144
Figure 5.20: Prosecution statistics for the period 1998 to 1999 – Knysna 145
Figure 5.21: Consolidated prosecution statistics for the period 1998 to 1999 – South West Coast 146
Figure 5.22: Consolidated prosecution statistics for the period
1998 to 1999 – Western Cape

Figure 5.23: Minimum number of abalone confiscations
nationally 1994-1999. 2000* indicates confiscations for the
month of January 2000 only

Figure 6.1: Question 1 – Gender?

Figure 6.2: Question 2 – Age?

Figure 6.3: Question 3 – Population group?

Figure 6.4: Question 4 – Marital status?

Figure 6.5: Question 5 – Educational qualifications?

Figure 6.6: Question 6 - Relevancy of tertiary qualifications?

Figure 6.7: Question 7 – Length of service?

Figure 6.8: Question 8 – Where currently stationed?

Figure 6.9: Question 9 – What is your annual salary?

Figure 6.10: Question 10 – Percentage of available time devoted to
coastal patrols and actual law enforcement?

Figure 6.11: Question 11 – Sufficiency of allocation?

Figure 6.12: Question 12 – Percentage deemed adequate to address
marine crime in Western Cape?

Figure 6.13: Question 13 – Activity to which most time devoted
per month?

Figure 6.14: Question 14 – Are coastal patrols undertaken on all
weekends/public holidays?

Figure 6.15: Question 15 – If no, why not?

Figure 6.16: Question 16 – Manner in which coastal patrols generally
carried out?

Figure 6.17: Question 17 – Description of the M&CM staff component
in the Western Cape?

Figure 6.18: Question 18 – Do you think staff component is sufficient to
address marine crime in Western Cape?

Figure 6.19: Question 19 – Current level of motivation towards job as
fishery control officer?

Figure 6.20: Question 20 – Reason for demotivation?
Figure 6.21: Question 21 – Can motivational state influence work performance/productivity?  
Figure 6.22: Question 22 – Can motivational state influence loyalty towards employer?  
Figure 6.23: Question 23 – Judicial system’s handling of marine conservation related cases?  
Figure 6.24: Question 24 – Awareness of any increased policing activity due to new recreational harvesting permits/equitable distribution of other fishing rights?  
Figure 6.25: Question 25 – An increased emphasis on environmental education will lead to less marine crime?  
Figure 7.1: Sensationalist headlines such as this one on a Marine and Coastal Management brochure indicates in no uncertain terms the precarious position in which the resource currently finds itself.  
Figure 7.2: A cartoon depicting the demise of the abalone resource, illustrates the tragic reality and seriousness of the current situation.
CHAPTER I

ORIENTATION AND BACKGROUND

METHODOLOGY
1.1 INTRODUCTION

Traditionally, criminological research has been directed at the more conventional, sensationalist and/or higher profile (status) types of crime in society especially those involving a definite (identifiable) victim or victims. Awareness of environmental, ecological or green crime, as it is sometimes referred to, in its various forms as well as its negative ramifications has only really manifested itself over the last decade or so, prompting criminologists to take a greater interest in attempting to understand, research and preemptively manage this type of deviance.

With the advent of the new millennium, environmental issues are often prominent in people’s minds, and they frequently dominate political agendas. Environmental crime can be seen as a global phenomenon, affecting both developed and developing countries, and although attitudes towards environmental crime might not feature as prominently in South Africa as in more developed countries, due to a relatively undeveloped ‘environmental ethic’ and general prevalence of crime in the country (Kidd 1998:184), there seems to be a, albeit slow, growing environmental concern nationwide. However, because of a general lack of understanding for, and awareness of, issues such as environmental crime many South Africans’ attitude towards even those offences which would in most countries be regarded as morally wrong as well as illegal, may well have been deadened/numbed by the widespread concern over rampant ‘ordinary’ criminal activity which most people regard as more serious than environmental offences (Kidd 1998:190).

As South Africa struggles to come to terms with its fledgling democracy it has become embroiled in a syrtis of crime which subsequently and unfortunately makes it very difficult for the government to balance the interests of social and economic development, which enhances life and encompasses the promises made to the electorate, against the sustainable utilisation and maintenance/promotion of a healthy environment, ironically, concepts which seem far removed from each other but are in fact integrally related to and supplement each other (Naudé 1998:84).

The burgeoning problem of violent crime has attracted broad based condemnation and desperation, mainly due to its extent of victimisation and
has served to undermine popular condemnation of much other criminal activity, particularly acquisitive crime and forms of the sometimes called “victimless” crimes. Kidd (1998:184) shows in this regard that it is understandable that people are not going to be channelling their disapproval towards environmental offenders when there are hosts of murderers, rapists, car hijackers, armed robbers and the like committing crimes daily without apprehension.

Environmental crime, and more specifically marine crime, which forms the focus of this dissertation can be described as victimless crime in the sense that criminal activity or deviant behaviour is not directed at a particular individual or victim per se. Society as a whole can be regarded as the victim of marine crime, although they might not perceive it as such, especially due to the fact that they are not as sensitised to this type of crime as they are to conventional crime and because the negative effects thereof are not immediately visible.

When a crime against the environment, and more specifically the marine environment, is committed it is usually, as will be shown in this dissertation, executed in a clandestine manner (under water) and/or isolated/remote location (coastline and/or open sea).

Once the crime has been completed there is usually no visible evidence of the damage inflicted, no victim(s) who can raise the alarm and/or speak for him/herself, so as to be able to report the crime, and also no one (victim) who can claim compensation or seek retribution for the wrong inflicted. Consequently, the crime and its deleterious effect goes relatively unnoticed and is, as a result of public indifference, environmental myopia and lack of awareness and understanding, regarded by the vast majority of South Africans as morally colourless (Kidd 1998:190).

This fact does, however, not make marine crime any less reprehensible or immoral but rather underlines the importance of dedicated, enlightened and comprehensive intervention.

Through criminological research for example, a greater understanding and knowledge of marine crime can be engendered so as to reveal/discover potential solutions and hopefully ensure the wise utilisation and preservation of viable marine ecosystems for the benefit of our own and future generations.
South Africa, being a maritime country, has very important marine resources which are a rich natural heritage contributing enormous benefits to the people of the country, and few people appreciate the extent to which it provides opportunities for future economic and social development. Marine resources are, however, finite and vulnerable to criminal exploitation, which negatively affects judicious utilization and management and can have disastrous effects on their continued viability and sustainability. Mistakes made in this arena can rarely easily be remedied and there is seldom a quick and effective way back from the spectre of over-exploitation (Payne 2000:238).

To ignore the problem of marine crime and/or to submit it to fragmented and ineffective control/management would be to commit ecological suicide and surrender the marine environment to certain disaster. A lack of knowledge in this sphere will encumber an examination of, amongst others, the raison d'etre and dynamics of marine crime and therefore also potential solutions. Criminological intervention can play an important role here, and through research into the phenomenon of the illegal exploitation of certain marine resources obtain a lucid and better understanding of the various fundamental aspects thereof, placing this form of crime in perspective within the framework of environmental/green criminology.

1.2 RATIONALE

The regulation of marine resources has reached a crucial stage in South Africa (Hauck 1999:211) with a number of harvesting sectors experiencing unprecedented illegal exploitation, jeopardising the future sustainable utilisation of many marine resources. There is hardly a resource that has not been over-utilised to the point of it no longer being economically viable, with man's insatiable greed frequently being the conventional and often sole factor responsible for this unfortunate state of affairs (Siegfried 1989:2).

Comprehensive, and in some respects perhaps controversial, marine living resource legislation has been implemented over the last few years giving rise
to a shift in emphasis from large corporation domination of South African commercial fisheries towards a philosophy of equitable distribution of rights, sustainable utilisation of marine resources and stability within the marine fishing industry.

However noble these initiatives may profess to be, a great deal of unhappiness and conflict has accompanied the transformation in all sectors, i.e., commercial/rights holder sector, subsistence sector and lastly but by no means leastly the recreational sector, leading to, in many cases, reduced incentives to comply with marine living resources legislation.

Since the success of fisheries management, including stock rebuilding depends heavily on the degree of user compliance (Mayekiso 2000:9), illegal exploitation of marine resources can easily undermine these initiatives and render the equitable distribution and sustainable utilisation/stability programmes ineffective.

Accompanying the new transformation oriented legislation, however, is the increased obligation to police and enforce compliance therewith, a duty that in no uncertain terms implies motivated goal orientated and innovative law enforcement/compliance intervention.

With much of the state's attention currently being directed at the rampant crime situation in society the problem of marine crime receives relatively little attention/condemnation, despite the far-reaching ramifications this form of deviance can have on the environment and society as a whole.

If people do not understand environmental crime problems, they are unlikely to support the need to address and manage this phenomenon or acquire the necessary incentives to ascribe to it the required degree of censure it deserves.

Through criminological investigation, however, society can be sensitised to the magnitude and complexity of the crime problem thereby minimising or even alleviating to a large extent the current state of environmental/ecological myopia present in society today, to the benefit of the natural environment (biotic diversity) and society (social and economic considerations) as a whole.

The rationale, which can be regarded as both anthropocentric/utilitarian and ecologically orientated, for undertaking this research is in summary therefore, that even though conservation concerns are becoming prominent in modern
society the explanation of environmental crime, and more particularly natural resource over-exploitation, and why it persists, has received scant attention from scholars, subsequently being poorly documented. By exploring the underlying issues and dynamics of marine related crime and its nexus with the socio-economic milieu, the marine environment which together with the terrestrial environment forms the moral fibre of human existence and affects the livelihood of an incalculable amount of people can be adequately protected and promoted through the efficacious application of compliance/enforcement mechanisms and criminal sanctions.

1.3 AIM OF THE STUDY

This dissertation canvasses the problem of the illegal exploitation of certain marine species, comprising a transect of both near-shore and deep-sea organisms, namely, inter-tidal zone organisms; abalone (perlemoen); rock lobster; recreational rock and surf angling fishes; pelagic fishes and demersal fishes in the Western Cape province during the last five years of the previous millenium. An attempt is made to establish and understand the magnitude, dynamics, causes and implications of the current marine crime quandary as well as to evaluate and assess the extent and effectiveness of policing effort being directed at the problem by the authorities so as to be able to predict future deviance and postulate solutions for the phenomenon, which will hopefully lead to a reduction of marine related miscreant behaviour and serve to regain control over marine resource destiny.

Further envisaged, is that this research dissertation will, by demonstrating in a scientific manner the causality between characteristics/variables, serve to impress upon state decision makers (as the guarantors of the conservation of marine resources) the need to cogently enhance operational and functionary capacity, both in a reactive and pro-active sense, so as to facilitate effective planning and the formulation of high quality intervention initiatives, programmes and techniques directed at the realisation of the institutional goal, eventually culminating in the elevation of this phenomenon to its rightful status in terms of crime priority in society.
1.4 ASSUMPTIONS

Due to the essentially exploratory nature of this research dissertation, the formulation of a hypothesis is not entirely relevant and will therefore be supplanted by various assumptions.

It is assumed in this dissertation that marine crime, as a form of environmental crime, is due to amongst others:

- the attractiveness of the various resources, especially in terms of fiscal incentives;
- their availability (relevant to the various harvesting sectors) and spatial distribution (comparatively isolated, inconspicuous and often remote harvesting locales);
- the noticeably inadequate degree of guardianship, specifically in terms of policing, and concomitant deficient deterrence;
- the perceived lack of general societal concern and censure in connection therewith; and
- the general decline in the rule of law within the country, intensifying and diversifying and that continued indifference and/or piecemeal type intervention in this arena will lead to dramatic economic, social and environmental/biological impediments in future years.

It is furthermore assumed, that through criminological research, the dynamics surrounding this form of deviance as well as the extent to which it has manifested itself can be exposed, by providing a correct and lasting interpretation of the collected data and facts.

Through this mechanism, the frontiers of marine crime knowledge can be expanded, giving rise to a better understanding of the phenomenon, which will hopefully lead to timeous, effective, comprehensive (broad based), sustained and well co-ordinated intervention by the relevant authorities.

1.5 RESEARCH DESIGN

As mentioned in the foregoing section, this research dissertation is essentially exploratory and nomothetic in nature, although also utilising to a certain
degree, an idiographic research strategy. Dixon (1989:13), argues that the purpose of exploratory studies are to, amongst others, explore and gain insights into a relatively unknown field often including, as applied in this study, a survey amongst people who have practical experience of a particular problem and/or an analysis of examples that stimulate insight.

Although frequently the topic of hot debate, very little has been written about environmental crime, especially marine crime issues, in relation to other crime topics and it was therefore considered prudent to investigate this contentious phenomenon in more detail and expound on its dynamics, underlying issues and interactions.

In order to do this, an open minded, flexible and investigative stance was adopted to facilitate exploration of all relevant sources of information.

1.5.1 DATA GATHERING

Although exploratory researchers often exclusively make use of qualitative data, due to its collection techniques being less wedded to a specific theory or research question (Neuman 1997:19), the use of a combined quantitative and qualitative methodological strategy was considered most appropriate to examine this particular issue in a holistic manner due to their combined deductive and interactive nature, enabling the researcher to better clarify and elucidate concepts as well as produce the most valid and reliable results.

Neuman (1997:14) states in this regard, that by understanding both styles one will be able to use both in complimentary ways.

Leedy (1997:169) is, furthermore, of the opinion that both research traditions provide answers to important questions and that there is no wrong or right approach because each yields valuable yet different information.

Being knowledgeable about both traditions increases the researchers options for both learning from and conducting meaningful research. In essence, by examining the same phenomenon of the over exploitation of certain marine species by collecting information/data through the use of multiple indicators i.e., by the quantitative interviewing of fishery scientists, perusal of official marine prosecution statistics and the dissemination of a survey questionnaire as well as the qualitative interviewing of chief (supervisory) functionaries, the researcher has made use of a form of what Dooley (2001:249); Leedy
According to these authors, the basic idea of triangulation is that measurement improves when diverse indicators are used, confidence in measurement grows and greater validity results. Huysamen (1996:113) is also of the opinion that by using several measures a high, but not necessarily perfect, correlation between indicators can be expected and recommends the use of multiple measures.

Quantitative data gathering techniques employed included structured survey questionnaires consisting of chiefly, closed ended questions (See appendix 1.) and personal structured interviews, executed with the assistance of interview schedules (See appendix 2.). Qualitative techniques constituted in-depth personal interviews.

During the initial stages of the research, information was gathered on the biological and ecological characteristics of the relevant species in order to place the issue of marine crime in better perspective and assist the reader to more clearly envision the concept of, and rationale for, crime in the marine biome. Scientific research personnel attached to Marine and Coastal Management’s scientific component in Cape Town were approached for interviews in this regard and their inputs supplemented and cross-referenced with data obtained from a comprehensive literature study in this regard.

All interviews took place at pre-determined times within the respondents own comfort zone (office) and were chiefly concluded within 1 – 2 hours of initiation. Structured quantitative interviews were the preferred method of operation so as to facilitate communication, both verbal and non-verbal, between the researcher and the respondent and to give the respondent the opportunity to qualify his/her responses and also allow the researcher to clarify questions and answers by way of explanation.

Standardised interview schedules, consisting of a number of pre-recorded structured questions, served as the basis for the interview and assisted the researcher not only to retain the focus on key issues but also to standardise the interviews with the various scientific personnel in the numerous components (representing the various marine species/harvesting sectors) visited.
Apart from being questioned about ecological and biological issues, scientists were also questioned about their perceptions of crime within the particular harvesting sector of the species in which they specialised. These answers allowing the researcher to draw analogies between their perceptions and those of the operational line functionary entrusted with the policing of compliance with the relevant Marine Living Resources legislation. These questions, although being uniformly formulated and applied as a quantitative technique to all respondents, elicited interesting discussions and allowed the researcher a glimpse into the respondents' world of meaning and captured to a large extent what might be referred to as the richness of the respondents' experiences, in essence by way of a qualitative methodology. In order to investigate the dynamics of marine crime and more specifically the crime scenes, modus operandi and causes/motivations pertaining to the over exploitation of the various marine species relevant to this dissertation the three chief functionaries (Chief Fisheries Control Officers) responsible for managing marine law enforcement and compliance within the various sectors/areas comprising the Western Cape's coastline were, due to their extensive operational and management experience as well as insight, chosen as the subjects for qualitative in-depth interviewing. During the numerous interviews held with these functionaries, insight was sought, by allowing respondents to answer in their own words, and express their feelings, so as to discover the respondent's perceived meaning and also to construe reality in terms of the subject's world of meaning. Through this technique it was possible to obtain an insider perspective of the phenomenon in question. Although these interviews were essentially unstructured and no rigid interviewing schedule was adhered to, the interviews were structured around certain key themes so as to keep the interaction focussed and stimulate responses directed at the realisation of the interviewing goal. Detailed notes were taken throughout. Through an informal approach devoid of any pre-conceived ideas as to how the interview might unfurl, underlying issues were revealed and new topics were generated for discussion, emphasising the researchers commitment to unbiased exploration into this particular phenomenon.
Qualitative research techniques have often been criticized by positivists, who seek rigorous, exact measures and strive for "objective" research (Neuman 1997:63). This qualitative (humanistic) approach, which Leedy (1997:155) and Neuman (1997:69-70) term an interpretive technique, was conducted with the chosen target group in order to learn what is meaningful or relevant to the respondents, and to be able to share the feelings and interpretations of the respondents, basically seeing things through their eyes, and in essence forming an empathetic relationship with them so as to gain a vantage point that would otherwise not have been possible through more inflexible techniques.

According to Marshall and Rossman (1989:83), the qualitative interviewers role is demanding, for he/she is the research tool and should, therefore, be skilful at personal interaction and question framing. In this sphere, prior training and experience in the giving of evidence and the conducting of pre-sentence evaluation interviews with parolees, required for the successful completion of the University of South Africa (UNISA) Criminology Honours course, stood the researcher in good stead, and although time consuming and expensive, facilitated the successful completion of the operational functionary (and certain other ad hoc informal field-work) interviews.

During the final data gathering stage of this dissertation, a survey questionnaire consisting of 25 closed-ended questions and one open-ended question was designed, formulated and disseminated to all the operational fishery control officers within the study area.

Sixty questionnaires were subsequently disseminated representing the entire operational fishery control officer staff contingent on duty at that particular period. Closed questions, many consisting of summated attitude or Likert scales, considered by Huysamen (1996:126) to be the most popular type of scale in the social sciences, were predominantly used and respondents requested to select an answer from a provided list of alternatives.

Care was taken to formulate questions in such a manner so as to be, as far as possible, mutually exclusive and include all possible answers. Anonymity and scientific objective were emphasised so as to obtain responses reflecting as far as possible the true situation and assure the
respondents that their honest responses would not jeopardise them in any way.

Through personal involvement and close liaison with senior functionaries at those stations on the periphery of the study area, a response rate of 100% for the target group was achieved, negating the need to generalize and/or extrapolate findings, and thereby, also significantly increasing the credibility, validity and reliability of the findings.

Smit (1995:6), states in this regard that it is essential that a sample be fully representative of the [target] population, and that if scientifically chosen, it will portray an accurate and representative mirror image of the population.

1.6 DATA PROCESSING AND CONSTRUAL

Qualitative data obtained through the in-depth interviews, ad hoc enrichment fieldwork interviews as well as the open-ended final question of the survey questionnaire were analysed by comparison of similarities/dissimilarities and the identification of themes, patterns, sequences and relationships between variables. Those answers corroborating and/or supplementing/contradicting each other were recorded and through the process of systematising the data arranged to present a coherent, consistent picture.

Data obtained and analysed through this technique was not merely taken on face value, but were checked by confirming and comparing it with the results obtained from the survey questionnaire, structured interviews with the scientific component and objective marine crime prosecution statistics. Although interpretation/analysis of qualitative data can raise questions of bias it also, as Neuman (1997:333) aptly puts it, 'provides a sense of immediacy, direct contact, and intimate knowledge, providing insight into critical situations'.

Analysis/processing of the quantitatively obtained data was, after editing and checking for completeness, done by recording (coding) the choices/responses of the respondents in the shaded 'official purposes' block at the bottom left side of each question, in the case of the questionnaires, and by grouping and totalling prosecution statistics per harvesting discipline with regard to the official marine prosecution statistics.
All answers were recorded numerically (tabulated), categorised and with the aid of a computer, calculated and represented in the form of numbers, percentages as well as graphically.

Once effectively represented in histogram format, conclusions were drawn and results chiefly used as a key parameter in evaluating the operational functionaries contribution to the reduction/elimination of this form of deviance, and, in the final analysis, the degree to which the marine environment is being protected from over-exploitation and wanton destruction.

1.7 VALIDITY AND RELIABILITY

According to Neuman (1997:138) and Sarantakos (1998:83), reliability tells us about an indicator's dependability and consistency throughout the research process, i.e. the degree to which it can be repeated, and validity (which is more difficult to achieve) tells us whether an indicator actually captures the meaning of the construct in which we are interested, i.e. how accurately it represents the true social situation to which it applies. If indicators have a low degree of reliability or validity it therefore follows that the final results will be questionable.

Sarantakos (1998:84), argues that qualitative researchers, in the main, strive for rigour, but their standards vary from those employed by quantitative researchers in that, instead of striving for validity they strive for 'credibility' and 'applicability' and instead of speaking of reliability they speak of 'auditability'; objectivity is replaced by 'confirmability'.

Lindlof (1995:238), furthermore, states that qualitative inquirers seek credible, dependable data in order to inspire confidence in readers that the correct interpretations have been achieved.

During qualitative data gathering sessions (in-depth interviews and ad hoc fieldwork interviews), all relevant information was written down contemporaneously by the researcher and a thorough synopsis written as soon as practicably possible, but not later than 36 hours thereafter.

Through recording and data documentation consistency, reliance on the accuracy of the data, it is submitted, has also substantially been increased. Although certain researchers argue that the use of a tape recorder in
qualitative interviewing is to be preferred, it was felt that the essence of the interview could best be captured and the interest of the respondent best be maintained and prolonged through this method. The researcher was continuously mindful of signs of non-verbal communication but at the same time careful not to attach embellished interpretations to insignificant reactions. All information obtained qualitatively was unremittingly checked for confirming evidence and internal consistency as well as for extreme cases/deviation from the mainstream response (often termed outlier response), and care was taken to ensure that those respondents approached for interviews were credible and had authentic knowledge of the phenomenon, cancelling out to a large degree the need for respondents to exaggerate or be untruthful and thereby also increasing the validity and reliability of the research findings/interpretations considerably.

Care was therefore taken to establish a strong “chain of evidence” which according to Leedy (1997:169), strengthens the validity of a study due to readers being able to follow the researcher’s reasoning and subsequently being able to personally determine whether the conclusions offered are logical or not. Quantitative data gathering techniques involved more structured objective methodology, which not only facilitated data tabulation and analysis but also substantially reduced the risk of misinterpretation rendering the results highly reliable and valid.

The use of complementary evidence or triangulation, as a method of increasing and confirming conviction in data, clarifying meaning and verifying concepts, as expounded upon in a previous section, further it is submitted, enhanced the validity of both the research findings and subsequent interpretations/generalizations.

1.8 DEFINITION OF KEY CONCEPTS

- **Illegal exploitation**

Illegal exploitation refers to any act (wilful or negligent) that violates the prescriptions of the Marine Living Resources Act, 1998 (Act 18 of 1998) and its regulations.
• **Target species of marine crime**

The target species chosen for investigation in this dissertation represent a cross-section of ('commercially viable') marine organisms stretching from the inter-tidal zone and near-shore marine environment, to those found in the deeper-sea realm. These organisms are also to a large extent representative of those species most commonly targeted and harvested by the recreational, subsistence, commercial and dedicated poacher fishery sectors, namely:

- **Inter-tidal zone organisms**: (white and black mussels, periwinkles and limpets);
- **Abalone**: (also known as perlemoen);
- **West Coast rock lobster**: (also known as crayfish or kreef);
- **Recreational shore angling fishes**: (Hottentot, blacktail/dassie, dusky kob, white steenbras, galjoen and elf/shad);
- **Pelagic fishes**: (Pilchard/sardine, round herring/red-eye and anchovy); and
- **Demersal fishes**: (Shallow and deep water hake/stockfish and kingklip).

• **Environmental crime**

Environmental crime, also referred to as green or ecological crime, and often-encompassing pollution and other forms of wilful or negligent terrestrial degradation, in the context of this dissertation, refers specifically to crime involving marine organisms and the concomitant negative effects thereof.

• **Western Cape province**

The illegal exploitation of the marine species relevant to this dissertation was researched within the political boundaries of the
Western Cape province, to wit, the area stretching from the northern most boundary some distance north of the West Coast towns of Doring Bay/Strandfontein to the southern most boundary in the vicinity of Knysna/Plettenberg Bay.

- **Dedicated poaching**

  The term, dedicated poaching/poachers, as used in this research study refers to those individuals/groups that illegally and extensively harvest marine resources solely for financial gain in a pre-meditated and often professional and highly organised manner for the purposes of the illegal trade therein.

- **Recreational harvesting**

  Recreational harvesting refers to any form of fishing (including diving) done for leisure or sport and not for sale, barter, earnings or gain.

- **Subsistence harvesting**

  Means a natural person, who on authority of a subsistence right allocated to him/her in terms of the Marine Living Resources Act, 1998, regularly catches fish for personal consumption or for the consumption of his/her dependants, including one who engages from time to time in the local sale or barter of excess catch, but does not include a person who engages on a substantial scale in the sale of fish on a commercial basis.

- **Commercial harvesting**

  Commercial harvesting, refers to a person or entity (to which a fishing right has been allocated) that fishes for any of the species, which have been determined by the Minister in terms of section 14 of the Marine
Living Resources Act, 1998 to be subject to the [total] allowable commercial catch or total applied effort, or parts of both and who may legally market and offer for sale their catch.

- **Total allowable catch (TAC)**

  Refers to the maximum quantity of fish of individual species or groups of species made available annually, or during such other period of time as may be prescribed, for combined recreational, subsistence, commercial and foreign fishing in terms of section 14 of the Marine Living Resources Act, 1998.

- **Total allowable effort**

  Means the maximum amount of fishing vessels, the type, size and engine power thereof or the fishing method applied thereby for which fishing vessel licences or permits to fish may be issued for individual species or groups of species, or the maximum number of persons on board a fishing vessel for which fishing licences or permits may be issued to fish individual species or groups of species.

- **Sustainable utilisation/harvesting**

  Can be defined as the usage/harvesting of marine resources to meet the needs of the present generations without compromising the ability of future generations to meet their own needs, in such a way that ecological life-support systems and marine biodiversity are not compromised in any way, in essence ensuring that utilisation takes place within the carrying capacity of the marine and supporting ecosystems.
• **Marine biome**

A biome can be defined as a major regional ecological community of plants and animals or life zone. Marine biome therefore refers to the life zone found within the marine realm/environment.

### 1.9 LAYOUT OF CHAPTERS

In this dissertation, the issue of the illegal exploitation of marine species is approached in a chronological and structured manner in order to, at the outset, sensitise the reader to the various marine fishing disciplines as well as the ecological/biological characteristics of the relevant species before dealing with the actual dynamics of the marine crime phenomenon.

Through this methodology an attempt is made to provide not only insight into the issues at hand but also to ensure that the phenomenon is addressed in a logical, holistic and integrated fashion. In the following section the scope of each chapter will be succinctly outlined.

**Chapter one:** This chapter deals with the orientation, approach and background of the research dissertation and encompasses, amongst others, the rationale for the research, the assumptions, aim of the study, data gathering and processing techniques, validity and reliability issues, definition of key concepts and so forth.

**Chapter two:** This chapter deals with the biological and ecological characteristics of the target species and aims to introduce the reader to each of the relevant organisms, specifically with regard to its habitat requirements, distribution, feeding and reproductive regimes, so as to place the phenomenon of crime within the marine environment in perspective and enable the reader to better envision and appreciate the complexities and vulnerabilities associated with the marine biome.

**Chapter three:** In chapter three the nature of marine crime is discussed under the headings, modus operandi and crime scenes. Detailed information is provided on the methods and techniques used to illegally harvest organisms in the various fishery sectors and the diversity of crime scenes as well as the implications for effective policing are highlighted.
Each section is, for orientation purposes, preceded by a concise overview of the various fishing sectors and the user groups active within it.

Chapter four: The aetiology of marine crime in terms of causational and motivational aspects for each of the species under investigation is comprehensively investigated in this chapter and topical law enforcement issues are discussed.

Chapter five: In this chapter the extent of marine crime is addressed regionally in terms of law enforcement and control issues.

Each fishery control station is evaluated in terms of, amongst others, location, functions/duties, staff complement and individual species prosecution statistics and regional comparisons are made.

Histograms are provided to facilitate interpretation and to, at first glance, determine the degree of policing effort being generated by the station in relation to the various organisms encountered in that stations operational area and in the region as a whole.

Chapter six: The empirical results of the survey questionnaire disseminated to all the operational fishery control officers in the Western Cape province are expounded upon in this chapter in both a textual and graphical manner.

Based on the information collected the reader is presented with a lucid picture of the fishery control officer's operational milieu and his/her motivational disposition. Parallels are drawn between the dominating emergent themes and the deficient policing effort currently being directed at the conservation of our fragile marine resources.

Chapter seven: The effect of marine crime in terms of its biological and social implications is investigated in this penultimate chapter.

The far-reaching effects that this form of deviance can have on biotic diversity and the socio-economic milieu are discussed in detail. How marine crime can lead to the intensification and diversification of crime is also addressed.

Chapter eight: This final chapter provides an overview of the study under the headings summary, conclusion and recommendations.

It is envisaged that the recommendations made, will provide state decision makers with a framework that will stimulate positive actions and realise the institution of effective and realistic intervention programmes directed at the regaining of control over marine resource destiny for the benefit of present
and future generations as well as the economy of not only the Western Cape province but South Africa as a whole.

1.10 CONCLUSION

Through a combination of both qualitative and quantitative data gathering techniques a framework for understanding the phenomenon of the over-exploitation of certain marine resources in the Western Cape province has been provided. An attempt has been made to systematically explore this phenomenon as a form of environmental/ecological crime in a reliable, valid and credible manner by examining, in chronological order, the biological/ecological characteristics of the relevant marine species, the crime scenes, modus operandi, causational/motivational aspects, extent of law enforcement and control (as an indicator of deterrence and conservation success), operational milieu of the enforcement line functionary and the biological and social effects/implications of marine crime.

The fundamental question this research purports to answer is whether there is a marine crime problem within the various harvesting sectors identified, and if so, can the criminological discipline act as a conduit contributing to placing it in perspective and developing solutions therefore?

Finally, through this research it is anticipated that an interest in, what can, it is submitted, rightly be termed conservation criminology, will be stimulated and that it will lead to accession by criminological scholars prompting more research to be directed towards addressing those environmental issues responsible for the escalating deracination of our fragile natural environment.
CHAPTER 2

TARGET SPECIES OF MARINE CRIME

BIOLOGICAL AND ECOLOGICAL CHARACTERISTICS
2.1 INTRODUCTION

Although the species that form the subject of investigation in this dissertation have as a common denominator the marine environment, each group possesses distinct and unique biological characteristics and has a specific ecology in terms of amongst others: habitat requirements; behaviour; distribution; and interaction/relationships with conspecifics (identical organisms) and incongruous (non-identical) biota as well as with the inorganic environment.

Most of these factors, apart from determining the particular species' niche\(^1\) in the marine environment, also have an important bearing on, and are in most cases inextricably linked to, the criminal exploitation of these species.

They dictate, for example, how vulnerable the organism will be, i.e., how accessible it is to criminal exploitation/perturbation, by whom and where it is most likely to be exploited as well as by which method; the economic or commercial value of the organism, i.e., how attractive it is as a target in pecuniary (monetary) terms and the degree of guardianship it enjoys, i.e., the extent to which it is pro-actively and reactively protected.

To place the phenomenon of marine crime in a criminological perspective and to engender an understanding of its underlying rationale it is imperative therefore to examine these biological and ecological factors in relation to each of the target species, namely abalone, demersal fishes, inter-tidal zone organisms, pelagic fish, rock lobster and shore angling fishes by providing a comprehensive exposition of their habitat, distribution, reproduction and feeding as a precursor to this dissertation.

\(^1\) Niche: functional role of a species in the community including activities and relationships (Smith 1980:737).
2.2 BIOLOGICAL AND ECOLOGICAL BACKGROUND OF THE RELEVANT SPECIES

2.2.1 ABALONE (*Haliotis midae*).

Abalone, more commonly known to most South Africans as Perlemoen, are a group of slow growing sedentary\(^2\) shellfish (Hauck 1999:212; Wood 1994:33) much valued for their flesh belonging to the Phylum Mollusca and Class Gastropoda, (Storer, Usinger, Stebbins & Nybakken 1979:466) which are superbly adapted to life in the often turbulent and highly oxygenated section of the marine ecosystem that they characteristically inhabit. (see figure 2.1).

![Abalone](image)

Figure 2.1: Abalone (*Haliotis midae*) feeding (Branch and Branch:1981).

- HABITAT

The vast majority of these organisms are found in beds or forests of the kelp (seaweed) *Ecklonia maxima*, the fronds (leaves) of which are often easily visible from the surface, within the near-shore sub-tidal marine ecosystem at depths of less than 10 metres, with the highest densities occurring in the 0-5 metre depth range (Tarr 1989:64). Being sedentary in nature, abalone are closely associated with the substrate, even occasionally, if optimum

\(^2\) Sedentary: term used to describe organisms which are either immobile on or under the seabed, or are unable to move except in constant physical contact with the seabed or the subsoil (Storer, Usinger, Stebbins & Nybakken 1979:854).
growth and reproductive conditions prevail, remaining in one particular position for life (Mackenzie 1999), a characteristic which coupled with its occurrence in relatively shallow water makes it extremely accessible and easily exploitable (Hauck 1999:212).

• DISTRIBUTION

According to Mackenzie (1999), abalone are found between Cape Columbine, just north of Saldanha Bay on the West Coast, and Port St Johns on the Transkei coast, with the highest densities occurring in the most productive section of the coastline from Cape Hangklip to Quoin Point, an area which has in the past yielded more than 85 percent of the annual quota (Tarr 1989:64). Less favourable conditions, such as lower water temperatures, result in slow growth and reduced productivity to the west of Cape Point, and the warmer water to the east causes the isolated populations to be low in productivity probably due to less food, higher losses to predation, competition with other species such as sea urchins for sheltered sites, and currents sweeping most larvae away from settlement areas.

• REPRODUCTION

Abalone are a dioecious species (separate sexes) that reproduce by means of broadcast spawning (Wood 1994:37-38), a process whereby both sexes spawn simply by releasing their sexual products into the surrounding water - a large female releasing up to 15 million eggs per spawning, and for this reason relying heavily on the proximity of conspecifics for successful reproduction, i.e., a critical density of organisms must exist below which reproductive success will drop substantially (Tarr 1989:67).

Spawning, depending on conditions, occurs either once or twice per year usually in spring and autumn, with less than 1 percent of the larvae produced reaching adulthood (Mackenzie 1999), a minute proportion considering the vast number of eggs produced.

Once an egg is fertilised, it is wholly dependent on the prevailing currents to carry it to an environment suitable for settlement, with the abalone taking approximately 8 - 10 years before it reaches sexual maturity and only attaining a shell breadth of 114 millimetres, the size at which legally harvestable, after approximately 13 years (Tarr 1989:67).
The abalone, thus theoretically, has 3 - 4 years of protected spawning before being exposed to human exploitation.

Also closely related to the breeding success of abalone is the close ecological relationship (commensalism) that exists between young abalone and sea urchins Parechinus angulosus, with juvenile abalone deriving protection from predation by fish and rock lobsters under the spines of the urchins (Stuttaford 1999:208).

• FEEDING

Abalone are herbivorous (plant tissue eating) organisms, which, when small, feed by grazing the minute algal turf that cover rocks but when large enough to occupy exposed sites on rocky outcrops, feed by trapping drift weed or overhanging kelp fronds, the most important food by bulk, under their shells and rasping it with their tongue-like radula (Branch & Branch 1988:72-73; Mackenzie 1999; Tarr 1989:66).

Such trap feeding is stimulated by rough seas, probably due to more pieces of seaweed being available as a result and is an energetically economical method of feeding which explains the high densities of abalone encountered in marine reserves and which undoubtedly occurred naturally before exploitation by man (Tarr 1989:66).

It is advantageous for abalone to aggregate in high concentrations with regard to feeding because once an abalone has trapped, for example, a drifting frond of kelp, the frond becomes more easily available to the abalone's neighbours, and often one frond is trapped and fed upon by four or more individuals (Tarr 1989:66).

2.2.2 DEMERSAL FISHES  (Shallow-water Hake, Merluccius capensis; Deep-water Hake, Merluccius paradox: and Kingklip, Genypterus capensis).

Demersal fish are bony fishes belonging to the Phylum Chordata and Class Osteichthyes (Storer et al. 1979:631-633) living on or near the ocean bottom where they are either netted by trawlers towing behind them sturdy nets (Branch & Branch 1988:122), or by longlining (Stuttaford 1999:207). The demersal trawl industry is centred on the Cape hakes, more commonly known as stockfish and is regarded as the most valuable sector of the South African fishing industry in terms of product value (Stuttaford 1999:220).
Since hake are so dominant in the demersal ecosystem that they constitute about 75 percent of the fish landed by deep-sea trawlers, the discussion below will chiefly be devoted to this species.

- **HABITAT**

Hake and kingklip live predominantly on or close to the bottom of the ocean in a variety of substrata with hake usually being exploited over 'soft' ground where nets incur less damage from the substrate and because the 'softer' areas are more resilient and capable of quicker regeneration after net dragging damage (Tilney 1999). Kingklip prefer a substrate that is more rocky and tend to spend much of their time hiding in crevices and the like being exploited mainly through the longline\(^3\) method (Payne & Badenhorst 1989:154).

The ocean floor is, however, not the only section of the marine ecosystem that hake utilise and both species undertake daily migrations, usually rising by night in reaction to food chain fluctuations but not necessarily to feed (Tilney 1999), and thus spend a large portion of their lives in mid or surface waters, making trawling activities in darkness an uneconomic proposition (Payne 1989:141).

- **DISTRIBUTION**

Both species of hake are spatially distributed in a long band along the continental shelf, ranging from 10 to 40 nautical miles off the coast from north of Doring Bay on the West Coast, an area commonly known as the 'Browns', to Mossel Bay on the South Coast, an area commonly known as the 'Blues' in water ranging from 50 metres to over 500 metres in depth, with species biomass within this distribution range being closely associated to the particular species' habitat requirements (Tilney 1999).

Kingklip are found in varying densities from Luderitz in Namibia to beyond Port Elizabeth on the East Coast in water ranging in depth from 250 metres to 400 metres.

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\(^3\) *Longlining:* an arduous and labour intensive fishing technique whereby baited hooks (up to 10,000 or more) hang from longlines, sometimes several kilometres long, buoyed at the surface for tuna or near the bottom so that the hook rests on the bottom for kingklip or just off the bottom for hakes and which are retrieved by mechanical means (Tilney 1999).
• REPRODUCTION

Both hake and kingklip are dioecious species that reproduce by means of broadcast spawning throughout the year along the entire coast (Naidoo 1999:11), with a single large female capable of releasing tens of thousands of eggs into the water during the spawning process where eggs are fertilised in the water by sperm released by males (Payne 1989:142). Survival rate of larvae is estimated to be between 1 and 2 percent, mainly due to predation and starvation, and is probably the reason why so many eggs are produced (Tilney 1999). Young hake remain near the surface for some months often forming extensive schools, presumably for protective purposes, whereafter they follow their instinct to migrate to the bottom (Payne 1989:143). Here they grow relatively slowly, becoming sexually mature after about 4 years and in some instances living to an age of 14 years and reaching a length of up to 110 centimetres (Branch & Branch 1988:122), and in the case of kingklip living to an age of 20 years and reaching a length of up to 150 centimetres (Payne & Badenhorst 1989:154).

• FEEDING

Cape hakes, like many fish, are opportunistic feeders taking whatever is available, at any time of day whenever the opportunity presents itself and therefore, there are distinct differences in their diet, both seasonally and spatially, (Payne 1989:144). Kingklip, however, feed at night on chiefly larger fish but eat relatively little in comparison to other fish due to their mainly sedentary nature (Payne & Badenhorst 1989:154).

The feeding habits of hake change during their life, however, with young fish feeding predominantly on crustaceans in the plankton, particularly small shrimp-like euphasiids similar to the Antarctic krill, before developing a prelibation (fore-taste) first of all for small mesopelagic fish of which the Lantern fish Lampanyctodes hectoris or “onderbaadjie” is the most common off South Africa and later, when adult for larger fish, both bottom-living and epipelagic (shoaling fish) as well as those of its own species (Payne 1989:144).

4 Mesopelagic: pertaining to the region of the oceanic zone from 200 metres to 1000 metres in depth (Smith & Heemstra 1988:941).
It is also interesting to note that kingklip often eat hake, but seldom do hake eat kingklip, despite the fact that they cohabit (Payne & Badenhorst 1989:155).

2.2.3 INTER-TIDAL ZONE ORGANISMS (Black mussels, *Chromytilus meridionalis*; White mussels, *Donax serra*; Periwinkles, *Oxystele spp* and Limpets, *Patella spp*).

Although rocky shores, and to a lesser extent, sandy beaches are inhabited by a myriad of organisms superbly adapted to life in the extreme conditions that prevail in these environments, this discussion will be limited to those species (listed above) that can be regarded as the most often utilised by humans in the Western Cape province and therefore most susceptible to criminal exploitation. All the above-mentioned organisms can be taxonomically placed within the Phylum Mollusca, and apart from the white mussel *Donax serra* and black mussel *Chromytilus meridionalis*, which belong to the Class Bivalvia, all other organisms under discussion, belong to the Class Gastropoda, Subclass Prosobranchia (Storer *et al.* 1979:468-487).

- **HABITAT**

Organisms living within the rocky shore and sandy beach inter-tidal zones of the marine environment find themselves in one of the most stressful habitats on earth. They must constantly adapt to severe habitat changes - they are submerged in water twice every day for six hours when the tide rises, only to be exposed to the air, and with the exception of the white mussel, the blazing sun as the tide recedes at low tide (Rousseau [S.a.]:2). When covered by water, these species must be able to adapt to underwater life, as well as cold temperatures and rough treatment from waves.

Just hours later they must be able to withstand dry air conditions and high temperatures of up to forty degrees Celsius (Rousseau [S.a.]:3; Smith, 1980:242). This means that they must effectively be able to continue with all the vital functions of life, whether respiration, excretion, or reproduction in two utterly different environments: marine at high tide and essentially terrestrial at low tide (Branch & Branch 1988:26). Their unique ability to adapt to these varying conditions makes them all the more interesting to observe and all the more important to protect against criminal exploitation.
• DISTRIBUTION
Rocky shore and sandy beach environments throughout the Western Cape are almost without exception inhabited by the species discussed in this section, and although organism abundance and composition will, as a result of differing physical and biological processes and harvesting pressure, vary from area to area, their representation can basically be seen as ubiquitous in the study area.

• REPRODUCTION
Periwinkles and most limpet species are hermaphroditic organisms, i.e., organisms possessing both male and female organs, with a number of them becoming one sex first and then later changing to the other sex, a phenomenon termed consecutive hermaphrodisism (Branch & Branch 1988:218). This phenomenon, as with most phenomenon in the plant or animal kingdom, does not, however, occur without reason and holds distinct advantages for the particular species. It may, for example, not make much difference to a male whether he is large or small, but a female can only hold a limited number of eggs, and the number depends on her size. It is thus advantageous to start off being a male, and only when larger switch to being female (Branch & Branch 1988:218).

Limpets and periwinkles practice external fertilisation, shedding both eggs and sperm into the water and since this is a wasteful process vast quantities of gametes (eggs) need to be produced - up to sixty percent of the body mass of a limpet can be made up of gonad (sexual organ) with the production of gametes consuming a great deal of the creature’s energy (Branch & Branch 1988:218).

A limpet can during its lifespan produce about six million eggs, of which an average of only two will survive to the point where offspring themselves successfully reproduce, mainly due to the fact that the larvae produced float helplessly in the water and are subject to a high degree of predation in the plankton and the possibility of not reaching a suitable habitat (Branch & Branch 1988:29-30). Bivalves (double shelled organisms), such as the black and to a lesser degree the white mussel are generally not very mobile and like periwinkles and limpets practice external fertilisation.
They are, however, dioecious with both sexes’ gonads filling much of the visceral mass (body cavity) and often even extending into the foot and the lobes of the mantle (Branch & Branch 1988:223).

Fertilised mussel eggs develop into trochophore larvae and later into a second larval stage, the veliger which are covered by hair like cilia and are able to swim, although they are so tiny that they are very much at the mercy of the currents and waves with the result being a high mortality rate (Branch & Branch 1988:29).

**FEEDING**

On rocky shores, the seaweeds that cover much of the lower shores are central characters in the food web, for they are able to utilise the sun’s energy for photosynthesis\(^5\) and thus convert simple inorganic compounds (carbon dioxide and water) into complex compounds (Branch & Branch 1988:37).

Animals in turn eat these plants and use the energy trapped in their organic compounds to power their own growth.

Numerous grazing organisms, including periwinkles and limpets, eat the seaweeds, curiously though, not often attacking mature seaweeds but preferring to scrape the seemingly bare rocks for algal sporelings and diatoms with their long tongue like radulae (Branch & Branch 1988:37).

Bivalves, like the black mussel are, however, filter feeders relying on the turbulent organic rich water to continually bring in fresh food and as a group, filter feeders are in terms of biomass and numbers much more important than the grazers making up more than half the flesh-weight of the animals on rocky shores (Branch & Branch 1988:39).

On sandy beaches no grazing herbivores are found and all animals including the white mussel must depend on plant material and other food being brought into the shore, either by being blown in from the land or in most cases being introduced by the sea in the form of small organic particles suspended in the water (Branch & Branch 1988:52-53; Department of Environmental Affairs [S.a.]:33).

\(^5\) Photosynthesis: synthesis of carbohydrates from carbon dioxide and water by chlorophyll using light as energy and releasing oxygen as a by-product (Branch & Branch 1988:37).
White mussels feed on these small organic particles by sucking in the water in which these particles and phytoplankton are suspended through a siphon, extracting the nutrients and consuming them (Branch & Branch 1988:54-59).

Because bivalves are filter feeders, they are prone to poisoning by red-tide for they sometimes consume toxic planktonic organisms, concentrating the toxins in their tissues making them lethal to anyone who subsequently eats them or under certain circumstances, actually killing the organism itself (Branch & Branch 1988:109).

2.2.4 PELAGIC FISH (Sardine/Pilchard, *Sardinops ocellata*; Anchovy, *Engraulis cepensis*; Round herring/red eye, *Etrumeus whiteheadi*).

Pelagic, or more correctly epipelagic fish, are small short lived teleosts belonging to the Class Osteichthyes, Order Clupeiformes (clupeoid fish), (Smith & Heemstra 1986:199; Storer et al. 1979:682) and are so called because they swim in densely packed shoals or schools in the upper layers of the ocean where their planktonic food abounds (Armstrong & Thomas 1989:105). These fishes are heavily preyed upon by other fishes, birds, and man and can be regarded as the most important single group exploited by world fisheries, in particular the purse-seine industry, providing a significant contribution to the world's supply of protein (Armstrong & Thomas 1989:105; Smith & Heemstra 1986:199). Because the South African purse-seine pelagic fishery is centred on the three species mentioned above, and more specifically the pilchard and anchovy resource (Van der Lingen 1999), the following discussion will be directed chiefly towards these species.

- **HABITAT**

The pelagic fish species listed above occur most commonly in the upper layers of the open sea, i.e., between the surface and a depth of approximately 200 metres, over the continental shelves with the greatest abundance occurring off

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6 Teleosts: those fish species possessing a skeleton chiefly of bone as distinguished from the elasmobranchs, cartilaginous fishes such as sharks and rays, which have a cartilaginous skeleton (Van der Elst 1981:362).

7 Purse-seine fishing: technique whereby a shoal of epipelagic fish are encircled by a net weighted at the bottom and floated at the top which is pursed, “zipped” closed trapping the fish inside (Payne & Crawford 1989:52).
the West Coast in the top 50 metres of the upwelling\textsuperscript{8} enriched water where the rates of planktonic production are the highest (Armstrong & Thomas 1989:106-7; Branch & Branch 1988:119; Van der Lingen 1999). Pelagic fish, depending on environmental conditions, tend to form dense shoals during the daylight hours and characteristically prefer a deeper habitat than during the night when they rise to the surface layers of the ocean dispersing somewhat more whilst feeding (Armstrong & Thomas 1989:118; Van der Lingen 1999). The appearance of pelagic fish right at the surface during daylight is often caused by predators such as dolphins attacking the school from below, and is usually a visual clue to skippers of purse-seiners, the only group able to exploit these resources, just as the light from bioluminescent plankton being disturbed by pelagic fish is at night, that schools of pelagic fish are in the vicinity (Armstrong & Thomas 1989:117-8).

- DISTRIBUTION

Although clupeoids occur in most of the world's oceans and seas, with the exception of the Antarctic, the species relevant to this discussion are inhabitants of a temperate ocean system, which extends from northern Namibia to Natal (Armstrong & Thomas 1989:106-7). According to Van der Lingen (1999), young pelagic fish are in general found in the highest densities on the West Coast of South Africa as a result of their spawning regime and the availability of nutrients essential for their growth, moving progressively eastwards towards the Aghulas Bank as they grow older, to spawn.

- REPRODUCTION

Pilchards, anchovies and round herring generally spawn during August to March, October to February and August to October respectively over the Aghulas Bank between Cape Aghulas and Cape Columbine (Stuttaford 1999:207). All the mentioned species are dioecious and oviparous\textsuperscript{9} practicing broadcast spawning - with females releasing large numbers of eggs into the

\textsuperscript{8} Upwelling: a process whereby deeper colder waters, rich in nutrient salts, rise to the surface as a result of the combined effects of wind, ocean currents, earth rotation and fluctuating water densities usually stimulating the prolific growth of phytoplankton.

\textsuperscript{9} Oviparous: producing young by laying egg cases in which the embryos continue to develop after being shed (Smith & Heemstra 1986:941).
water column and the males synchronously releasing their sperm into the water in the vicinity of the newly released eggs, ensuring a high rate of fertilisation (Armstrong & Thomas 1989:111).

Survival rates for the fertilised eggs and/or larvae are extremely low as they are simply abandoned into the water where they are subject to a high degree of predation, swept into unfavourable habitats by surface currents or are spawned in areas that have insufficient food reserves for the larvae to survive (Armstrong & Thomas 1989:110).

These species do, however, increase the chances of their eggs/larvae surviving by means of protracted spawning, i.e., spawning at, depending on the species, certain intervals during the spawning season, thereby increasing the chances of their eggs/larvae growing into adult fish (Armstrong & Thomas 1989:110-111). Pilchards, anchovies and round herring attain ages of approximately 6-8 years, 3 years and 4-6 years respectively (Stuttaford 1999:207), and reach approximately 28 centimetres, 13 centimetres and 20 centimetres in size respectively (Smith & Heemstra 1986:201-5).

- **FEEDING**

Juvenile anchovy and pilchards feed mainly on zooplankton, but as adults become omnivorous, opportunistic feeders (Armstrong & Thomas 1989:115). In areas where phytoplankton is abundant, it will dominate their diet, but in areas where zooplankton is more abundant, copepods or euphausiids may be the most important food (Armstrong & Thomas 1989:115). In contrast, both juvenile and adult round herring feed only on zooplankton (Armstrong & Thomas 1989:115; Van der Lingen 1999) making it exclusively a particulate feeder. Anchovy and pilchards employ two different types of feeding. Small particles such as diatoms, are consumed by filter-feeding, whereas larger items such as most zooplankton, are taken by biting or particulate feeding (Armstrong & Thomas 1989:115; Stuttaford 1999:207; Van der Lingen 1999).

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10 Zooplankton: floating or weakly swimming planktomic animals (Smith 1980:739).


When filter-feeding, the fish opens its mouth wide and flares its gill covers forming a sieve which traps any particles in the water passing through as the fish swims along. This technique, however, requires a considerable expenditure of energy to overcome the water resistance and coupled with the fact that, weight for weight, phytoplankton are less nutritious than zooplankton, the energy demand means that filtering only becomes a profitable form of feeding when food particles are present in dense concentrations (Armstrong & Thomas 1989:115). As a result, even in areas where phytoplankton is abundant, pelagic fish such as anchovy may selectively feed on zooplanktonic organisms, although some phytoplanktonic cells are almost inevitably filtered during the normal course of respiration (Armstrong & Thomas 1989:115).

2.2.5 ROCK LOBSTER (*Jasus lalandii*).

Rock lobster, more commonly known as kreef or crayfish (see figure 2.2) are a group of reptant (crawling), long-lived, slow growing organisms, characteristically inhabiting the shallower waters of the marine environment which are much valued for their palatable flesh and their recreational/commercial importance.
Rock lobsters, such as *Jasus lalandii*, belong to the Phylum Arthropoda, Class Crustacea and Subclass Malacostraca (Storer *et al.* 1979:541-3). These crustaceans possess a dorso-ventrally flattened body with a hard exoskeleton providing effective protection against many predators, as well as five pairs of walking legs, causing them to appear to the uninitiated as a form of sea spider (see figure 2.3).

![Figure 2.3: Viewed from this angle, rock lobster resemble a form of sea spider](Photo: Sunday Times, 12 November 2000).

- **HABITAT**

Rock lobsters, like abalone are usually encountered in cool relatively shallow water between the depths of 3 metres and 50 metres and are commonly associated with kelp beds and rocky substrata\(^{13}\) (Groeneveld 2000), sections of the marine ecosystem in which the biomass of their preferred food is the greatest. Rock lobsters characteristically undertake regular migrations from shallower waters to deeper waters and visa-versa within their habitat range, but interestingly seldom tend to migrate laterally to any great extent\(^{13}\) (Groeneveld 2000).

\(^{13}\) Translated from Afrikaans.
Within their chosen habitat, rock lobsters occupy crevices and holes under rocks in a hierarchical fashion - the largest animals occupying the choice holes defending them against others of their kind (Branch & Branch 1988:189).

- DISTRIBUTION
According to Stuttaford (1999:207-8), the West Coast rock lobster, *Jasus lalandii* is geographically distributed from Cape Cross in Namibia around the Cape of Good Hope to Algoa Bay and East London with the greatest abundance, however, being found in the cold upwelled waters of the Benguela current off South Africa’s western seaboard.

- FEEDING
The rock lobster, *Jasus lalandii*, is the most important predator in kelp beds, feeding on many organisms including the urchin *Parechinus* but favouring mussels, more specifically the black mussel, *Chromytilus meridonalis* (Branch & Branch 1988:78; Herbig 1990:10).
Small rock lobsters feed mainly on small black mussels being unable to crush larger ones, while larger rock lobster prefer large mussels since they give a greater yield of food for the effort put into crushing them open, with growth rate being closely related to the amount of food present at a particular locality (Branch & Branch 1988:78).
Although rock lobsters also rely on other sources of food, even ingesting seaweed from time to time and resorting to cannibalism, in areas where mussel biomass is low their growth becomes stunted or retarded as a result, (Pollock 1989:79) and it therefore becomes plain to see how illegal exploitation of a resource such as black mussels, for example, can negatively affect the rock lobster resource in a particular area, emphasising the close ecological relationship and balance that exists within the marine environment.
Rock lobster, with the exception of very large individuals, usually feed during the night remaining relatively inactive during the day, when natural enemies are most active

- REPRODUCTION
In South African waters, *Jasus lalandii* grows agonisingly slowly achieving

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14 Translated from Afrikaans.
sexual maturity at a carapace (dorsal shell) length of approximately 65 millimetres, when the individuals, depending on the availability of food, are in the region of 6-7 years old\textsuperscript{15} (Groeneveld 2000).

Since, rock lobster may only be legally harvested by recreational fishers once it has attained a carapace length of 80 millimetres, and by the commercial sector once it has attained a carapace length of 75 millimetres, the rock lobster theoretically has a 3-4 year opportunity to reproduce before becoming susceptible to exploitation (Branch & Branch 1988:125).

Once rock lobsters mature, females grow only about 1 millimetre a year and males 3 millimetres a year so that the monsters of 150 millimetres occasionally caught could be as old as 30-40 years and implying that it is very easy to overfish the populations and that the stocks are slow to recover (Branch & Branch 1988:125).

Copulation occurs shortly after females have moulted in April to June with eggs being fertilised internally, the sperm deposited on the underside of the carapace gaining entry by means of fine channels in the newly moulted females soft exoskeleton (Groeneveld 2000; Pollock 1989:73).

On extrusion the eggs are attached to numerous hairs on the under-surface of the female's abdomen and peak hatching, which appears to be synchronised with the onset of upwelling, occurs in the late winter or spring with surface currents facilitating offshore dispersal (Branch & Branch 1988: 73).

Brood sizes are large with up to 240 000 eggs being carried by a large female (Pollock 1989: 73) and less than 1 percent surviving until adulthood\textsuperscript{15} (Groeneveld 2000).


Shore angling fishes are a group of shallow water, inshore, edible teleosts belonging to the Phylum Chordata, Class Osteichthyes (Storer \textit{et al.} 1979:664), most commonly exploited by the rock and surf angling fraternity

\textsuperscript{15} Translated from Afrikaans.
and is a fishery discipline that can be regarded as the most accessible to all sectors of the community (Van der Elst 1989:166), both in terms of access to the resource itself, and due to the minimal outlay required for tackle and equipment. Although a large number of fish species are targeted by shore anglers, a discussion of all of them would be prohibitive, and for this reason only those species listed above, which are most commonly targeted and exploited by rock and surf anglers in the Western Cape will be dealt with.

- HABITAT

Most of the species relevant to this discussion have certain individual preferences with regard to habitat but it can in general be said that they inhabit the near-shore marine environment, being the narrow strip of coastal ocean out to approximately 150 metres offshore in waters of up to 20 metres in depth (Department of Environment Affairs and Tourism [S.a.]:26).

Species like hottentot, galjoen and blacktail are most commonly associated with shallow water reefs, kelp beds and rocky substrate, whilst elf, white steenbras and dusky kob prefer sandy surf-zones, estuaries and embayments (Van der Elst 1981:259-318).

- DISTRIBUTION

Galjoen, (South Africa's national fish), hottentot and white steenbras are all endemic\(^\text{16}\) to Southern Africa, being found with the exception of the hottentot, whose habitat range only extends eastwards as far as the Tsitsikama coast, in coastal waters from Angola to KwaZulu Natal (Attwood 1999:1; Goodman & Griffiths 1999:1; Lamberth 1999:1; Van der Elst 1981:161).

Although galjoen and white steenbras are, in terms of abundance, fairly evenly distributed throughout the above distribution range, hottentot are most abundant between Port Nolloth and Cape Agulhas (Goodman & Griffiths 1999:1). The distribution of elf, blacktail and dusky kob is far greater occurring in many different oceans around the world with Southern African populations, however, being concentrated between Cape Point and Mozambique (Van der Elst 1981:259-318).

\(^{16}\) Endemic: organisms that are restricted to a given geographic region (Smith 1980:735).
• **REPRODUCTION**

Due to the individual nature of the various species' spawning regimes, each one will be dealt with separately below.

**Hottentot:** Hottentot display a gonochoristic\(^{17}\) reproductive style spawning throughout the year and distribution range (Goodman & Griffiths 1999:1). Eggs and larvae are characteristically found in the inshore waters of the Cape Peninsula with juveniles most commonly being associated with shallow-water kelp (*Ecklonia* and *Laminara* spp.) beds (Goodman & Griffiths 1999:1). Hottentot attain a maximum length of 500 millimetres TL,\(^{18}\) weight of 3 kilograms and age of 12 years (Goodman & Griffiths 1999:1).

**White steenbras:** The white steenbras is a rudimentary hermaphrodite\(^{19}\) spawning during late winter (July to August) in the northern region of the Eastern Cape and Transkei coasts in water less than 25 meters deep (Lamberth 1999:1). Eggs and larvae drift southwards and after metamorphosis enter estuaries along the south-east, southern and south-west coasts where juveniles may remain for up to 2 years (Lamberth 1999:1; Van der Elst 1981:318). White steenbras attain a maximum age of 25 - 30 years, weight of more than 29 kilograms and length of approximately 1400 millimetres TL (Lamberth 1999:1-2).

**Blacktail:** The reproductive style of blacktail can best be described as partial protandrous hermaphroditism,\(^{20}\) with length and age at sex change occurring at different sizes and ages (Mann 1998:1). Spawning occurs during August to March in the south - eastern cape in the vicinity of inshore reefs throughout the distribution range (Mann 1998:2). Eggs and larvae are distributed close inshore throughout the distribution range with juveniles frequenting sub - tidal

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\(^{17}\)Gonochoristic: term used to describe eggs and sperm developing into separate sexes.

\(^{18}\)TL: term used to denote the total length of a fish as measured from the tip of the snout to the tip of the tail. Where the tail fin is forked, measurement is to the tip of the longest lobe of the tail (Lamberth 1999; Van der Elst 1981:355).

\(^{19}\)Rudimentary hermaphrodite: organism possessing both male and female reproductive organs but which does not lead to complete sex reversal (Lamberth 1999).

\(^{20}\)Partial protandrous hermaphroditism: organism that undergoes periodic sex changes becoming bisexual at specific times of year (Lamberth 1999; Smith 1986:940, 942).
gullies, inter-tidal pools and estuary mouths (Department of Environmental Affairs and Tourism [S.a.]:27; Mann 1998:1-2).

Blacktail attain a maximum age of 21 years, weight of between 1120 grams and 2900 grams and length of approximately 400 millimetres FL\textsuperscript{21} (Mann 1998:1).

**Galjoen:** This species displays a heterosexual reproductive style spawning from October to March throughout the distribution range (Attwood 1999:1). Eggs and larvae are believed to float and larvae are particularly vulnerable to starvation during very early life (Attwood 1999:1). Galjoen never enter estuaries and attain a maximum age of 13 years, length of 670 millimetres TL and weight of 6 kilograms (Attwood 1999:1).

**Dusky kob:** This species, like the hottentot, has a gonochoristic reproductive style, spawning from October to January in the Cape usually in an inshore marine environment (Griffiths 1999:1), with a large proportion of the adult population in the Cape migrating to KwaZulu-Natal to spawn. Juveniles less than 150 millimetres TL exclusively inhabit an estuarine environment with those up to 1000 millimetres TL inhabiting estuarine and surf-zone environments (Griffiths 1999:1). Dusky kob attain a maximum age of 42 years, length of more than 1800 millimetres and weight of 75 kilograms (Griffiths 1999:1).

**Elf:** Elf also employ a gonochorist reproductive style, spawning from September to February in KwaZulu-Natal in near shore waters ranging from 30 metres to 60 metres in depth (Radebe 1998:2). Eggs and larvae utilise the shoreward edge of the Agulhas current for dispersal to nursery areas, primarily embayments, in the eastern and south-western Cape (Radebe 1998:1). Elf attain a maximum age of 10 years, length of 100 centimetres in SA and weight of more than 10 kilograms (Radebe 1998:2).

- **FEEDING**

Feeding habits of the different species vary quite considerably according to their particular habitat preferences within the habitat range.

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\textsuperscript{21} FL: term used to denote the fork length of a fish as measured from the tip of the snout to the fork of the tail (Van der Elst 1981:352).
The galjoen, for example, prefers churning white water where it feeds on smallish black mussels (ingesting them whole), barnacles, ascidians (red - bait) and other benthic organisms dislodged from the rocks (Department of Environmental Affairs and Tourism [S.a.]:26; Van der Elst 1981:161).

Dusky kob and white steenbras on the other hand often congregate on shallow sandy beaches and in sheltered bays, where they feed on polychaete worms,\textsuperscript{22} sand and mud prawns and other organisms flushed from the sand by wave action (Department of Environmental Affairs and Tourism [S.a.]:27; Van der Elst, 1981:319). White steenbras may also often be seen waving their tails above the water as they nose into the sand, blowing small creatures from their burrows with a powerful jet of water that is forced through the narrow mouth by the pumping action of the powerful gill covers (Smith & Heemstra 1986:587).

Kob are also well equipped to feed at night and in dirty water since they hunt mainly by combining smell and lateral line\textsuperscript{23} senses instead of by sight (Van der Elst 1981:261). Elf, among the fiercest marine predators, most characteristically feed voraciously in the shallow surf zone, targeting mainly other small fishes and when feeding on, for example, a shoal of sardines will gorge themselves in a veritable feeding frenzy, regurgitate, and then start all over again (Smith & Heemstra 1986:564).

The feeding habits of hottentot and blacktail can best be described as opportunistic, feeding on both plant and animal material and can easily be caught in the shallow water kelp bed and near-shore tidal pool environment they characteristically inhabit by the shore angler on a variety of baits.

\textbf{2.3 SUMMARY AND CONCLUSION}

In the preceding chapter, the biological and ecological background of the relevant species were described in terms of habitat, distribution, reproduction and feeding so as to provide the reader with adequate information to place the various species within the context of their living environment and to inculcate

\textsuperscript{22} Polychaete worm: a segmented marine worm with bristles (Van der Elst 1981:354).

\textsuperscript{23} Lateral line: a series of sensory tubercules forming a raised line along either side of the body of some fishes (Van der Elst 1981:353).
an understanding of marine crime. The species relevant to this investigation have been identified within six categories and are summarised in Table 1 below. In the following chapter, the attractiveness of these species as targets for marine crime, as well as the crime scenes and methods whereby the illegal exploitation of the various species takes place, will be highlighted.

<table>
<thead>
<tr>
<th>Species</th>
<th>Habitat</th>
<th>Distribution</th>
<th>Reproduction</th>
<th>Feeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abalone (Perlemoen)</td>
<td>In kelp forests within near-shore sub-tidal marine ecosystem usually in depths of less than 10m. Sedentary and non cryptic in nature.</td>
<td>Most commonly found between Cape Columbine, just north of Saldanha Bay (west coast) and Port St Johns on the Transkei coast. Highest density in the area between Cape Hangklip and Quoin Point.</td>
<td>Dioecious, reproducing by means of broadcast spawning. Relies heavily on the proximity of conspecifics for successful reproduction.</td>
<td>Herbivorous, feeds by grazing algal turf and by trapping drift weed or overhanging kelp fronds.</td>
</tr>
<tr>
<td>Demersal fishes</td>
<td>Live predominantly on or close to the bottom of the ocean in a variety of substrata.</td>
<td>Along continental shelf from north of Doring Bay on the west coast to Mossel Bay on the south coast.</td>
<td>Dioecious, reproducing by means of broadcast spawning. A single female is capable of releasing tens of thousands of eggs during spawning.</td>
<td>Opportunistic feeders, taking whatever is available. Distinct differences in diet both seasonally and spatially.</td>
</tr>
<tr>
<td>Inter-tidal zone organisms</td>
<td>Rocky shore and sandy beach inter-tidal zones of the marine environment.</td>
<td>Ubiquitous throughout the Western Cape.</td>
<td>Periwinkles and most limpets are hermaphroditic. Mussels are dioecious.</td>
<td>Limpets and winkels feed on seaweeds. Mussels are chiefly filter feeders.</td>
</tr>
<tr>
<td>Epipelagic fishes</td>
<td>Inhabit the upper layers of the ocean between 20 and 200m.</td>
<td>Distributed within the temperate ocean system from northern Namibia to Natal.</td>
<td>All relevant species are dioecious and oviparous practising broadcast spawning.</td>
<td>Juveniles feed mainly on Zooplankton. Adults are omnivorous opportunist feeders.</td>
</tr>
<tr>
<td>Rock lobster (Kreef)</td>
<td>Found in cool relatively shallow water between 3 and 50m and are commonly linked to kelp beds.</td>
<td>Distributed from Cape Cross in Namibia around the Cape of Good Hope to Algoa Bay and East London.</td>
<td>Copulation between male and female organism. Eggs are fertilized internally. On extrusion eggs attached to female.</td>
<td>Important predator in kelp beds. Favours black mussels and urchins. Sometimes practices cannibalism.</td>
</tr>
<tr>
<td>Shore angling fishes</td>
<td>Generally inhabit the near-shore marine environment up to approx 150m offshore in waters up to 20m in depth.</td>
<td>Varies for the different species but generally all found from Angola to KwaZulu Natal.</td>
<td>Various reproductive methods ranging from gonochoristic and bisexual to partial protandrous hermaphroditism.</td>
<td>Feeding varies between species and ranges from ascidians and benthic organisms to polychaete worms and small fishes.</td>
</tr>
</tbody>
</table>

Table 1: Summary of the relevant marine species.
CHAPTER 3

THE NATURE OF MARINE CRIME

MODUS OPERANDI AND CRIME SCENES
3.1 INTRODUCTION

The illegal exploitation and criminal abuse of marine resources are, like many other forms of more conventional crime, closely related to the influence of situational variables, which largely generate opportunities for crime as well as determine the vulnerability (accessibility) and attractiveness (pecuniary or otherwise) of the target and can be said to act as catalysing or triggering factors integral to target selection and in most cases the subsequent engagement in criminal activity.

Participation in the illegal exploitation of marine organisms is, with few exceptions, also inextricably linked to the particular fishery discipline or user group generally responsible for exploiting that resource, mainly by capitalising on the opportunities, either in a spontaneous or premeditated planned way, that are presented whilst engaged in the harvesting of a particular marine resource.

It is for this reason therefore, that each of the following sections will be preceded by a succinct overview of the relevant fishery discipline (sector) and the user groups active within it. Information was obtained through personal interviews with Marine and Coastal Management scientific and technical functionaries, chief fishery control officers at various strategic stations as well as through correspondence and telephonic enquiries with other M&CM personnel/role players and perusal of the relevant literature.

3.2 THE ABALONE FISHERY

Three user groups, namely a commercial or rights holder sector, a subsistence fisher group and a recreational component, chiefly exploit the abalone resource in the Western Cape. The activities of all three these groups, which target almost exclusively the species *Haliotis midae*, are regulated by legislation contained in the relatively new, conservation and transformation orientated Marine Living Resources Act, 1998 [Act No 18 of 1998] which came into effect on 1 September 1998 replacing the old Sea Fisheries Act of 1988
(Act 12 of 1988), and affords resource management and the equitable allocation of rights a high priority.

Hauck (1999:213), also identifies a fourth user group that impacts on and exploits the abalone resource, namely an informal or poacher sector/category. This group is, however, concerned almost exclusively with the illegal exploitation of the abalone resource and seldom takes part in any legal fishing activities.

The rights holder or commercial fishing user group, which is defined in terms of South Africa (1998a, sec. 1(iv)), is among the smallest commercial fishery disciplines in South Africa in respect of yield but one of the most lucrative in terms of unit value (Hauck & Sweijd 1999-:2), and is basically a consolidation of the pre - transformation, 1998/99 fishing season's two - part commercial fishery structure consisting of entitlement holders (licensed divers who owned the rights to dive and deliver a fixed percentage of the total allowable catch)¹, (TAC) and quota holders (packers who owned the receiving, processing and marketing rights to fixed percentages of the annual TAC) and was the only user group to which a TAC was applicable (Tarr 1999:1). Presently, the rights holder user group consists of divers and quota holders from the previous dispensation, plus a so - called new entrant sector comprising individuals from previously politically and socio - economically disadvantaged backgrounds who now all have the right to dive, process and market their percentage of the annual TAC. During the 1998/99 commercial abalone -fishing season, generally the period between 1 November and 31 October of the following year, the rights holder user component was allocated a TAC amount of 515t, 62.80 percent of the TAC for the entire abalone fishery discipline, which was fixed at 820t for the same period (Tarr 1999:1). Rights holders generally harvest their allocated percentage of the TAC allocation for the abalone fishery within one of seven demarcated zones around the west and south coasts (see figure 3.1) by means of diving from boats with the aid of an

¹Total allowable catch (TAC): means the maximum quantity of fish of individual species or groups of species made available annually, or during such other period of time as may be prescribed, for combined recreational, subsistence, commercial and foreign fishing (South Africa.1998a, sec. 14(xlv)).
artificial air supply (compressors) and are required by law to land their catch in the presence of a fishery control officer\(^2\) for the purposes of TAC control.

Figure 3.1: Commercial abalone harvesting zones (Tarr 1999).

A subsistence fisher is an individual who is defined in South Africa (1998a, sec. 1(1v)) as 'a natural person who regularly catches fish for personal consumption or for the consumption of his or her dependants, including one who engages from time to time in the local sale or barter of excess catch, but does not include a person who engages on a substantial scale in the sale of fish on a commercial basis'.

This user group has been included in the abalone fishery discipline since the 1997/98 season (Tarr 1999:5), and is regulated by permit conditions as well as regulations promulgated in terms of the Marine Living Resources Act, 1998. Techniques employed by this sector for legally exploiting the abalone resource are basically limited to diving therefore from the shore (during the same season applicable to the recreational component, but includes weekdays, however), without the use of artificial breathing apparatus and they may sell their catch to end-users but not the industry (Visser 1999, 2000).

\(^2\) Fishery control officer: means any person appointed as a fishery control officer in terms of section 9 of the Marine Living Resources Act, 1998.
The 1998/99 subsistence fisher TAC allocation amounted to 85 t, 10.37 percent of the entire abalone TAC allocation (Tarr 1999:4).

Recreational fishing is officially defined in South Africa (1998a sec.1(x1vii)) as ‘any fishing done for leisure or sport and not for sale, barter, earnings or gain’. According to Tarr (1999:4), the recreational sector has probably been active for longer than the commercial sector, which began in 1949, but has only in the last decade become a management issue. Recreational fishers exploit their TAC allocation, which was set at 220 t, 26.83 percent of the total allotment for the abalone fishery discipline, for the 1998/99 season by means of diving from the shore with snorkelling equipment under authority of a recreational abalone fishing permit, and subject to both the permit conditions and the relevant regulations of the Marine Living Resources Act, 1998. Currently, recreational abalone fishers are restricted to harvesting this resource during a 4 month season stretching from 16 December to 9 April of the next year and may only do so on weekends and public holidays, between sunrise and sunset, within this demarcated period (Hauck & Sweijd 1999:-3-4; Mackenzie 1999; Tarr 1999:4). The 2000/2001 recreational abalone season which opens on 16 December 2000 has, due to heavy losses to poaching, further been shortened to 2 months and now closes on 31 January 2001, with permit holders being restricted to 3 abalone (instead of 4) on Saturdays, Sundays and public holidays (Kreef season is shortened 2000:page number unknown). The informal or poacher sector comprises individuals often forming part of highly organised syndicates who contrary to the former user groups do not usually take part in any legal harvesting activities, but solely and purposefully illegally exploit the abalone resource as a means of supplying the growing and lucrative black market trade in South Africa (Hauck 1999:213; Van Eeden 2000) and will therefore, be referred to, for the purposes of this dissertation, as dedicated poachers.

3.2.1 MODUS OPERANDI
3.2.1.1 RIGHTS HOLDER SECTOR
According to Basson (2000); Van Eeden (2000) and Visser (2000) all chief fishery control officers responsible for the management of marine law
enforcement on the Western Cape's coastline, who among them have an accumulated 46 years of active service (hereafter collectively referred to as the Chief Inspectors when in concurrence), most illegal abalone exploitation, in all probability occurs, with due regard to the illegal activities of the small dedicated groups of militant, politically motivated shore based poachers such as those concentrated in the Hawston/Mudge Point\(^3\) area and their more mobile counterparts using motorised vessels for offshore poaching, within the less conspicuous and certainly less notorious commercial or rights holder abalone fisher sector.

Illegal exploitation within this group, and all the others for that matter (excluding the dedicated poacher component), as a rule takes place during the course of legal harvesting activities. With the aid of breathing apparatus abalone are harvested (manually, by removing them one organism at a time, in a whole state) from the ocean floor and passed, in bags floated with air, to the vessel in attendance at the surface for storage prior to landing in the legally prescribed manner.

During this activity criminally motivated rights holders, bearing in mind that there are presently a large number of relatively "unknown" new entrants into this fishery discipline, some of them employing known and convicted marine felons to dive for them (Chief Inspectors; Theron 2000), which could exacerbate this problem, place a quantity of these legally harvested abalone which are usually in a shucked\(^4\) state into bags and drop them off in sheltered embayments or other hiding places along the coast so as to facilitate retrieval by either themselves or accomplices at a later stage for the purposes of the illegal trade therein.

Through these activities large tracts of abalone reserves can unknown to M&CM personnel be decimated with relative ease and seemingly with impunity.

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\(^3\) Hawston/Mudge Point: an area situated 10 kilometres from Hermanus and 120 kilometres east of Cape Town, which has historically harboured the largest concentrations of abalone in the country and is the home of many dedicated poachers and scene of many a violent confrontation between poachers and the police/authorities (Mackenzie 1999).

\(^4\) Shucked: an abalone is in a shucked state when the abalone flesh has been separated from the shell of the organism (Mackenzie 1999; Van Eeden 1999).
whilst policing of the resource, albeit limited, is concentrated on the highly visible and relatively accessible recreational abalone fishery and dedicated poacher components.

It is ironic therefore, that whilst the rights holder sector, because of the TAC control at official landing points, is considered to be well regulated (Mackenzie 1999), other user groups are identified as being primarily responsible for bringing the abalone resource to the brink of collapse.

The arguments raised by the Chief Inspectors can be regarded as extremely valid and logical if one considers that the rights holders (now even more than before) especially those with the larger TAC allocations are on a regular basis in close proximity and exposed to large quantities of an extremely attractive, (valuable) unattended, (unguarded) highly sought after commodity in circumstances that afford ample opportunity and means to illegally exploit the resource. Another method by which the rights holder sector can illegally exploit the abalone resource and one, which is closely related to the inability of the authorities to regulate and control the TAC effectively and which in the opinion of the researcher is a gaping deficiency perhaps best described by Theron (2000) of M&CM's Yzerfontein office as a 'moerse loophole', is when a rights holder lands a catch at a fisheries control point to be weighed and sealed on the vehicle transporting the harvest. Since a rights holder has in terms of the new M&CM legislation the right to dive, transport, process, pack, market and sell his/her allocated quota (Mackenzie 1999) the smaller allocatee can drive down to a launching point, and launch a vessel after confirming his/her intentions to do so timeously with the fishery control officer and proceed to dive a portion of the allocated quota in his/her designated area. On arrival back at the slipway the fishery control officer is required to weigh the rights holder's catch and to enter the relevant details thereof on the permit form and thereafter to seal the catch on the vehicle transporting the harvest. In practice two problems arise at this point. Firstly, not all fisheries stations are supplied with scales to weigh the catches resulting in the organisms merely being counted and the "honesty" of the rights holder being relied upon to record and deduct the accurate weight from his/her TAC at a later stage (Theron 2000; Van Eeden 2000). This basically amounts to an open invitation to a criminally
motivated rights holder to be mendacious. Secondly, the sealing of the catch on the transporting vehicle so as to ensure that the amount of abalone originally landed arrives at the end destination seems to have little point bearing in mind that the rights holder is legally entitled to transport the catch to his/her own residence/processing plant. The seal's intactness, or lack thereof, is therefore of no consequence and in fact the whole sealing procedure would seem, in such instances, to be pointless. Any amount of abalone could in this way enter the black market without it reaching its legally envisaged destination (Theron 2000; Van Eeden 2000). According to Mackenzie (1999) 'this current system is far from foolproof and if someone wants to be skelm he will be able to be skelm'.

Mackenzie also expressed the hope that by the following season [2001] the situation will have improved.

3.2.1.2 SUBSISTENCE SECTOR

The Chief Inspectors are in agreement that illegal exploitation within the subsistence sector can basically be ascribed to an absence of control, allowing the motivated individual to exploit the resource, weather conditions permitting, mainly by diving therefore from the shore without the use of artificial breathing apparatus, numerous times per day, and to sell this harvest without affixing the prescribed M&CM identification tags, i.e., multiple sales of the daily bag limit. Only once inspected by a fishery control officer, would such a deviant subsistence fisher affix the required tags and would it be known that he/she had exercised his/her right for that day.

Theoretically therefore, in the absence of effective policing this sector could under favourable weather conditions and with access to a willing market capitalise on the opportunity that is presented to them and exploit the resource on a continuous basis.

A further form of illegal exploitation that, according to Van Eeden (2000), takes place within the subsistence sector, is the selling of the non-transferable identification tags and record book issued to successful subsistence fishers, often for the paltry sum of approximately R1500.00, to those motivated offenders wanting to obtain these control measures for the purposes of the fraudulent use thereof in order to capitalise on the opportunities this form of
utilisation presents. This practice, bears testimony to the fact that in the wrong hands and without effective control such a subsistence right basically becomes a licence to poach and indicates a serious flaw/loophole in the system.

3.2.1.3 RECREATIONAL SECTOR

Scientists are currently concerned about the high level of recreational fishing for abalone (Mackenzie 1999; Stuttaford 1999:208), and far-reaching measures have been implemented to arrest the situation. The Chief Inspectors, however, felt that the illegal exploitation in this sector was a relatively small problem when compared to the commercial rights holder and dedicated poacher sectors.

Recreational abalone fishers as a rule illegally exploit the abalone resource whilst engaged in legal diving activities from the shore by harvesting undersize or excess organisms, either for resale or for the purposes of own consumption. According to Van Eeden (2000), young children are increasingly being used by the more deviant recreational divers (as well as poachers) to assist with the diving and transportation of excess/undersize organisms to waiting vehicles or residences due to the difficulty in prosecuting them should they be apprehended. In terms of South African Criminal Law, a child under the age of seven years is irrebuttably presumed to lack criminal capacity and a child who is between the ages of seven and fourteen is rebuttably presumed to lack criminal capacity (Snyman 1991:168-171), making the prosecution of these juveniles, wether acting as a voluntary accomplice or whilst under the influence of older children or adults, extremely difficult.

In the event of a conviction the sentence is anyway usually more lenient than that for adults due to the fact that juveniles cannot be expected to act with the same measure of responsibility as adults and because they lack the necessary experience and insight making them more prone to commit thoughtless acts as well as because the interests of society cannot be served by disregarding the interests of the juvenile (Geldenhuys & Joubert 1996:239).

Undersize: the minimum legal size of an abalone is 114mm measured by a ring with an inner diameter equal to the legal minimum size (South Africa 1998b, sec. 37; Van Eeden 1999).
This kind of *modus operandi*, therefore, allows deviant recreational harvesters and other more dedicated individuals to further their illegal pursuits with relative impunity. Since current legislation authorizes persons of age twelve and older to obtain an abalone and/or rock lobster recreational harvesting permit, the abuse of juveniles by deviant elders (as well as by deviant juveniles themselves) can be expected to persist, and should be reason enough to warrant the urgent revision of the present qualifying age for abalone and rock lobster permits by the authorities.

Recreational divers have, however, also on occasion been known to make use of self-contained under water breathing apparatus (SCUBA), and boats to illegally harvest the abalone resource, but this activity is usually associated with other underwater recreational activities such as exploratory or sightseeing diving on wrecks or the like and is not considered to constitute a major problem or threat to the abalone resource at present.

3.2.1.4 DEDICATED POACHER SECTOR

Dedicated land based poachers, like those at present operating in the Mudge Point/Hawston area are according to the Chief Inspectors currently, in terms of available statistics, the greatest problem with regard to illegal abalone poaching, but emphasise that this has for some years now been a highly visible, newsworthy and politicised sector to which vast amounts of funds, time and manpower (at the expense of policing the other sectors), have been allocated.

This sector makes use of both snorkelling and SCUBA equipment and of late even boats to strip large quantities of abalone from shallow sub-tidal kelp beds and surrounding environs, whereafter they are most commonly smuggled to houses or other hiding places in the nearby community, or even directly to the middleman’s abode, to await transport to the customer or agent, usually Chinese buyers residing in Gauteng (Bigalke 2000:9) by eager helpers/assistants known as runners (Van Eeden 2000) waiting on the rocks and who are lately in cellular telephone contact with each other and other role players. Although these individuals only play a small role in the poaching process, they can be viewed as pivotal in ensuring the success of the poaching operation (Hauck 1999:219).
Poached abalone are usually shucked and partially cleaned in the water so as to facilitate the manual transport thereof from the coastline to the hiding place, pickup or distribution point and make the illegal haul less conspicuous in terms of size.

This group has also lately started to plunder and strip the easily accessible shallow water sub-legal aggregations of abalone, which require little or no diving skills and the minimum of equipment (Hauck & Sweijd 1999-:2).

Dedicated poachers who have access to motorised vessels, usually of the rubber duck variety and sophisticated navigation and communication equipment, most commonly exploit areas such as offshore reefs near islands (Abarder 1999:3) or other inconspicuous locations where large aggregations of abalone are still to be found by diving therefore with SCUBA equipment from their vessels, normally in the late afternoon or under the cover of darkness, so as to avoid easy detection (Van Eeden 2000).

Vessels are often launched from recognised launching sites/slipways, whereafter the trailer is removed and hidden from view so as to create the impression that no vessel has gone out to sea, which could otherwise alert or draw the attention of the authorities to it.

These poachers often form part of highly organised syndicates, several of whom are Chinese Triads (see figure 3.2), who are involved in various forms of organised crime (Bigalke 2000:9; Hauck 1998:5, 1999:220), with numerous accomplices assisting with, amongst others, the retrieval of the illegal haul, lookout duties, intimidation of the authorities, packaging, processing and transporting/exporting, information on the enforcement activities of the authorities, and so forth.

Once landed, most often in a shucked state, the abalone is transported by vehicle to a location where facilities for drying or other forms of processing/preparation, depending on the market being supplied, exist.

According to Basson (1999, 2000), individuals, usually affiliated in some way to the dedicated poacher sector, and often as he put it, 'involved with the Hawston crowd', also further their poaching business by capitalising on a loophole in one of the mechanisms used by M&CM for the disposal of confiscated abalone, retained as exhibits, after a case had been finalised.
These suspect individuals, in the guise of law-abiding citizens, tender huge amounts of money, sometimes in excess of R1000.00 per kilogram, for as Basson put it ‘blackened vrot perlemoen’ in order to obtain a legal M&CM receipt, which does not have an expiry date on it, for the possession thereof. Once in possession thereof they are legally allowed to sell this abalone [even export it] (Groenewald 2000:6) and of course, in the absence of effective checks and balances, continually refill their freezers with poached abalone. This method of disposing of illegal abalone, as if it were legally obtained abalone, can be likened to the crime of money laundering. Although M&CM is thoroughly aware of this loophole, it appears, according to Basson (1999, 2000), that steps have yet to be taken to address this matter.

3.2.2 CRIME SCENES

Due to abalone’s sedentary, non-cryptic nature and its occurrence in relatively shallow water, seldom deeper than 10m (Hauck 1999:212; Houthoofd 1997:301), most crime scenes, with the exception of offshore reefs and islands, are relatively near to the mainland and closely associated with the organism’s habitat requirements.
3.2.2.1 RIGHTS HOLDER SECTOR
Because rights holders are legally allowed to operate from vessels with the aid of surface air, this user group is able to exploit the resource in deeper waters and in locations, which are not readily accessible to the other user groups.

The Chief Inspectors were of the opinion that due to the nature of the commercial harvesting operation, illegal exploitation does not often take place in out of sight, isolated or secluded type locations because of the fact that harvesting activities occur almost exclusively undetected beneath the surface of the ocean.

The location chosen for concealing or storage of any illegal catch would, however, be the one most likely to be selected based on the criterion of detection avoidance and thus in all likelihood a secluded, clandestine type area.

3.2.2.2 SUBSISTENCE SECTOR
Subsistence fishers, bearing in mind that these rights holders usually have no employment and belong to the less affluent, lower socio-economic groups, are much like the recreational component, to a large degree dependent on sea and weather conditions to exploit the abalone resource (Visser 1999).

They are therefore restricted to, depending on diving (harvesting) skill, the near-shore shallow sub-tidal habitat of the abalone that can be accessed by foot or in certain instances, vehicle. Illegal exploitation will hence, once a suitable habitat has been discovered, usually within close proximity to a market, take place in that area.

The location here, not necessarily being chosen for remoteness, but rather for practicality and cost benefit considerations.

3.2.2.3 RECREATIONAL SECTOR
Recreational fishers will dive for abalone mostly in areas that are pleasant and accessible such as those near to holiday resorts (Tarr 1989:64) or camping destinations, which have sufficient concentrations of abalone to warrant the effort, i.e., where a favourable cost benefit relationship exists.

No particular effort is generally made to reach difficult or secluded locations as this only serves to attract the attention of the authorities (Van Eeden 2000).
3.2.2.4 DEDICATED POACHER SECTOR

With regard to the dedicated poacher sector, the Chief Inspectors felt that site selection plays a major role with regard to illegal exploitation. Land based poachers such as those in the Hawston area choose sites that are easily accessible, usually per foot, relatively secluded with shallow water and high concentrations of organisms both of a legal and sub legal size that facilitate the rapid and relatively effort free removal of large quantities of abalone. Often these poachers undertake their activities under the cover of darkness, although of late these illegal activities have been done openly and in defiance of the authorities (Van Wyk 2000:3).

Dedicated poacher groups with access to motorised vessels usually undertake their illegal harvesting operations under the cover of darkness and in inconspicuous locations, preferring offshore reefs and islands (Abarder 1999:3; Louwrens 1999a:10), where high concentrations of organisms are still readily found and where the chances of being discovered or disturbed are at a minimum.

During a meeting held between the various law enforcement agencies assisting M&CM with control in the south-western Cape on 16 November 2000 at M&CM's Sea Point offices Mr. B. Patterson from the Cape Peninsula National Park remarked in this regard that 'die Robbeneiland area word op 'n gereelde basis gestroop en tot drie bote 'n aand is al opgemerk'.

These individuals are, in contrast to their land based cousins, extremely secretive about their operations and conduct their activities in a clandestine and criminally professional manner.

3.3. DEMERSAL FISHES

The multispecies demersal trawl fishery, centred on the Cape hakes *M. capensis* and *M. paradoxus* remains the most valuable sector of South Africa's fishing industry in terms of product value (Rothwell 1994:84; Stuttaford 1999:220) together making up a total allowable catch (TAC) of over 150 000 tons each year, worth almost R2 billion, much of which is exported (Department of Environmental Affairs and Tourism [S.a.]:62; Tilney 1999).
The hake fishery has a long history in South Africa, which started almost as soon as the Dutch settlers arrived in the Cape and began catching “stokvis” with hand-lines and which experienced a major decline in the 1970’s due to over utilisation and an onslaught by foreign vessels (Tilney 1999).

Effective management of the resource, including the proclamation of an exclusive economic zone (EEZ)\(^6\) from which foreign vessels are excluded, has largely contributed to the painstakingly slow rebuilding of the demersal fish stocks with catch rates since 1978 improving at 0.4% per year (Stuttaford 1999:207; Tilney 1999). The modern-day South African trawl fleet is based in three major centres (all within the Western Cape province), at Cape Town, Saldanha Bay and Mossel Bay and consists of about 100 vessels ranging in size from 22 to 90 metres, of which 25 freeze their fish on board (Department of Environmental Affairs and Tourism [S.a.]:62). Although hake and kingklip are occasionally taken from the shore and from recreational vessels the major form of exploitation remains through modern stern trawling (see figure 3.3) and longlining and it is by these latter two techniques that the most illegal exploitation takes place.

The longlining industry, which was basically regarded as an experimental sector between 1994 and 1996 and as a pseudo fishery sector in 1997, has only since 1998 been regarded as a full commercial fishery (Tilney 1999).

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\(^6\) EEZ: South Africa has an exclusive economic zone of 1 155 000 km\(^2\) stretching from the mouth of the Orange River to Ponta do Ouro on the Mozambique border (Tilney 1999).
has been established that this fishery sector does yield larger fish on a consistent basis.

The longline catch is due to, amongst others, the above reasons limited to 10% of the TAC for any given year and will be so limited in the future until the impact on the resource, the selectivity of the catch method and the socio-economic effects of the fishery have been thoroughly investigated (Stuttaford 1999:220; Tilney 1999). Kingklip, although also being a species for which there is a high demand, were so severely depleted during the 1980’s that no allocations are granted specifically for their exploitation but conservative amounts are merely allocated to the industry for by-catch purposes (Tilney 1999). Due to the fact that kingklip and hake have relatively similar habitat requirements it is inevitable that some kingklip will be caught during the course of routine hake fishing activities and it is for this reason that a by-catch, proportionate to the particular allocation holders TAC, is allocated. No person allocated a hake fishing right may, however, exceed the total amount of kingklip by-catch that has been allocated to him/her.

Historically, a fishing sector dominated by a handful of large trawling companies, a number of new entrants have over the last few years been allocated quotas (now referred to as rights allocations) and entered this fishery sector, often in partnerships with foreign companies (Tilney 1999). The 150 000 ton TAC is presently distributed proportionately amongst the 60 odd quota holders some of which, however, sell back their quotas to the larger companies thereby to a certain extent defeating the purpose for which they were empowered. Demersal fishing allocations to new entrants (basically the social engineering of the demersal fishing industry) are according to Tilney (1999) currently being issued by the Fisheries Transformation Council on an equitable share basis in terms of the Marine Living Resources Act, 1998 for periods of up to 15 years, with the idea being that if the persons to whom the allocations are made comply with the law and display an acceptable performance record, allocations will persist for longer periods.

7 Fisheries Transformation Council: a council established in terms of section 29 of Act 18, 1998 with its main object being to facilitate the achievement of fair and equitable access to the [fishing] rights referred to in section 18 of the Act.
3.3.1 MODUS OPERANDI

3.3.1.1 THE DEMERSAL TRAWLING INDUSTRY

According to the Chief Inspectors and Tilney (1999), there is no doubt that commercial stern trawlers illegally exploit the hake and other less important/non-target fish species in two particular ways.

Firstly, by dumping fish that they have trawled (target or non-target species) and do not deem suitable to keep for some or other reason, at sea and secondly, by processing fish aboard their vessels and transhipping\(^8\) it at sea to another vessel, local or foreign, which then does not declare the catch and of course allows the trawling vessel to continue catching that part of his/her TAC whilst already having been remunerated therefore.

In both instances the impact on the fish resources of our deeper oceans is severe, as fish trawled from the depths of the ocean mostly all suffer barotrauma,\(^9\) and are, so to speak, already dead when they reach the surface. By opening the trawl nets (see figure 3.4) and releasing the catch back into the ocean, all that in effect is happening is that a number of tons of dead fish are being dumped back into the sea, having been slaughtered by man for absolutely no reason at all.

By transhipping fish caught that have already been processed and which form part of a scientifically determined TAC to ensure the continued sustainability of the resource, is just as serious because it means that the efforts of the state to ensure that a viable resource is maintained and conserved is being undermined and makes a mockery of all the time, effort, money and expertise being put into research to ensure the survival of the demersal trawl and related industries.

According to Tilney (2000) and Van Eeden (1999), demersal stern trawlers, more often than not foreign vessels, also used to in the past, when demersal

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\(^8\) Transhipping: is defined in sec. 1(1x) of Act 18, 1998 as the transferring of fish or gear from one vessel to another.

\(^9\) Barotrauma: term given to the phenomenon of a fish's swim bladder (organ used to adjust certain fishes specific gravity to that of the water at different depths) forcing its stomach out of its mouth when suddenly hauled up from a considerable depth, causing it to die.
fish resources were scarce, line the cod-ends\textsuperscript{10} of their nets with a net of a much smaller diameter than the legal size so as to pillage even the smallest of fish which, under normal conditions, would be able to pass through the net unharmed.\textsuperscript{11}

Figure 3.4: Cod-end of demersal trawl net shortly after being retrieved from the ocean (Photograph: Herbig 1987).

This practice is, however, believed to have ceased with the ejection of the foreign vessels from our exclusive fishing zone, the effective management and rebuilding of the relevant demersal fish species stocks and a market directed at a larger rather than a smaller class of fish.

\textsuperscript{10} Cod-end: the bag portion of the trawl net at the extreme end of the net apparatus which is in contact with the substratum during demersal trawling activities and into which the trawled fish is directed and winched to the surface (Van Eeden 1999; Tilney 1999).

\textsuperscript{11} Legal size of demersal net: currently the minimum legal mesh size of a demersal trawling net is in terms of the Marine Living Resources Act 1998, 110mm, measured diagonally stretched from knot to knot on the West Coast and 75 mm on the South coast. No reason could be provided by Marine and Coastal Management as to why the mesh sizes differ on the two coasts, but is apparently a bone of contention between research staff and is currently being addressed (Tilney 1999).
3.3.1.2 THE LONGLINING INDUSTRY
As mentioned in the preceding section, the longlining fishery is a relatively new demersal fishery discipline that is currently only allocated 10% of the total demersal fishery TAC for any given year. This allocation is relatively small when compared to that of the demersal trawling industry and the inference can, therefore, be drawn from this fact that the opportunities to commit crime are accordingly, proportionately reduced. The Chief inspectors were less sure of themselves with regard to this industry, but felt that over/criminal exploitation in this fishery sector was very similar to that of the trawl industry with regard to the dumping and transhipping of fish, only on a smaller scale.

It was felt that although the fishing technique was more discriminate and selective with regard to size and species, unwanted or non-target species would still be discarded and dumped in favour of the target species and/or size class and that opportunities to sell catches at sea for quick financial gain would be capitalised upon. The demersal longline fishery, being a labour intensive and arduous discipline (Payne & Crawford 1989:54) cannot really afford to make mistakes with regard to where and how their lines are laid or take the risk of targeting an incorrect species or size class and is therefore a fishery sector that out of financial necessity will more than likely abstain from illegal practices and to a large extent regulate itself. Transhipping of fish is felt to be a very real problem and far more serious than dumping, even though smaller quantities are involved especially considering that there are more than enough willing buyers.

The Chief Inspectors felt that, if allowed to continue unabated, such a practice with its short-term financial incentives will severely impact on the target species and allocated TAC resulting in serious socio-economic repercussions and spelling doom for the fledgling demersal longline industry.

3.3.2 CRIME SCENES

Due to the nature of the demersal fishing industry the over-exploitation of the
hake, kingklip and associated fish stocks generally takes place in areas where
the fish occur naturally. They are trawled, longlined, dumped or transhipped,
depending on the sea going capacity of the vessel, at varying distances from
shore, but invariably at localities which can be regarded as isolated (Basson
1999).
Due to the remoteness of these locations, the resource enjoys very little
guardianship, a fact which is compounded by the lack of deterrence through
regular and focussed demersal/deep sea patrols by the marine conservation
inspectorate. Regular M&CM staffed deep sea patrols were last undertaken 4-
5 years ago, and according to the Chief Inspectors and Du Toit (2000),
currently only take place on an *ad hoc* basis, implying that this valuable and
vulnerable resource, as well as its perpetuation, is solely in the hands of the
very industry that is inclined to abuse it in search of greater profits and yield.
With so much expertise, funds and effort being put into research and the
formulation of TAC’s directed at the conservation and sustained yield of the
resource, it is mind-boggling to think that without regular and thorough policing
and monitoring of compliance with rules and regulations it may all come to
naught.

3.4 INTER-TIDAL ZONE ORGANISMS

In contrast to most of the other groups of marine organisms and fishing
disciplines discussed in this dissertation, indigenous inter-tidal zone organisms
are with the exception of the white mussel, *Donax serra*, of which prior to 1998
some half a million were harvested at Blouberg Strand, outside Cape Town,
annually (Tyrell & Attwood 1999:10; Van Eeden 2000) not really harvested as
part of any major commercial industry and a group of organisms to which
currently no TAC or subsistence fishery applies (Van Eeden 2000).
Nowadays, almost all black mussels taken commercially in South Africa are
cultivated (Department of Environmental Affairs and Tourism [S.a.]:15) and
are usually of the non-indigenous Mediterranean variety *Mytilus
galloprovincialis* (Department of Environmental Affairs and Tourism [S.a.]:33;
Visser 2000).
Due to their comparatively low per organism value and demand, the illegal trade in inter-tidal zone organisms is considered not as prominent as in the other fishing sectors, but nevertheless, still a reality (Basson 2000; Botha 2000:3; Mossels in Parow gekonfisieer 2001:3).

Van Eeden (2000) and Myburgh (2000) are, however, of the opinion that white mussel poaching is on the increase and that this organisms popularity is gaining momentum amongst especially the Chinese community of the Western Cape. B. Patterson of the National Parks Board also maintains that ‘there is currently a tendency at Soetwater near Kommetjie to collect large quantities (500-600) of limpets’. The emergence of such new markets in the Western Cape should be carefully monitored by the authorities to ensure that intensive illegal harvesting does not give rise to yet another marine organism, albeit that mussels are regarded as an extremely resilient species (Department of Environmental Affairs and Tourism [S.a.]:34), being brought to the brink of extinction. This group of organisms are, however, due to amongst others, rapidly spreading urban and industrial coastal developments as well as rapid population growth extremely accessible to all and sundry, especially during low tide periods when their narrow strip of coastal habitat is exposed.

During these periods these essentially non-cryptic and sedentary organisms are at the mercy of all those that choose to exploit them and are invariably therefore, also the group of marine organisms that are the most vulnerable and susceptible to human destruction, degradation and over/illegal exploitation (Department of Environmental Affairs and Tourism [S.a.]:14). A trip to the water’s edge, whether on a rocky shore or a sandy beach is seldom, if ever, not accompanied by the removal of some or other living organism found there. With little or no defence mechanisms, these organisms can therefore, just as easily be stripped from their natural habitat by injudicious curiosity and ignorance as they can through the purposeful and premeditated over-exploitation by unscrupulous individuals.

With the exception of the white mussel, which has a minimum size restriction of 35mm (South Africa 1998b, reg. 56 (1)(d)), none of the other organisms under discussion have any minimum size limitations applicable to them. Each of the relevant organisms is however subject to a daily bag limit instituted in an
attempt to ensure that each person’s needs are catered for whilst limiting the overall harvest of a particular species (Tyrell & Attwood 1999:6).

Bag limits, in terms of the Marine Living Resources Act, 1998 regulations, are as follows: white mussels, 50; periwinkles, 50; rock (black) mussels, 30; and limpets, 15. None of the organisms may, however, in terms of this legislation be removed with an implement having a blade or flat edge of a size in excess of 12mm in width.

Non-transferable permits at R50.00 each are also in terms of the above-mentioned legislation, required to harvest inter-tidal zone organisms. Children below the age of 12 years are, however, exempt from this requirement but should this exemption be abused, it will be reconsidered by the authorities (Marine and Coastal Management 1998).

3.4.1 MODUS OPERANDI

According to the Chief Inspectors, the harvesting of these organisms does not generally require the use of any sophisticated equipment or apparatus and in most instances hands, feet and the most rudimentary of implements will suffice to prise loose organisms from rocks or extract them from sandy beaches.

Since limpets have the ability to suck down onto rocks with an incredible force, flattened objects such as screwdrivers and knives are more often than not the implements of choice for harvesting this particular organism, whereas hands and feet are more than adequate to harvest the other species. It was felt that no particular effort is made to conceal the illegal exploitation of rocky shore organisms by either the incidental harvester or the more dedicated individual who poaches intentionally, and that the crime usually takes place during the daylight hours in order to facilitate the location/detection and harvesting of the choicest organisms. The most common method of removal from the crime scene is by placing the organisms in a bag or bucket and then transporting the catch from the rocks to an awaiting vehicle by foot or to, especially in the case of vagrants (transients) and homeless people, their nearby abode (shack or other temporary shelter). The organisms, depending on the circumstances, are
then either taken to a private residence for further processing and dissemination or consumption, or transported directly to a customer such as a seafood restaurant, where in most instances, a rapid cash transaction takes place and the organisms, usually black mussels, are integrated with the legally purchased mussel stocks in the restaurant’s freezers (Basson 2000). The illegal exploitation of white mussels was felt by the Chief Inspectors to be the largest problem in this fishing discipline and also the marine commodity in this group for which the highest demand (often for bait purposes) exists and prices are paid. In contrast to rocky shore organisms, white mussels are often harvested at night by a dedicated poacher element due to the fact that sight is not an important consideration in the exploitation of this resource and because such nocturnal pursuits are best executed in a clandestine manner to avoid detection by the authorities. The harvester usually wades into the shallow water’s edge during low tide periods and does, what is known as the “jive”, a combination of left and right gyrations of the lower body causing the harvester to sink down into the sand to the depth at which the mussels find themselves, often varying on a daily basis from a few centimetres to up to a metre. Once located, the harvester reaches down into the loosened sand at his/her feet and retrieves the mussels. Once retrieved, the mussels are most commonly placed into orange/onion bags chosen for their strength and the fact that they allow water to pass through them which at the same time causes excess sand to be removed from the organisms alleviating the need for subsequent extensive cleaning.

These bags are then, depending on the target amount, routinely emptied into larger bags, often Hessian in nature, on the upper beach where they are either guarded by an accomplice, in many cases a member of the perpetrator’s family, or hidden amongst the dunes or coastal vegetation.

Once the harvesting operation is completed, the haul is transported by foot to an awaiting vehicle, usually parked close by, and often integrated with the vehicles belonging to other beach users and then dealt with in a similar fashion to the rocky shore organisms. Since weather conditions are of little importance with regard to the harvesting of these organisms, crimes are also often committed during periods of inclement weather when the likelihood of
patrols by the authorities and the presence of witnesses is considerably reduced.

The modus operandi of the incidental over exploiter is similar to that of the dedicated poacher with regard to collection technique, but site selection and weather conditions play a far greater role, i.e., harvesting locations will be easily accessible, highly visible and relatively near to vehicle parking areas and weather conditions will be favourable. Dedicated poachers, who are usually very adept at removing large quantities of organisms in a very short time, frequently in addition to the above-mentioned technique, also make use of other people or accomplices to poach. The poacher brings with him/her to the beach three, four or even more people who remain on the beach whilst the poacher harvests mussels. After collecting one person's bag limit it is, in the absence of a fishery control officer, handed over to one of these individuals (decoys) until all have received a full quota. In this way the poacher can leave the beach with many times more than his/her quota in a seemingly innocent and legal manner. If these individuals' catch had to be inspected after they had left the crime scene, no enforcement official would be able to ascertain if a crime had been committed or not, emphasising the need for an increased law enforcement presence/omnipresence (guardianship) on our coastline.

3.4.2 CRIME SCENES

Due to the Benguela upwelling system, which provides a wealth of nutrients and planktonic food supplies (Department of Environmental Affairs and Tourism [S.a.]:33), inter-tidal resources in South Africa are more abundant on the West Coast than they are elsewhere and where as a result of the concomitant harvesting pressure many rocky shores have been cleaned out of shellfish and other species (Tyrell and Attwood 1999:6) (see figure 3.5). Rocky shore organisms, the Chief Inspectors and Myburgh (2000) felt were most commonly over-exploited adjacent, or in close proximity to built up areas, areas surrounding camping sites and popular holiday locations as well as areas that are easily accessible per foot. Visser (2000) also felt that on the West Coast the over-exploitation of inter-tidal zone organisms occurred most
profusely in areas closest to the lower socio-economic residential areas. Crime scenes within this fishing sector are, as can be seen from the preceding section, therefore, closely linked to modus operandi. Incidental/recreational harvesters, of both rocky shore and sandy beach organisms, usually exploit the resource (bearing in mind availability) close to where they reside, or camp/holiday for that matter, and within easy walking distance from a parking area or abode. According to the Chief Inspectors, this phenomenon is borne out by the fact that many popular areas, which were once well stocked with the various species, now support mediocre populations of visibly smaller organisms. One such area is the metropolitan rocky shore coastline from Granger Bay in the Moullie Point area to Oudekraal just north of Camps Bay.

![Image](image_url)

**Figure 3.5: Over-exploitation of inter-tidal zone organisms (Tight Lines 2000).**

This area once boasted a diverse and vibrant shore ecology, which has since, due to continual harvesting pressures, started to become a barren uninteresting and sterile environment characterised by, due to the decreasing numbers of inter-tidal zone grazers, heaps of decaying, decomposing kelp, a phenomenon described in detail by Branch & Branch (1996:37), which has to be constantly removed by the local authority (Basson 2000).
The exploitation will take place in open view of the general public and very few if any attempts will be made to conceal the harvesting activities or final catch (Myburgh 2000). Dedicated poachers will choose to exploit the resource in more clandestine type locations, but are limited to a large extent by the spatial distribution of the organisms.

In general, the Chief Inspectors felt that the dedicated poacher component utilised the most productive areas, which were well known to yield the best harvest in the shortest period. Their activities were, in contrast to those of the recreational harvester, felt to be more rehearsed and covert in nature and were often planned to coincide with a reduced law enforcement presence, such as over weekends/public holidays, during periods of inclement weather and under the cover of darkness.

3.5 PELAGIC FISHES

The pelagic fishing industry, which had its origins in the early forties (Marine and Coastal Management [S.a.]:1), has the largest TAC for any individual fishery in South African waters, averaging about 350 000 tons per year (Department of Environmental Affairs and Tourism [S.a.]:51; Van der Lingen 1999). This catch allocation can, however, vary considerably depending on the availability of fish and in recent years as much as 670 000 tons and as little as 250 000 tons have been taken in a single year (Department of Environmental Affairs and Tourism [S.a.]:51; Stuttaford 1999:38-39).

The value of the pelagic fish product was in excess of R365 million during 1996 and considerably higher during 1999. Separate TAC’s are allocated for pilchard (sardine) and anchovy, namely a directed pilchard quota for fish which is kept on ice and canned and a by-catch pilchard quota for fish landed with anchovy and red eye as industrial fish, i.e., fish processed for fish meal and oil (Marine and Coastal Management [S.a.]:2).
The harvesting of anchovy, which are caught almost exclusively as industrial fish and of which only a small percentage is used for human consumption, is also regulated by a TAC.

The TAC for directed pilchard was set at 103.90 thousand tons for 1998, the by-catch pilchard TAC at 24.10 thousand tons and the anchovy quota at 107.60 thousand tons (Marine and Coastal Management 1999; Stuttaford 1999:38-39). No TAC applies to red eye (Marine and Coastal Management [S.a.]:2).

The TAC for 1999 was set at 136 000 tons for directed pilchard, 24 400 tons for pilchard by-catch and 146 000 tons for anchovy (Marine and Coastal Management [S.a.]:2), indicating a slight improvement in the health of this resource.

Pelagic fish are caught from pelagic fishing vessels that vary in size from 12 to 34 metres in length with hold capacities ranging from 15 to 300 tons (Department of Environmental Affairs and Tourism [S.a.]:51) and which cost between R2.5 million to R8 million each (Marine and Coastal Management [S.a.]:1).

Vessels that target specifically fish for canning or bait are usually refrigerated, whilst those targeting industrial fish are not. About 90 pelagic boats are based on the western and southern coasts of South Africa at harbours such as Lamberts Bay, Laaiplek, St Helena Bay, Saldanha, Hout Bay and Gans Bay, where processing plants, also known as reduction plants, as well as canneries are situated (Department of Environmental Affairs and Tourism [S.a.]:51; Marine and Coastal Management [S.a.]:1).

The method of catching pelagic fish during the pelagic fishing season which generally extends from 15 January to 15 December of each year (Stuttaford, 1999:35) is known as purse-seining (see figure 3.6) and entails the encircling of a school of fish with a curtain of net, the mesh size of which is 13mm and 32mm for anchovy and pilchard respectively, which can be up to 700 metres long and 90 metres deep with a headrope which is kept afloat by metal buoys and a footrope which rapidly sinks with the aid of lead weights (Armstrong & Thomas 1989:116; Department of Environmental Affairs and Tourism [S.a.]:51; Marine and Coastal Management [S.a.]:2).
Once the circle is completed, the footrope is pulled closed (like a purse) and the headrope is recovered by the powerblock (winch) with the crew piling the meshes on deck.

The net is pursed dry next to the boat, and a powerful suction pump is lowered into the net to suck the fish into the hold (Armstrong & Thomas 1989:116-117; Marine and Coastal Management [S.a.]:2).

Although advanced technology such as colour echo sounders and sonar are used to navigate and locate fish, experience and human judgement play a big role in fishing success (Department of Environmental Affairs and Tourism [S.a.]:51; Marine and Coastal Management [S.a.]:2).

The species, however, often mix with each other and make it difficult for the skipper to identify precisely what type of fish he is trapping (Department of Environmental Affairs and Tourism [S.a.]:51) and can therefore easily lead to the incorrect size/class or species of fish being netted and subsequently discarded in favour of a more profitable catch (Van der Lingen 1999; Van der Westhuizen 1999). Once a pelagic vessel has caught its full complement of fish it usually returns to its harbour of origin and offloads its catch in the presence of a fishery control officer. It is the duty of this officer to determine the mass of the fish offloaded from the vessel by means of a mass meter as well as the species composition and concentration, through regular random sampling of each individual vessels catch.

**3.5.1 MODUS OPERANDI**

According to the Chief Inspectors and Van der Westhuizen (1999), the illegal exploitation of pelagic fish takes place during the normal course of fishing operations, either at night, or more commonly, during the day depending on the type of fish being targeted (some species are more easily caught at night because of their schooling characteristics and their movement can be detected by the phosphorescence they create) (Department of Environmental Affairs and Tourism [S.a.]:51).

A pelagic fish school is encircled by the purse-seine net and brought up next to the vessel.
If a catch is not to the satisfaction of the skipper, i.e., the size class, quality or species composition is not acceptable, the net is simply opened up and the catch, most of which is at this stage dead or injured as a result of the pursing action of the net and/or the resultant lack of oxygen, dumped back into the ocean.

In certain instances, a school of fish that is too large to be accommodated by the particular vessel is encircled, allowing only a percentage of the trapped fish to be pumped into the vessels hold, with the rest simply being dumped back into the ocean.

Figure 3.6: Purse-seining of pelagic fish (Branch & Branch 1981).

According to Van Eeden (2000), a skipper should, in the event of him/her trapping more fish than the vessel can accommodate in its hold(s), call any other pelagic vessel in the vicinity to come and pump the remaining portion of the catch out of his/her net.
This, 'gee van bolyn', is, however, according to Van Eeden (2000) seldom if ever done, due to amongst others, the time delay involved (the quicker back to the factory, the quicker back to sea), the fact that this remaining fish is usually of a weaker quality than that already pumped out, animosity and competition between skippers and of course the absence of resource guardianship on the open ocean.

3.5.2 CRIME SCENES

Since pelagic fish are generally caught 40 to 50 sea miles from the coast (De Oliveira 1999), it follows therefore, that the most over/illegal exploitation will also occur in this region. As in the case of demersal fishing, the crime scenes are thus of an isolated and remote nature, with little chance of detection.

3.6 ROCK LOBSTER

The West Coast rock lobster occurs in commercially exploitable densities from about 25 degrees south in Namibia to approximately Cape Hangklip, to the east of the Cape Peninsula, a distance of some 1055km (Pollock, Cockroft, Groeneveld & Schoeman [S.a.]:3).

The fishery for this species, generally the period between November 16 and May 31 of the next year, which was valued at R104 000 000 in 1994 and is currently valued at close to R200 000 000 (Groeneveld 2000) started in approximately 1870 (Stuttaford 1999:208) with commercial catches in the 1950's exceeding 10 000 tons annually (Department of Environmental Affairs and Tourism [S.a.]:22) and in the 1980's ranging between 3500 to 4000 tons annually (Pollock et al. [S.a.]:7). Over the last decade, annual harvests have, however, due to large scale environmental perturbation resulting in poor recruitment (Pollock et al. [S.a.]:3; Rothwell 1994:82) and resource depletion (over-fishing) (Groeneveld 2000) continually declined, so much so, that during the 1989/90 and 1990/91 seasons the TAC set could not even be fully caught even though almost 300 tons were included from outside the traditional fishing areas (Pollock et al. [S.a.]:7).
During the 1993/94 season the TAC continued to fall rapidly from 3790 tons in 1990/91 to 1500 tons in 1995/96 and although there has subsequently been a modest improvement in the viability of the resource the 1998/99 TAC has only been increased to marginally more than 1900 tons (Pollock et al. [S.a.]:8; Stuttaford 1999:17-31). According to Mayekiso (1999:11), it will take some luck and self-control by all sectors (commercial, recreational and subsistence) to stop the resource following in the footsteps of abalone.

Three user groups in the Western Cape, namely a commercial or rights holder sector, a recreational sector and a subsistence sector, exploit the rock lobster resource.

The Chief Inspectors and Groeneveld (2000) were also of the opinion that as in the case of the abalone fishery there is an additional sector exploiting this resource, namely a dedicated poacher sector.

Although it is only the commercial sector to which a TAC currently applies (Groeneveld 2000), it is estimated that recreational harvesting accounts for the removal of some 325 tons of rock lobster annually (Tyrell & Attwood 1999:12) and that some 500 tons are poached annually (Mathews 1999:9).

The ramifications of these estimated exploitation figures are that several limitations have in recent years also been implemented with regard to recreational harvesting, due to it growing exponentially while the commercial take, is capped by a TAC.

Examples of such limitations are, amongst others, having to pay more for the privilege of harvesting the resource (from R35.00 to R50.00 per permit), restricting harvesting to public holidays and weekends (previously harvesting was permitted on every day of the week) and reducing the harvesting season from a six month period to a four month period (Mathews 1999:9).

The minimum legal size at which rock lobster may be harvested by the recreational and subsistence sectors is 80mm (carapace length) as opposed to 75mm for the commercial sector (Groeneveld 2000; Pollock et al. [S.a.]:7; Van Eeden 2000).

As in the case of abalone, children below the age of 12 years are not entitled to rock lobster permits and may therefore not fish for this species (Marine and Coastal Management 1998; South Africa 1998b, reg. 51(2)).
3.6.1 MODUS OPERANDI

3.6.1.1 RIGHTS HOLDER (COMMERCIAL) SECTOR

During the 1997/8 rock lobster fishing season, 178 rights or quota holders, new entrants included, (as opposed to 149 in 1996/7 and 103 in 1995/6) exploited the allocated 1920 tons of West Coast rock lobster TAC in four zones further divided into eight areas (South Africa 1998b, annex. 11), ranging from the Orange river in the north to False Bay in the south with the largest TAC, namely 960 tons, being allocated to the area Chapman's Peak to Cape Hangklip (Stuttaford 1999:27).

Quotas as large as 130 tons, and as small as 387 kilograms were issued by the Minister of Environmental Affairs and Tourism to new entrants (Arends 1999:3). According to the Chief Inspectors, the biggest problem with regard to the illegal exploitation of the West Coast rock lobster resource is, with few exceptions, to be found within the commercial/rights holder sector.

Although the illegal exploitation of rock lobsters, in terms of the method employed for retrieving them from the ocean, is identical to the method of legal harvesting, viz, the casting overboard, in suitable locations, of specially designed (South Africa 1998b, reg. 46(5)(a–e)) baited lobster traps (see figure 3.7) into which the lobster easily gains access but cannot escape, a number of additional methods are employed to illegally exploit and plunder the resource by criminally motivated individuals in this sector which are expounded upon below. The Chief Inspectors were of the opinion that one of the most common methods of illegal exploitation is by harvesting, in the prescribed legal manner, large quantities of rock lobster (a single trap can contain hundreds of rock lobster) and instead of returning the undersize individuals to sea through the deck grid sorter\textsuperscript{13} as required by law, retaining these lobster and tailing\textsuperscript{14} them either for the purposes of resale to ski-boats or other willing buyers at sea or on land after having put into port and/or by consuming them at sea.

\textsuperscript{13} Deck grid sorter: mechanism allowing undersize rock lobster to fall through back into the ocean without having to be handled (Van Eeden 2000).

\textsuperscript{14} Tailing: removal of the fleshy and more valuable tail portion from the lobster's body.
Through this method, considering the number of fishing units active in this fishery sector, vast amounts of sub-legal rock lobster, according to Groeneveld (2000), possibly in excess of hundreds of tons, the breeding stock of the future, are removed from specific areas causing recruitment into the fishery and the sustained viability of the resource to be severely compromised.\textsuperscript{15} Even when skippers of vessels are conservation orientated and attempt to comply with regulatory legislation the crew are often not similarly motivated and poach during the course of normal fishing operations and sell their illegal harvest once back at port.

Figure 3.7: A commercial rock lobster trap (Branch & Branch 1981).

\textsuperscript{15} Translated from Afrikaans.
Another major problem identified by Van Eeden (2000), is the offloading of rock lobster from commercial vessels without the authorities being notified of the intention to land a catch (a legal requirement). This results in large quantities of rock lobster being landed without passing over the scales and subsequently not being deducted from the particular rights holder’s TAC – the benefits of which, considering the scale at which commercial harvesters operate, are plain to see (Friedman 1999:1; KFM 2000; Polisie lê beslag op 6½ t kreef 2000:3).

3.6.1.2 RECREATIONAL SECTOR
The Chief Inspectors were in agreement that the problem of illegal exploitation in this sector, although still cause for concern, was of a far less serious nature than that occurring in the rights holder sector and that most contraventions took place during the course of normal recreational harvesting activities.

Recreational harvesters may only harvest West Coast rock lobster by the following methods: by diving therefore from the shore without the use of any artificial breathing apparatus other than a snorkel (South Africa 1998b, reg. 51(6)(c)) or by using a ring or scoop net (see figure 3.8) complying with the specifications stipulated in South Africa (1998b reg. 51(6)(a)-(b)) from the shore or a boat which is not specifically registered for rock lobster harvesting or collection (commercial vessel) between sunrise and sunset (South Africa 1998b, reg. 51(4)(b)).

The activities of recreational harvesters are further restricted in the sense that the total amount of rock lobster caught from a recreational vessel, and which may transported on such vessel, may not exceed 20 per day, i.e., the vessel may only be used for the harvesting of 20 rock lobster per day and may not undertake multiple trips or engage in continuous harvesting activities.

All rock lobster caught, whether by commercial (South Africa 1998b, reg. 49(b)), recreational or subsistence fishermen (South Africa 1998b, reg. 51(5)) must at all times be kept in a whole state.

Once harvested in one of the prescribed methods, the catch (including any illegally harvested organisms) is according to the Chief Inspectors usually physically carried to a nearby vehicle, or if caught from a boat, left concealed on the vessel, and transported to the individuals’ residence for personal
consumption or resale to friends/family. Rock lobster, as in the case of abalone, are sometimes also illegally harvested by recreational divers utilising aqualungs (SCUBA) during sight seeing/exploratory dives (for example on wrecks) with smaller quantities often being concealed on the divers person inside his/her wetsuit and larger quantities being hidden in bags.

Figure 3.8: Ring or scoop net (Branch & Branch 1981).

Recreational divers using aqualungs have also been known to harvest rock lobster, and abalone for that matter, in deeper waters where the choicest organisms are still to be found. Once harvested they are brought undetected, usually in some sort of bag or net, into shallower waters to a previously agreed on underwater location where accomplices effortlessly dive their legal amount out of the bag as if they were diving and searching for rock lobster in the legitimate manner. The SCUBA diver then exits the water some distance from these divers making it extremely difficult to connect this diver and his/her activities to that of the other group of divers. Because the divers only retrieve their legal quota from the bag it could be argued that little or no damage is being done and that such practices are therefore not detrimental to the resource.

These harvesting practices do, however, have an adverse effect on the resource in the sense that those organisms which cannot easily be reached by conventional legal harvesting methods and which are in all probability important breeding stock integral to reseeding the shallower water areas with
organisms can be accessed, leading to poorer recruitment and less harvestable organisms being available for recreational harvesting, increasing the probability of sub legal rock lobster/abalone being harvested. Recreational divers employing the aforementioned insidious technique have also been known to move undetected into marine protected areas or reserves to harvest organisms and then to return with a choice catch into an adjacent non-protected area from which the harvest is then in a seemingly legal way, removed by accomplices or assistant divers. According to the Chief Inspectors, recreational fishing vessels fishing in an area where commercial traps have been set, on occasion, even though they are very heavy, illegally lift these traps in order to loot the rock lobster already trapped within them. Often, only the legally permitted amount of lobster will be pilfered, but it also often occurs that these fishermen succumb to temptation and relieve such traps of their entire contents, attempting to conceal the illegal haul on or in their boats in order to avoid detection at slipways and other launching facilities or by dropping the bounty off at a location from which it can easily be retrieved undetected after having left the water.

3.6.1.3 SUBSISTENCE SECTOR
The Chief Inspectors felt that the way in which illegal exploitation occurs within this sector is very similar to the methods of illegal exploitation encountered in the abalone subsistence sector, namely that rock lobster are harvested in one of the prescribed ways and that multiple sales take place until the subsistence rights holder is inspected by a fishery control officer and is then obliged to attach the prescribed tags (see figure 3.9) and dispose of the catch in the lawful manner. Once again, in the absence of effective control and guardianship, this subsistence right could easily be abused by the motivated offender with the right then becoming nothing other than a licence to over exploit or poach, undermining the noble cause for which it was implemented. The selling of the prescribed tags and receipt book by successful applicants to others (the right is not transferable) is also considered to be problematical by Van Eeden (2000) because through such deception support for the subsistence fishery will dwindle, no improvement of the successful applicants' standard of living or upliftment, apart from the short term financial gain made
by selling the tags, occurs and in the wrong hands large amounts of lobster can fraudulently be exploited by motivated offenders.

Figure 3.9: Paper tags used by subsistence fishers to mark their catch (M&CM 1999).

3.6.1.4 DEDICATED POACHER SECTOR

According to Mathews (1999:9), poaching of rock lobster has never been as serious as it is in the abalone fishery because rock lobsters fetch comparatively low prices. Mathews, is furthermore, of the opinion that it is not so much the magnitude poached, but rather that it is often females in berry (with eggs) and undersized rock lobsters that are taken, thus removing the breeding stock. The Chief Inspectors and Groeneveld (2000) agreed that although dedicated poaching for West Coast rock lobster was not as
prominent or localised as abalone poaching in the Hawston area for example, and that the resource was not under such extreme pressure, the occurrence of dedicated poaching in this fishery sector was still widespread and cause for grave concern. The following exposition reflects, amongst others, the Chief Inspectors’ views of how dedicated poachers most commonly illegally exploit this resource. As in the case of dedicated abalone poachers, this group does not as a rule partake in any legal form of this fishery, displays a flagrant disregard for the law and community and are solely out to pillage the resource in search of the high monetary rewards the illegal or black market trade therein offers (Jong stropers kry tot R60 000 per jaar 1999:1). Ironically, dedicated lobster poachers are all too often also involved in abalone poaching (and visa versa) and often harvest abalone illegally, depending on availability at the particular crime scene, during lobster poaching operations (Platt 2000:3).

Dedicated poachers most commonly make use of motorised vessels (rubber ducks) to poach rock lobster. These vessels are launched at slipways throughout, especially the Cape Peninsula, at any time of day or night, usually during periods of favourable weather conditions and often proceed to areas far from the launching sites to poach. Once a vessel has been launched the trailer is as a rule removed and carefully hidden by accomplices, so as not to alert the authorities to the presence of a vessel at sea, until the illegal exploitation has been completed and the craft is ready to leave the water. Most large scale poaching takes place under the cover of darkness reducing the possibility of detection during both the harvesting and the landing operation. Poaching occurs by either diving for the lobster from the vessel with aqualungs (and artificial light at night), by means of strategically placed ring nets along a productive section of coastline (such as a rock lobster reserve), by pilfering commercially set traps or by a combination of these methods. Once the poached lobster has been harvested and brought onto the vessel they are, unless an order has specifically been placed for whole lobster, most commonly tailed (Wenk lei tot kreefvonds op Hawston 2000:3) and packed into bags that facilitate the landing, concealment and transport thereof and landed at a suitable location often some distance from the site where they were actually harvested (Platt 2000:3).
Drop off points, such as beaches, are usually chosen for their isolation and ease of location, approach (by both vessel and vehicle) and escape. Bags of poached organisms are seldom, if ever, landed on the vessel, and if not dropped off in such locations as described above where accomplices can later easily retrieve the organisms, they are commonly fastened to jetty supports, hidden between rocks/dolosse\(^{16}\) at the entrances to harbours and slipways or left submerged in locations from where they can easily be retrieved by the poachers at a later stage without the use of a vessel.

By following such a modus operandi, even if the landing of the vessel is detected and subsequently searched/inspected by the authorities, no evidence of any illegal activity will be found on it. Should the illegal haul be discovered near to the vessel, or even at or near to a residence, at this, or a later stage no positive association will be able to be made between the poached organisms and the occupants of the vessel, unless the drop off was personally witnessed by an official(s), something that given the current staff complement responsible for attending to such matters, is unlikely to occur very often, and the poachers, although losing their catch, live to poach another day.

If poaching operations are not detected the vessel is usually removed from the scene and hidden after which the poacher(s) or an accomplice(s) will return to load the illegal haul and transport it to a residence or other location where further processing, packing, cleaning and/or storage will take place prior to use, further shipment and/or sale. Illegal exploitation of rock lobster, on the West Coast in particular, is according to Visser (2000) extremely problematical within certain fishing communities (especially the one at Paternoster).

Certain elements within these communities, although dependent on the harvesting of rock lobster and other marine species for a living, seem to have normalised the concept of poaching and partake therein as a matter of course, despite actions by the authorities to curb this undesirable practice and seemingly unperturbed and oblivious to the damage they are inflicting on the

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\(^{16}\) Dolosse: irregularly shaped concrete blocks weighing up to a few tons each commonly placed so as to interlock with each other at the entrances to harbours and slipways in order to absorb the impact of waves and swells, ensuring calmer water within the harbour or launching area thereby facilitating the safe launching and retrieval of vessels.
resource and their own as well as the community's future well-being. Criminal elements within this community harvest large quantities of lobster, often undersize, with ring nets from their rowing boats (referred to in the local vernacular as "bakkies") (see figure 3.10) during the course of normal harvesting operations and in broad daylight, whereafter, the undersize organisms are tailed (Platt 2000:3) to facilitate transport and concealment and sold to large syndicates operating from amongst others Cape Town and even to local buyers and tourists.

Figure 3.10: Poachers brazenly harvesting rock lobster in broad daylight within a proclaimed rock lobster reserve (Sunday Times Metro, 29 July 2001).

Although these individuals also partake in legal lobster fishing activities and are therefore, the exception to the rule, their activities are of such a magnitude that in the opinion of the researcher they must also be classified as dedicated poachers.

The arguments raised in the section relating to the control and policing of abalone apply equally here and serve to highlight the glaring deficiencies within the Marine and Coastal Management Inspectorate to effectively deal with and prevent illegal exploitation and promote the conservation of the resource within this fishery discipline.
3.6.2 CRIME SCENES

Crime scenes within the various harvesting sectors are intimately related to the particular method of harvesting employed therein and spatially restricted by the distribution and density of the rock lobster resource (spatial vulnerability). Each will be discussed individually below.

3.6.2.1 COMMERCIAL RIGHTS HOLDER SECTOR

Commercial operations are, as mentioned elsewhere in this dissertation, restricted to particular zones and areas.

A rights holder may only harvest his/her allocated TAC within this zone and is required in terms of South Africa (1998b, reg. 49(4)), to land his/her catch at any one of the fourteen official designated landing points along the coast (twelve of which are in the Western Cape), at which mass meters have been installed.

Rights holders will, according to the Chief Inspectors, seek out those areas within their demarcated zone with the highest concentration of rock lobster and centre harvesting operations around such a point or points. These areas are invariably located some distance offshore along reefs and blinders or in the vicinity of an island, for example Dassen Island near Yzerfontein on the Cape’s West Coast.

After traps have been set, vessels often seek refuge in calmer waters whilst waiting for the lobsters to enter the traps, a period of between several hours and several days, depending on weather conditions. Since, many such productive areas are also frequented by recreational angling vessels, there is often considerable vessel traffic in the area and much opportunity for illegal deals, in the absence of effective deterrence, to be made.

3.6.2.2 RECREATIONAL SECTOR

Within the recreational sector two main methods of harvesting are found, namely diving from the shore and by setting ring nets either from the shore or from recreational vessels. Diving, the Chief Inspectors felt was centred around popular holiday and camping destinations and areas that could be easily accessed by vehicle and/or foot with difficult to reach and secluded locations being chosen by only the most serious and dedicated recreational divers.
Notwithstanding this fact, numerous normally remote areas such as Brand se Baai and Gert du Toit se Baai some distance north of the Olifants river mouth on the Cape's West Coast become popular and densely inhabited areas during holiday periods. Due to the remote nature of these areas, law enforcement patrols are sporadic in nature and the camping community close-knit, resulting in divers and those harvesting by means of other techniques being fore-warned about the approach or presence of a fisheries control officer.

These camping areas therefore, develop into ephemeral crime scenes within, and around which, it is extremely difficult to enforce the law. Within the recreational diving sector cost/effort benefit relations were also felt to play a major role with regard to site or crime scene selection.

Recreational divers illegally exploiting the resource with SCUBA the Chief Inspectors felt, either utilised similar locations to that of the snorkel diver due to the fact that heavy and bulky equipment (such as oxygen tanks) has to be transported to the waters edge, or entered reserve/marine protected areas adjacent to such areas egressing back into areas where legal harvesting would be permitted.

Recreational rock lobster fishermen utilising vessels were felt to travel much larger distances in search of lobsters and often combined the setting of ring nets with angling trips.

Areas known or presumed to sustain healthy populations of select rock lobster and angling fishes, commonly along reefs and kelp beds and similar secluded areas frequented by the larger commercial boats also known in fisherman vernacular as "chukkies", usually in water too deep for recreational divers, were felt to be most commonly targeted.

3.6.2.3 SUBSISTENCE SECTOR

As in the case of the abalone subsistence fishery sector, crime scenes are according to the Chief Inspectors usually situated relatively close to where an easily exploitable population of the rock lobster resource and market for the rapid disposal of the harvest (facilitating multiple sales) is to be found.

The further a subsistence rights holder has to travel from the harvesting location to a "market place" the longer he/she has to be in possession of the
harvest and therefore the greater the risk he/she runs of being confronted and inspected/apprehended by a fishery control officer, thwarting to a large extent the possibility of multiple sales of the restricted selling right.

Bearing in mind that subsistence fishers are, in terms of the purpose for which these rights are granted, the poorest of the poor whose entire existence depends on the utilisation of marine resources (Visser 1999), they don't often have access to transport (restricted mobility) and illegal exploitation is as a result usually spatially biased towards those areas closest to their residence. Lateral movement occurs when resources in the immediate vicinity of the individual's residence become depleted and they are forced to seek out more distant target areas with higher yields.

Although operating close to home has distinct advantages such as local knowledge of an area facilitating ease of target identification, etcetera, it also has the disadvantage of being known in the area, increasing the risk involved in illegally exploiting the resource. The cost/effort benefit relationship is, however, presumed to play a major role in the selection of crime sites within this fishery sector.

Notwithstanding the foregoing, harvesting in terms of the subsistence right is not restricted to any particular area and theoretically a rights holder could, if well known in a certain area as someone who often abuses the right, move to another area where he/she is less well known and continue with his/her illegal practices with fewer encumbrances from the M&CM inspectorate.

3.6.2.4 DEDICATED POACHER SECTOR

According to Brantingham & Brantingham (1981:32) criminals look for 'good' victims or targets, with a 'good' victim or target being evaluated in terms of availability, potential payoff and degree of risk of apprehension or confrontation associated with it.

Basson (1999, 2000) and Van Eeden (2000) were in agreement that dedicated poachers utilising motorised vessels for the poaching of rock lobster at night invariably choose remote locations that will yield a good harvest in the shortest time viz., an area where availability is at a premium, the potential payoff is high, and the risk of apprehension and confrontation is of a reduced or minimalistic nature. These areas, according to the above individuals, are
mostly synonymous with offshore islands and reefs, as well as other areas (including rock lobster reserves and commercial trap fields) of varying distance from shore where healthy populations of the target resource are known to be present.

Those dedicated poachers within local West Coast fishing communities utilising "bakkies" to poach under the guise of and/or during normal harvesting activities, tend to poach especially as mentioned previously, at the sites where normal harvesting takes place with little or no attempts being made to operate clandestinely or in remote and secluded locations.

Of importance here, with regard to site/crime scene selection, would be the intimate knowledge of the local marine environment and conditions as well as the movements and capacity of local law enforcement personnel. It is submitted that identification as a criminal or repeat offender within such a milieu is irrelevant with regard to site selection/crime scene.

3.7 RECREATIONAL SHORE ANGLING FISHES

South Africa has a large multi-user marine line fishery exploiting over 200 fish species of which 95 are economically important and which, excluding the estuarine sectors, is estimated to provide employment for approximately 131 560 people and to contribute about R2.2 billion annually to the economics of the four coastal provinces (Griffiths, Attwood & Thomson 1999-:1; Smith 2000:77).

Within this fishery there are various sectors to be found namely, a commercial component, comprising about 3000 boats, an estuarine component who fish from both boats and banks, numbering in excess of 50 000, a lineboat sector consisting of approximately 12 800 anglers fishing from some 3500 boats and a recreational shore angling component consisting of approximately 400 000 anglers (Griffiths et al. 1999-:1). Since November 1998, all recreational shore anglers have in terms of the Marine living Resources Act, 1998 been required to obtain angling licences in order to legally partake in rock and surf angling activities (Marine and Coastal Management 1998; Permitte voortaan saam na viswaters 1998:2). According to Daniels (2000), statistics regarding the
precise number of permits issued for the various fishing disciplines as well as the number of permits issued per province regarding each particular fishing discipline since the inception of the permit system are, due to alleged administrative complications, not available (See appendix 3.), making it extremely difficult to determine the precise amount of recreational shore anglers active in the Western Cape and in the opinion of the researcher also presumably making it extremely difficult for M&CM research personnel to plan and implement operational management procedures, the very essence of the new management protocol for addressing the problems experienced in the past within this fishery (Griffiths 1999:1), based on such inadequate information. Because a discussion of all these components would be prohibitive for the purposes of this dissertation, the shore angling component, due to its already vast number of participants and growing popularity (Department of Environmental Affairs and Tourism [S.a.]:26) as well as its accessibility to all types of people from all walks of life, was selected as the target group within this fishery discipline. As a result of past over-exploitation by commercial and recreational fishermen many species are now protected by a minimum size limit, bag limit, closed season and a prohibition on the sale thereof (Department of Environmental Affairs and Tourism [S.a.]:26), restrictions through which it was envisaged that effective resource protection/crime prevention could be encouraged.

Griffiths et al. (1999:-1), however, feel that such protective measures applied in the past were seldom tested in a qualitative manner and that due to poor enforcement and the inadequate provision of data for monitoring, stock assessments now indicate that many linefish species are over-exploited and some are severely depleted.

Griffiths et al. go on to state that recent research surveys reveal that regulations have failed to provide a reasonable measure of resource protection, either because of poor enforcement or because the regulations themselves are not limiting and that unless the issue of poor compliance is appropriately addressed and incorporated into management plans, reversal of declining trends and the rebuilding of depleted linefish stocks will not be possible. Dr Monde Mayekiso (1999:11), Chief Director of M&CM appositely
sums up the foregoing with his statement that the prognosis for the linefishery is not good and that most linefish stocks are in a critically over exploited state. Of the six recreational shore angling fishes applicable to this research dissertation, the status of three species, namely the dusky kob, white steenbras and galjoen are regarded as collapsed, one species, namely the elf is regarded as over exploited (Lamberth 2000; Smith 2000:78) with only the two remaining species, namely the hottentot and blacktail being regarded as abundant (Department of Environmental Affairs and Tourism [S.a.]:26 - 27). All the mentioned species are currently protected by means of bag and size limits in terms of South Africa (1998b, regs. 22 and 25) respectively. Furthermore, elf and galjoen are protected by closed seasons and none of the species mentioned, or any other species for that matter, may in terms of regulation 27 of the said Act, be sold by individuals engaged in recreational fishing, i.e., fishing for leisure and/or sport.

3.7.1 MODUS OPERANDI

As indicated by the Chief inspectors, shore angling fishes are most commonly exploited, both legally and illegally, by means of fishing rods and reels and to a lesser extent handlines and illegal nets. Rod and reel equipment can readily be purchased almost anywhere nowadays at a reasonable cost, thereby allowing aspirant anglers, from all walks of life with little or no skill in the discipline to partake in the exploitation of this resource.

17 Collapsed: is the term allocated to a species whose stock status declines to below 25% of the pristine ratio and is no longer a viable component of the linefishing economy (Griffiths et al/1999:-6).
18 Over exploited: is the term allocated to a species whose stock status falls to between 25% and 39% of the pristine ratio indicating the over fishing/exploitation of the species (Griffiths et al/1999:-6).
19 Abundant/under exploited: term used to indicate that the fishery has not impacted substantially on the stock and its stock status is >50% (Griffiths et al/1999:-6).
20 Bag limit: refers to the amount of fish that a person may legally harvest on any one day.
21 Size limit: refers to the minimum legal size of a fish as measured in a straight line from the tip of the snout to the extreme end of the tail.
The popularity of shore angling has increased steadily over the last few years placing South Africa’s fish resources under tremendous pressure (Louwrens 2000b: page number unknown; Tyrell & Attwood 1999:4) with reel sales according to Van der Elst (1981:21) already exceeding 300 000 annually.

Every day hordes of recreational fishermen descend on our province’s coastline (see figure 3.10) hoping to return with a worthwhile catch. Once caught, fish, especially the more sought after species such as galjoen, are commonly concealed in cooler bags or dug in under the sand in order to preserve them and prevent the authorities from ascertaining whether a catch is legal or not.

Once any perceived danger has passed the day’s/night’s harvest is usually transported by whatever means at the disposal of the angler to his/her residence for further clearance.

Figure 3.11: A typical rock and surf angling scene along the Western Cape’s coastline (Payne & Crawford 1989).

According to the Chief Inspectors, shore angling fishermen, due to the scarcity of fish in the waters around the western cape, tend to commonly, if and when fish come onto the bite, catch as many as they can even if it means breaking the law in the process.

Often undersize fish that are caught are also retained due to the possibility that other more legal size organisms might not be caught and because the angler does not fancy returning home empty handed.
The Illegal use of nets for exploiting shore angling fishes is not deemed to be such a widespread problem and according to Sauer, Mann, Brouwer & Lamberth (1997:51) and Visser (2000), is more localised along portions of the West Coast. These illegal net fishermen can be likened to the dedicated poacher elements found in some of the other fishery sectors, although this particular sector does not as a rule partake in these activities on a permanent basis in order to support themselves financially, but rather undertake these illegal activities to make extra pocket money or to be able to boast about having unlimited access to a scarce and sought after resource such as galjoen, i.e., for status reasons (Basson 2000; Visser 1999, 2000).

Stake and set nets of up to 300 metres long are most commonly used and are frequently clandestinely set during weekends, when inspectors are known to be off duty, from either the beach or from a vessel in areas where shoals of the target species are thought to move on a regular basis (Visser 2000). Apart from the decimation of adult and breeding stock that such illegal net fishing causes, juvenile individuals are also often caught before they have been able to contribute to the perpetuation of the species, thereby serving to severely compromise the sustained viability of the species on certain areas of coastline.

3.7.2 CRIME SCENES

Because shore angling is such a popular pursuit, illegal exploitation could in reality occur at any place along the coastline where anglers can reach, or get close to the ocean.

Many recreational shore anglers, however, also combine their fishing trips with their holiday trips or weekend outings and it is for this reason that the Chief Inspectors are of the opinion that the highest degree of illegal exploitation will usually occur in the vicinity of the more popular holiday/camping destinations as well as areas that can easily be accessed by vehicle.

Popular angling locations, and those sites known to yield good results from time to time, will in all probability also yield a higher percentage of non-compliance due to the increased density of anglers.
Remote locations, in contrast to abalone and rock lobster harvesters, are often sought out by shore anglers in an attempt to harvest a perceived pristine or virgin fishing ground where greater densities are believed to be found. Failure after such effort, it is submitted, could easily result in the taking and retaining of undersize individuals or alternatively the taking of excess individuals if the fish happen to come onto the bite in the particular remote area.

According to the Chief Inspectors, anglers visiting remote locations are not regarded with nearly the same suspicion, as recreational divers would tend to be and are subsequently not disturbed unnecessarily.

Illegal netting activities, principally for high status species such as galjoen, usually take place off beaches or otherwise sandy areas where nets will not easily be damaged/snagged and which facilitate the easy placement and retrieval thereof along routes, which fish are presumed to move, and tend to be in more clandestine secluded type locations.

3.8 SUMMARY AND CONCLUSION

In the foregoing chapter a discussion of the nature of marine crime in terms of modus operandi and crime scenes has been preceded by a brief overview of each particular fishing industry/sector so as to sensitise the reader to the operation, value, and limitations applicable to each one and therefore, also to assist the reader to better envision the concept of crime therein.

As can be seen from this chapter the modus operandi and crime scenes pertaining to the various fishing sectors do not only differ from each other in terms of their close linkage to each particular fishery sector but are also inextricably and individually associated with the particular target organisms biological and ecological characteristics, its spatial distribution, attractiveness (desirability), in monetary terms and the degree of guardianship it enjoys.

Furthermore, motivational aspects (reasons for illegal exploitation) also play a significant role in crime scene selection criteria as well as harvesting methods and will be expounded upon in the following chapter.
CHAPTER 4

AETIOLOGY OF MARINE CRIME

CAUSATIONAL AND MOTIVATIONAL ASPECTS
4.1 INTRODUCTION

In contrast to the relative simplicity with which the various marine resources relevant to this dissertation are exploited illegally, the reasons or causation dynamics of illegal exploitation are, although limited in number, far more complex and varied.

According to the Chief Inspectors, people generally become involved in marine crime for instrumental rather than expressive motives and listed greed, in the sense that large amounts of money could be made by illegally exploiting certain resources, and lack of effective law enforcement/policing and control, in the sense that there is little or no control/guardianship (deterrent) of the valuable resources, as amongst the most important causes for being attracted to, partaking and remaining involved in, marine crime.

It should also be borne in mind that with marine crime, as in the case of certain types of property crime, the offender(s) does not deal directly with a specific victim and doesn't therefore have to deal with someone's suffering/discomfort as a result of their crime.

As mentioned elsewhere in this dissertation, the negative effects of the illegal exploitation of marine resources are not easily visible in the short or even medium term and, coupled with the general societal perception that these resources are infinite, the perpetrator can, it is submitted, subsequently, in the absence of a particular victim, more easily rationalise and justify his/her deviant actions as well as the perpetuation of these actions. It is with this understanding therefore, that the causes and motivations for participation in the illegal exploitation in each of the relevant fishery sectors will be expounded upon below.

4.2 CAUSES OF ILLEGAL ABALONE EXPLOITATION

As indicated by the Chief Inspectors, abalone is illegally exploited primarily because of greed, due to its high value (attractiveness) and lack of guardianship. Although status and ease of harvesting (accessibility) were also mentioned as causes they were felt to be of secondary importance.
4.2.1 GREED AS A CAUSATIONAL FACTOR
If one considers that abalone fetch the highest prices of any South African fishery resource (Tarr 1999:8), with its flesh or meat fetching approximately R560.00/kg in the Far East and the Chinese black market paying a minimum of US$ 65/kg, (Hauck & Sweijd 1999:-8) and up to R6000 per kilogram of dried abalone (Hauck 1999:213) it becomes plain to see that there is no lack of financial incentive to become, or remain involved in, the illegal abalone exploitation business. Although the prices listed are those paid to the kingpins of the various syndicates the prices being paid to those lower down in the hierarchy is, all things being equal, just as impressive. According to Hauck (1999:218), the actual divers of the abalone organism in the Hawston/Mudge Point area are receiving up to R45.00 per kilogram (shucked), which equates to, if done on a regular basis, a higher income than that which is earned by most of the community through legitimate means.

Even young poachers, usually of school going age, are earning up to R60 000.00 per year through poaching activities (Jong stropers kry tot R60 000 per jaar 1999:1). Forsyth (1993:223) maintains in this regard that as long as the rewards of poaching remain relatively high individuals will be enticed into this illegal activity.

According to Visser (2000), abalone illegally poached by recreational and subsistence fisher's fetch prices of up to R20.00 per organism, i.e., in a whole state, on the local market and sometimes even more when purchased by unsuspecting tourists. These prices, although relatively low in comparison to the prices being commanded in the Far East, to an unemployed subsistence fisher represents an opportunity to obtain short-term wealth and to the recreational fisher enough motivation to warrant the taking of a chance if the opportunity presents itself.

4.2.2 OPPORTUNITIES (LACK OF CONTROL/GUARDIANSHIP) AS A CAUSATIONAL FACTOR
With regard to law enforcement and control, the Chief Inspectors were all of the opinion that the inspectorate was hopelessly understaffed and under-resourced and that in its present state it would not be possible to achieve and maintain an adequate and effective level of control over the illegal exploitation of the abalone resource, or many of the other marine resources for that
matter. It was, furthermore, felt that this state of affairs is largely to blame for the unprecedented levels of illegal exploitation and lawlessness that have been experienced within this fishery sector over the last few years and that government support to protect the abalone resource is totally insufficient considering the value of the resource. According to Van Eeden (2000), there are presently fifty-nine (59) fishery control officers (of which some are essentially non-operational) responsible for patrolling and monitoring compliance with the law, as well as apprehending offenders along the Western Cape’s coastline. A number of posts are currently also vacant. In addition to their patrolling duties, to which an average of 25% of the officer’s time is allocated, they are responsible for quota (TAC) control, usually at static points within fishing harbours, and other duties such as harbour management and administration, which takes up the other 75% of their time. This time allocation results in what certainly seems to be a gross over-commitment towards quota control, ironically, specifically a practice related to which little crime can be attributed, i.e., harvested marine species brought to quota control points staffed by fishery control officers are seldom in contravention of legislation.

According to the Chief Inspectors and Tarr (1999:6), very little funds, something that seriously compounds the inadequate control issue, are allocated for overtime remuneration and the little that is made available is more often than not used up by quota control overtime. This results in no or very few law enforcement patrols taking place over weekends and public holidays, the very harvesting periods that recreational divers are restricted to. At certain stations, especially on the West Coast, lack of funds for overtime payments have resulted in stations not functioning over weekends for the last 2-3 years (Visser 2000). Where overtime cannot be paid, time off, is offered as an alternative but few inspectors, as with their counterparts in the Police Service, find this acceptable and are therefore willing to make use of this offer (Brits 2000:1) and cannot also be compelled, in terms of (South Africa 1997, sec. 10) [Basic Conditions of Employment Act], to work overtime. The Chief Inspectors were of the opinion that at least 80% of a fishery control officer’s available time should be spent on coastal, crime prevention orientated, patrol duties and felt that the quota control function could be
handled adequately by monitors and should, therefore, be outsourced to a private company.

The end result of this lack of control, bearing in mind that successful deterrence depends not only on the severity of the punishment but also a perceived high risk of detection, is that potential offenders will not be deterred by the threat of severe penalties if they realise that they are unlikely to be apprehended. In effect, this lack of control serves to lessen the risk involved in an illegal activity and make the target that much more attractive. Some could even interpret the defective enforcement and the low priority afforded it by the authorities as a sign indicating that it is acceptable to poach or otherwise contravene Marine Living Resources legislation. It is common knowledge that empty threats rapidly lose their credibility.

4.2.3 TOPICAL LAW ENFORCEMENT ISSUES

It is widely accepted that effective compliance and enforcement are necessary to preserve the sustainable benefits derived from the abalone resource. Without enforcement there will be no viable resource and issues such as equitable access will be meaningless (Houthoofd 1997:302).

It would, therefore, appear that before paradigm shifts in control strategies are considered, an effective, solid and functional law enforcement base should be established, or to a certain degree re-established, to send out a clear message to offenders that the state (government), as the lead agency and guarantor of the conservation of the public's marine resources, is serious about conserving its natural assets and that no form of non-compliance will be tolerated. Thereafter, once the sustained survival of the particular marine resource has been guaranteed, it is submitted, alternative and more adventurous control methodology such as private/public/community partnerships could be considered to promote compliance with legislation. It is ironic that while our own country's marine resources slip slowly into a syrtis of destruction and the authorities seem to be caught up in a state of paralysis with regard to the implementation any form of expedient and goal directed actions, the selfsame government sends a navy vessel [obviously at great cost] 260 sea miles south of Cape Agulhas to assist in the apprehension of a fishing vessel alleged to have poached patagonian toothfish near the Heard Islands in Australian waters (Van Wyk 2001:1). If only a fraction of this
commitment could be channelled into addressing our own problems with
marine crime (especially with regard to demersal and pelagic harvesting on
the open sea), the positive repercussions in terms of resource preservation
and of course socio-economic benefits would be enormous. With the advent
of the Marine Living Resources Act legislation, a number of new concepts
were initiated, none so controversial perhaps, as the requirement that permits
be obtained for previously “free” activities such as recreational angling, bait
and shell collection, cast/throw netting, spearfishing and so forth. The reasons
given by the authorities for the introduction of permits being that the price of
marine conservation could no longer be carried solely by the general taxpayer
and, furthermore, that the revenue generated through the sale of these
permits would be used to promote the conservation of South Africa’s marine
living resources through supporting relevant research, control and
management activities (Marine and Coastal Management 1998) and also to
fund a drastic increase in law enforcement personnel to enforce the new
legislation (Permitte voortaan saam na viswaters 1998:2).
During the first year of the introduction of the new fishing permit fees, i.e., the
period between 1 September 1998 and 1 September 1999, the Department of
Marine and Coastal Management raised R12-million in revenue from the new
fishing licence fees (Daniels 2000; Goosen 1999:7). Ironically, however, none
of this money (stored in the Marine Living Resources Fund) has been used for
increased law enforcement/policing as undertaken, due to the fact that funds
generated in such a manner cannot be utilised for personnel appointments,
commonly known as the PERSAL\(^1\) system (South Africa 1998b, annex. 1;
Van Eeden 2000; Visser 2000). In section 11 of the Marine Living Resources
Act, 1998 it states that the Fund shall be made available for the administration
of said Act and any activity aimed at reaching the objectives thereof as
referred to in section 2, which includes, amongst others, the achievement of
optimum utilisation and ecologically sustainable development of marine living
resources, the need to conserve marine living resources for both present
and future generations as well as the need to preserve marine biodiversity,

\(^1\) PERSAL: refers to an integrated computerised personnel and salary system for the public
service (Van Eeden 2000).
implying in no uncertain terms increased enforcement, and therefore also the appointment of more staff. Currently, however, there seems to be no progress in this regard and all the goal-orientated legislation seems to amount to is nothing else than empty promises. According to Van Eeden (2000) considerable amounts of money have, however, been made available from the Marine Living Resources Fund, rumoured to be approximately R100 million strong, (Bonthuys 1999:17) for the purchase of equipment such as night vision sights, video equipment, weapons, for the launching of numerous research projects as well as to a certain degree for extension and education, but ironically, there are not sufficient functionaries to optimally utilise the expensive equipment and would, unless serious attention is given to the appointment of additional staff, appear to be an exercise in futility. It is the researcher’s submission therefore, that the public has to a certain degree been misled by the authorities with regard to the increased control that is supposed to be forthcoming from the permit fees generated in terms of the new legislation, and that it would not be unreasonable to interpret the assertions of the authorities with regard to control as implying the appointment of additional personnel. Sooner or later the general public will become aware of the fact that the hard earned cash with which they purchase their permits (an abalone permit currently costs R50.00) is not contributing significantly, as promised, to addressing the retrogression of the countries abalone and other marine resources. This perfidious action by the authorities undermines the public’s trust and confidence in their competency/ability and serves to, in the opinion of the researcher, promote public antipathy and hasten the despoliation of the resource by giving rise to the “if you can’t beat them, join them” syndrome, compounding an already serious situation. According to Farieda Khan (in Houthoofd 1997:302-303), the law/politics is to blame for the abalone poaching phenomenon and the formation of the so-called dedicated poacher fraternity. This author postulates further that the law, which has over the years alienated coastal communities from the resource, which has historically been their livelihood, has driven impoverished and marginalized community’s to vent their frustration by breaking the law and in certain instances violently opposing the authorities in their attempts to enforce the Marine Living Resources Act, 1988.
Houthoofd (1997:303), maintains that the poachers are willing to cease their criminal behaviour if they are given a slice of the cake, and if given quotas they will use the funds generated for the upliftment of their towns/communities.

This sentiment is, however, to be questioned when one considers that by the poachers' current actions they are knowingly destroying the very resource and its future yield potential they envisage utilising should they be allocated quotas. Quota allocations, bearing in mind that there are stringent selection requirements and criteria that have to be met with regard to the allocation of rights will, however, in the researcher's opinion not solve the poaching problem and there will be undoubtedly be losers on both sides.

Thousands of hopeful applicants, each believing that he or she is more deserved of a quota than the next person will still not gain access to the abalone fishery discipline due to, amongst others, factors such as state mismanagement (Coetzee 1999:2) lack of transparency, bungled processing of applications, nepotism (Xako 2000:5), the allocation of rights (quotas) to known poachers and the failure to grant quotas to local communities (Cape at Six 1999; Neptunus is onmisbare waghond 1999:1; Yeld 2000:12). Those who do gain access are also not likely to have all their high expectations fulfilled and old quota holders will be disillusioned with losing, or having their existing quotas reduced.

It can be argued that by their confrontational approach and reliance on reactive policing methods, especially in the Hawston/Mudge Point area, the authorities have exacerbated the unsustainable and illegal exploitation of abalone by dedicated poachers and fuelled outbreaks of violence and mistrust between the local community and state structures. The vexing question is, however, if these poachers are not merely cashing in on political opportunities, concepts such as equitable share and disenfranchisement and utilising the legacy of past injustices as a smokescreen for self-interest and to justify/rationalise their own illegal pursuits? Are they not perhaps milking the proverbial past discrimination cow dry in an attempt to realise their own short-term financial goals?

Confrontational law enforcement initiatives involving the marine control inspectorate, police services (referred to as Operation Neptune) and even on
occasion the military, however questionable, have yielded positive results (Hauck & Hector 2000:4-6; Neptunus is onmisbare waghond 1999:1) and bearing in mind that the abalone poaching problem in South Africa is believed to be one of the worst in the world and that the state has been severely criticised for its doubtful commitment to the eradication of poaching (Louwrens 2000a:1), such initiatives are imperative to highlight the state's ongoing commitment towards the protection and conservation of the country's marine resources as well as to send out a clear message to poachers that their impudence and a decline in the rule of law will not be tolerated. With a high value product such as abalone, there is no doubt that enforcement of regulations will have to remain a cornerstone of management success (Tarr 1999-:10).

Admittedly, underlying social, political, economic, cultural and historical factors can play a motivational role in abalone poaching or any other type of crime for that matter but this does not necessarily justify the taking of the law into one's own hands or indicate/explain why some and not all of the people in the community become involved in abalone poaching. Even though it is beyond the scope of this dissertation to examine all these factors in detail, cognisance is given to the fact that dealing with the poaching problem proximate causes as well as fundamental issues should be addressed.

4.3 CAUSES OF THE ILLEGAL EXPLOITATION OF DEMERSAL FISHES

According to the Chief Inspectors, the overriding reasons for the illegal exploitation of demersal fishes are financial (either necessity or greed based) in nature. Closely linked hereto, however, is the inability of the authorities to effectively police the resource, to provide an acceptable level of deterrence and of course the industry's intimate knowledge of M&CM's policing inadequacies.

The Chief Inspectors are in agreement that the factories for which most of the skippers work put pressure on them to bring in a certain size/class of fish. Failure to do so results in the factory making less profit on the catch and of course results in the skipper and his crew being paid considerably less. Skippers therefore try to utilise their time at sea optimally and will attempt to
return with as close to a perfect required catch as possible, often at the expense of the resource.

Returning to shore with a catch of non-target or incorrect size/class of fish, although promoting the conservation of the fish resource, will not result in the payment of the highest salaries and can give rise to serious socio-economic problems for the individuals involved with that specific fishing vessel. Crews will also become disgruntled with the skipper should he fail to return with what the factory requires for payment of "top dollar", and places further pressure on the skipper to injudiciously fill his holds.

As mentioned elsewhere in this chapter, a by-catch of kingklip is applicable to demersal fishing vessels proportionate to their TAC. It often occurs, therefore, that when a skipper nears the maximum by-catch tonnage allowed, but still has a considerable amount of TAC to catch, that an entire trawl catch which contains too much by-catch species is dumped, something that in the absence of effective control is easy to do, so as to enable the vessel to continue harvesting the resource.

Once again, these actions can be seen to be financially motivated because a skipper filling his by-catch before filling his actual target species TAC will not be able to continue trawling and basically therefore be out of work and incapable of supporting his family financially. Often a non-target species is mistakenly netted and although usually entirely edible and marketable the species does not fetch as high a price as the actual target species would and is as a result simply dumped back into the ocean.

Conservation, in such instances, comes a distant second to the financial incentives on offer. Transhipping too, is undertaken due to the financial incentives it offers. In the absence of deterrents at sea, transactions between vessels are easy to do and the rewards lucrative. Twice, or even thrice the revenue that a single trip to sea can deliver through legitimate means can be generated in this manner without the TAC being affected proportionately.

Exacerbating the problem of both the illegal dumping of fish at sea and transhipping, as well as being an additional important cause of crime in the demersal industry, is the seemingly harmless process of equitable distribution of fishing rights. Although the introduction and empowerment of previously disadvantaged individuals into the demersal fishing industry is nothing less
than appropriate, it could have far reaching effects on the sustainable utilisation of the demersal fish stocks if the level of policing is not stepped up commensurate to the increasing numbers of operators and accompanying harvesting pressure.

Although many new entrants find it difficult to enter the particular industry due to financial constraints and end up selling their allocations back to the larger companies (Tilney 1999), many do manage to enter the scene and join the already established fleets on the ocean, implying increased utilisation and, therefore, also crime levels, as similar or even higher financial pressures come to bear upon them whilst they try to compete in an industry historically dominated, and quite possibly still manipulated, by a few powerful entities.

Although the overall demersal TAC is not necessarily increased to accommodate new entrants, but rather equitably divided amongst those individuals allocated rights, the increased number of vessels, varying dispositions towards sustainable utilisation, etcetera, causes more people to be on the sea at any given time [an increase in fishing units and effort] and, therefore, increases the likelihood of crime in all of the mentioned forms of occurring and causing the integrity of the TAC to be severely compromised.

4.4 CAUSES OF THE ILLEGAL EXPLOITATION OF INTER-TIDAL ZONE ORGANISMS

In order to address the causes of this crime it is necessary to distinguish between the recreation/incidental exploiter and the dedicated poacher component. As per the Chief Inspectors, recreational harvesters chiefly exploit inter-tidal zone organisms for bait and personal consumption reasons and to a limited degree due to curiosity/ignorance, whereas dedicated poachers are solely involved for financial gains. They also contended that illegal exploitation in this fishery sector was promoted by a lack of effective control (deterrence) and the fact that, in general, fishery control officers attributed less importance to the conservation of these organisms.

4.4.1 RECREATIONAL HARVESTING

Recreational harvesting for bait or personal consumption purposes often results in an excess number organisms being harvested in order to minimise
the number of trips that have to be undertaken to and from the harvesting area. This type of harvesting can thus basically be seen to be financially motivated, in the sense that the more organisms that can be harvested during a single trip to the coast, the more favourable the cost benefit relationship becomes.

During favourable conditions the excess organisms collected seldom tend to be of a sub-legal size, but in less favourable conditions such as rough seas or high tides the Chief Inspectors felt that organisms harvested were more randomly chosen, with less attention being given to the size of the organism. The illegal harvesting of these organisms is also felt to be exacerbated by the fact that the resource tends to be viewed as infinite with the little conservation importance being attributed to these seemingly inconspicuate organisms.

Recreational harvesting by transients, homeless people or vagrants as well as by individuals belonging to the lower socio-economic groups is often necessity driven in the sense that the organisms represent free food and are harvested for subsistence purposes.

Since these organisms are relatively small, large amounts are required to constitute a meal for a person, not to mention a family, which consequently leads to excess organisms being harvested (Basson 1999, 2000). Such prolonged subsistence harvesting in a particular area can have far reaching effects on the ecology a particular stretch of coastline and could seriously undermine the concept of sustainable utilisation. Careful monitoring of such trends should be an integral part of the fishery control officer's brief in order to ensure that viable populations of these vulnerable organisms survive.

The Chief Inspectors felt that over-exploitation, due to ignorance of the rules and regulations pertaining to the harvesting of inter-tidal zone organisms, seldom occurred and were of the opinion that most people, whether local or tourist, were well aware of the existence of regulatory legislation. Curiosity, the Chief Inspectors felt, especially by children, sometimes led to over exploitation but that this proportion could be regarded as negligible, with minimal negative ecological impacts being attributed thereto. In the absence of effective guardianship, the decimation of this extremely accessible and vulnerable resource will continue unabated and will surely become more widespread as well stocked areas become denuded and as other more
prominent marine organisms, for example abalone, become unobtainable. Since November 1998, however, permits are required to harvest these inter-tidal zone organisms. This fact, the Chief Inspectors felt, was not as well known amongst the general public as the regulations regarding size and bag limits which accordingly leads to more recreational/incidental harvesters unintentionally breaking the law. As mentioned elsewhere in this dissertation, the implementation of increased control measures in the form of permits and licences, necessarily implies an increased level of policing/monitoring, but since no noticeable personnel expansion has taken place in the M&CM inspectorate since the introduction of these mechanisms, the bona fides of this permit system are questioned. The lack of control/policing can also send out the message that the authorities are impuissant to conserve the resource and are more interested in making money from the public through the permit system, a message that could result in public antipathy and a blatant disregard for any form of resource regulation. It is the researcher's opinion that these inefficacious actions by the authorities could lead to purposeful breaking of the law, even by people that used to respect and obey the law, as a form of retaliation or protest against the lack of action/interest by the authorities, irrespective of the concomitant environmental damage their actions will cause. To rebut the above allegations by arguing that funds generated through permit sales will be directed towards the scientific management of the resource would be imprudent because even the most valuable and commendable research efforts and inputs will come to naught if regulatory recommendations and the like, are not enforced and/or monitored.

4.4.2 DEDICATED POACHING

Dedicated poachers, the Chief Inspectors felt, were solely involved in the illegal exploitation of inter-tidal zone organisms, primarily white and black mussels, for economic reasons and that permits and/or legislation were irrelevant or of little importance to this group. Whether the organisms were sold to restaurants/enterprises for resale purposes, or to private individuals for bait/personal consumption reasons, was also irrelevant, because either way the deal would predominantly be of a safe and rapid cash transaction nature with few role players/witnesses being involved.
Because these organisms are relatively small and only contain minute amounts of edible flesh, large quantities are required to constitute a meal, resulting in significant numbers being harvested illegally.

Restaurants specialising in seafood dishes often have a sizable turnover of mussels which can therefore create an impressive demand to be satisfied and with the constant search for increased business profits, the trade in illegal inter-tidal zone organisms by these enterprises can constitute a serious threat to the sustained viability of this resource.

Integral to this illegal trade in inter-tidal zone organisms, is the level of guardianship and dedication towards the protection of these resources by the authorities.

If only sporadic type policing is directed towards the protection of these resources, deterrence is undermined and participation in this form of illegal exploitation can be expected to increase exponentially, especially given the socio-political and economic climate that currently exists in the province/country.

The opinion expressed by the Chief Inspectors, that less importance was attributed to the policing and conservation of inter-tidal zone organisms, was corroborated by Theron (2000), a chief fishery control officer stationed at Yzerfontein on the West Coast who, when questioned about the importance of law enforcement with regard to inter-tidal zone organisms in relation to other marine organisms such as rock lobster, stated that, ‘intergety organismes word as minder belangrik beskou en word mense wat gewoontlik hierdie regulasies oortree net gewaarsku’. The researcher gets the distinct impression that the policing of the inter-tidal zone organism resource is, in terms of policing economics, not considered viable when there are far more so-called “valuable” organisms to protect and that such apathy towards these organisms tacitly condones their over-exploitation.

If this is the correct assumption, the question, in the researcher's opinion, should not be “can we afford to police this particular resource” but rather, “can we afford not to invest in the protection of this valuable resource”? 
4.5 CAUSES OF THE ILLEGAL EXPLOITATION OF PELAGIC FISHES

The Chief Inspectors, Van der Westhuizen (1999) and West (2000:3) were of the opinion that illegal exploitation in this fishery sector occurs primarily as a result of financial considerations, and is compounded by a lack of effective policing and control (deterrence) by the authorities, especially during physical harvesting activities. Most of the pelagic vessels' skippers are employed by, or deliver their fish to, factories and processing plants, which place great pressure on them to land a certain size/class of fish so as to be able to maximise their profits.

A skipper landing sub-standard or mixed fish (a high percentage of by-catch) results in the factory making less profit and consequently remunerating the skipper and his crew less. To be an environmentally friendly and law abiding skipper in such an unguarded fishery sector would therefore be to commit financial suicide and in the absence of effective controls and policing (which could even be interpreted by some as condonation of the illegal activities) most skipper’s employ techniques to harvest that portion of the resource that will result in the highest financial gains without necessarily considering the environmental or lawful implications of their actions.

Often the skippers of these pelagic vessels have no other means of income and realise that the landing of the incorrect type/quality of fish will result in them being penalised financially.

To subscribe to high environmental/lawful morals and suffer financially whilst others break the law with impunity and profit therefrom leaves the skipper in reality with only one practical option. In such a poorly policed sector where the dumping of fish has become the norm (Chief Inspectors; Van der Lingen 1999; Van der Westhuizen 1999) and the concept of the over-exploitation of such a seemingly infinite resource is not easily comprehensible, it all boils down to the understandable, natural and quite human “if you can’t beat them, join them” syndrome.

Illegal exploitation in its various forms within this fishery sector are thus all directed at making each trip to sea the most profitable possible and which according to Van der Westhuizen (1999) together with the concomitant
pressure from the factories forces the skipper and his/her crew to become criminally orientated.²
The choices the skippers make are therefore, it is submitted, in many cases far from free, but rather severely constrained by endogenic and exogenic forces i.e., personal, situational and environmental factors. Van der Westhuizen (1999), was further of the opinion that fishery control officers themselves could promote the illegal exploitation of these resources by dishonesty at the weighing scales and particularly with regard to the sampling of the catch, i.e., being bribed by skippers/ factory representatives to record an incorrect species composition percentage of catch landed.² This type of corruption he felt, would be particularly prevalent during periods of less than optimal harvesting i.e., when fish was very mixed and by-catches could easily be exceeded, effectively preventing the boats from going to sea to harvest any remaining TAC. The granting of fishing rights to new entrants, although the equitable distribution in terms of empowerment is strongly supported, can also in the opinion of the researcher be regarded as a contributory factor or cause of the illegal exploitation of pelagic fishes in the sense that the number of fishing units is being increased, implying greater competition between parties and therefore a greater chance of more illegal exploitation occurring. At present of the 107 pilchard rights holders, 70 are new entrants and of the 50 anchovy rights holders, 38 are new entrants (Stuttaford 2000:23-25). With an increase in fishing units comes an increased need for high profile policing of compliance with legislation from a deterrence point of view in order to promote and inculcate the concept of sustainable utilisation, voluntary compliance and conservation.

4.6 CAUSES OF THE ILLEGAL EXPLIOTATION OF ROCK LOBSTER

The Chief Inspectors and Groeneveld (2000), were of the opinion that the major causes for the illegal exploitation of rock lobster were greed and lack of effective control and deterrence. Furthermore they felt that these causes were compounded by, depending on the particular harvesting sector within the rock

² Translated from Afrikaans.
lobster fishery, three factors, namely, that a person's criminal record prior to 1 September 1998 was regarded as irrelevant for the purposes of allocating and granting fishing rights i.e., a type of amnesty was afforded to applicants for criminal offences prior to the said date, dissatisfaction at not being granted a fishing right (quota) or having an existing one reduced and the dissatisfaction and resistance by the recreational sector to the imposition of a reduced recreational harvesting period.

4.6.1 COMMERCIAL SECTOR

According to the Chief Inspectors, illegal exploitation within the commercial (rights holder) sector tends, as a rule, to be financially motivated. Whether the organisms are sold at sea or on land after having been smuggled ashore/offloaded secretly in a whole, tailed or otherwise processed form, the profits to be made through the black market trade therein was felt to be the single most important reason for the impenitent and continued illegal exploitation of the resource.

According to Polisie le beslag op 6½ t kreef (2000:3), 6,5 tons of crayfish (West Coast rock lobster) has a value of R650 000 (even more on the black market) indicating the degree of financial incentive the illegal exploitation of this resource promises. Considering that commercial vessels deal with exceptionally large quantities of rock lobster on practically a daily basis during the commercial rock lobster fishing season, criminally motivated individuals are constantly in close proximity to a valuable and virtually unguarded resource and illegal exploitation is therefore, bound to occur.

Fishing companies are also well aware of the financial benefits to be derived from landing lobster secretly, i.e., without being weighed in the presence of a fishery control officer and deducted from a TAC and are believed to often be totally conscious of and even encourage such illegal practices.

With the advent of the Marine Living Resources Act, 1998, the equitable distribution of fishing rights to previously disadvantaged individuals 'in a bid to redress the imbalances of the past' (Mokwena 1999:3) has been afforded a high priority. The allocation of rights to new entrants entails, because the TAC cannot merely be arbitrarily increased to accommodate these new entrants, the reduction, or in certain instances, the total loss of existing rights holders' TAC’s. Allocations to new entrants thus impacts heavily on existing quota
holders and has given rise to dissatisfaction in, and suspicion of, the governments bona fides amongst these individuals, prompting calls for legal action and resulting in delays with the issuing of quotas (Arends 1999:1; Louwrens 1999b:1). Perceived corruption (Philander 2000:2; Schronen 1999:1) and dissatisfaction at the government's handling of rights/quota allocations will in all probability prompt aggrieved fishermen to turn to poaching if the crisis is not resolved in an amicable fashion (Philander 2000:2), and has in all likelihood already resulted in considerable illegal exploitation occurring.

Delays in the issuing of permits can, apart from leading to poaching of marine resources, also give rise to other forms of crime as families dependent on the allocation of quotas endure the concomitant hardships of no or little income. Not only is the allocation of rights a thorny issue to those rights holders who have had to sacrifice all or a portion of their TAC to "subsidise" new entrants, but also to those to whom rights were issued and then subsequently withdrawn (Louwrens & Ellis 1999b:1; Soal 1999:1). These new entrants are sure to feel that they have been betrayed and are being denied access to a resource, that in their opinion, they are legally entitled to. The resultant dissatisfaction in the treatment by the authorities can easily manifest itself in crime with over-exploitation occurring as a form of revenge for the perceived injustices forced upon them (Louwrens & Ellis 1999a:14; Soal 1999:1).

Notwithstanding the foregoing, there will also always be those individuals who apply for a fishing right believing wholeheartedly that they deserve to be allocated one, but who in the end unfortunately do not receive one. It is the researcher's submission that such disappointment can also lead to illegal exploitation due to the belief by these individuals that they received a raw deal from the authorities and that as a form of retribution for this perceived injustice they feel that they are getting their own back by illegally exploiting the resource(s).

The Chief Inspectors were also extremely concerned by the fact that, irrespective of the type of right a person was applying for, the criminal record of the individual prior to 1 September 1998 was regarded as irrelevant and felt that this oversight could significantly enhance illegal exploitation in this and other fishery sectors. Whether or not legislation governing the allocation of
rights or the regulation of resource utilisation prior to the introduction of the Marine Living Resource Act, 1998 was just/politically acceptable or not is beyond the scope of this dissertation, but the scrutinisation of an applicant's criminal record, it is submitted, could provide an insight into the particular individual's propensity to commit crime and break laws whether of a marine nature or otherwise. The Chief Inspectors felt that this type of screening at an early stage of the evaluation process could serve to allocate rights in a more holistic and sustainable manner, and would contribute substantially to ensuring that a more conservation orientated, law abiding type of individual gained access to the fishery. If one further considers the inadequate capacity of the M&CM inspectorate to police compliance within this (and other) fishery sector(s), it becomes clear to see why illegal rock lobster exploitation in the commercial sector is regarded as such a great problem. According to Fattah (1993:248) unattended goods in a department store create a temptation and an opportunity situation that facilitates shoplifting. The same scenario, it is submitted, applies to marine crime where the rock lobster, abalone or any of the other marine resource dealt with in this dissertation can be regarded as the unattended goods.

Without effective deterrence it is envisaged that this problem will continue to intensify and that the rock lobster resource, as in the case of abalone, will also be driven to the brink of extinction.

4.6.2 RECREATIONAL SECTOR

Within the recreational harvesting sector the Chief Inspectors felt that greed, dissatisfaction with current harvesting restrictions, increased permit fees, status and a lack of effective control in the form of law enforcement patrols and visibility especially during those periods allocated for recreational harvesting, i.e., weekends and public holidays, were the most probable causes giving rise to the illegal exploitation of the rock lobster resource.

Although prices for rock lobster on the local market tend to be considerably less than those being paid on the black market, whole crayfish sell at between R15,00 and R25,00 each and tails at between 50 cents and R2,00 depending on the size and availability (Visser 2000).

These prices are felt to adequately motivate certain recreationals to illegally exploit the resource, usually in terms of excess whole, rather than tailed
organisms. Organisms are usually sold to friends or acquaintances, with increased demands and the promise of higher monetary rewards, often prompting such recreationals to continue or even become more seriously involved in the illegal exploitation of these and other marine resources. Higher permit fees, shortened harvesting periods and a lack of effective deterrence undoubtedly contributes to or even promotes this illegal pursuit. Several individuals\(^3\) (recreational harvesters) were, during the formulation of this dissertation, questioned on an ad hoc and informal basis by the researcher as to why, if they ever partook in illegal exploitation activities, they did so? The answers invariably contained to lesser or greater degree elements of all the causes mentioned above, with the most common cause of illegal exploitation being cited as the making of extra money to offset/subsidise the increased permit fees and/or the cost of fuel to and from the particular harvesting site, and to as one respondent put it ‘make the trip worthwhile’. Most respondents felt the threat of being apprehended to be negligible.

According to the Chief Inspectors, many recreational rock lobster harvesters are disillusioned, distressed and antagonised by the far-reaching conservation orientated restrictions that have been forced upon them by the authorities. Apart from increased permit fees, the restricted harvesting periods during which legal harvesting by recreational fishers is permitted, i.e., weekends and public holidays, cause people to want to maximise their harvesting trip by harvesting those extra organisms that they feel they have been cheated out of by the authorities.

Recreational harvesters, the Chief Inspectors postulated, also feel that because their activities are largely dependant on weather conditions during these restricted harvesting periods, they should harvest whilst conditions are favourable, even if it means breaking the law. With regard to the above, Van der Elst (1981:21) is of the opinion, that fishermen naturally resist conservation restrictions imposed by the authorities because they feel that the

\(^3\) Individuals: (recreationals) questioned about their motivation for illegally harvesting rock lobster were all persons known to the author and were informed of the purpose of the question. For obvious reasons all of those questioned requested that their identity remain anonymous.
term conservation represents no more that a host of autocratic rules and regulations designed to rob them of their catch and their sport.

Ironically, where subsistence fishing has legalised/decriminalised one previously unlawful practice (the selling rock lobster out of hand) the imposition of recreational restrictions has merely served to criminalize another, to wit diving/harvesting on weekdays.

One can only wonder if the current state of affairs, given the deficient policing capacity of the M&CM inspectorate, is serving to promote or derail resource conservation efforts.

The recreational fisher seems to reconcile him/herself to the fact that harvesting excess organisms is acceptable because of the fewer chances in general to do so within the parameters of the new restrictions, thereby totally undermining the reason for the imposition of the restrictions in the first place.

The Chief Inspectors concurred that to a lesser extent over-exploitation also occurs for status reasons i.e., to be able to boast to guests about prosperity/affluence and that seldom, if ever, illegal exploitation takes place for the purposes of thrill seeking, for example, to challenge or outwit the authorities, a cause which can sometimes be associated with more conventional types of crime.

4.6.3 SUBSISTENCE SECTOR

Subsistence fishers, according to the Chief Inspectors, illegally exploit the resource for one of two reasons, namely (and most importantly) to pursue the monetary rewards to be gained therefrom and/or for survival, in terms of actually consuming the harvest.

Whatever reason, or combination of reasons applied, the Chief Inspectors were in agreement that the lack, and in many cases the complete absence of, effective control within this sector compounded the problem and served to entice others to become involved in such illegal pursuits.

4.6.4 DEDICATED POACHER SECTOR

Greed, in the sense that large sums of money are to be made from the illegal trade in rock lobster, as well as the lack of effective guardianship of the resource were felt by the Chief Inspectors to be the main rationale for dedicated poacher involvement in this fishery sector.
These criminals ply their trade without regard to the consequences and seemingly with impunity. Regularly, when dedicated poachers are apprehended, fines or bail are paid without the blink of an eye and no cost is spared in hiring the best defence council, who exploit weaknesses in the prosecutions case, frequently obtaining an acquittal on a technicality. Little or no consistency with regard to sentencing by our criminal courts exists (Hauck 1998:11) further exacerbating the problem.

Even when a conviction is obtained, the degree of punishment often does not adequately reflect the seriousness of the crime and the deterrent value thereof is left wanting, which also according to Basson (2000), explains to a large extent why there is such a high rate of recidivism amongst criminals in this sector. Notwithstanding the foregoing, the arguments raised in sections 4.2.2 - 4.2.3 (causes of illegal abalone exploitation) pertaining to M&CM law enforcement capacity are also relevant and apply equally to this section.

4.7 CAUSES OF THE ILLEGAL EXPLIOTATION OF SHORE ANGLING FISHES

According to the Chief Inspectors and Griffiths (1999), the primary causes for the illegal exploitation of the resources in this fishery sector are greed, in the sense that if the fish are biting, maximum use is made of the opportunity and to a certain degree the financial rewards such illegal pursuits realise, dissatisfaction/resistance to the imposition of a compulsory permit for a previously free activity and the pervasive lack of effective law enforcement and control. The researcher is, furthermore, of the opinion that public uncertainty as to whether an angling permit is actually required at all is also a contributory factor here. The Chief Inspectors were totally convinced that the main cause of illegal exploitation in this sector was due to the general scarcity of fish in the waters around the Western Cape. They felt further that the combination of unpredictable Cape weather, often substantially reducing the potential fishing days, and the scarcity of fish often gave rise to anglers taking as much as they could during those periods that fish would actually bite, with the exploiter's argument in defence of such actions usually being, that if they don't do it somebody else will. It was also felt that due to the scarcity of fish
undersize individuals would often be retained so as not to return home empty handed and suffer the humiliation of having to admit that nothing was caught. The following two submissions by Beeselaar (2000:45)[14 years old] and Pretorius (2000:45) respectively, clearly reflects what has been said in the above two paragraphs, [Beeselaar] 'Eendag het elfkoors die hawe getref [Struisbaai in the Western Cape Province]. Ek het een dag vyf gevang en 'n ander dag drie. Daar was mense wat ons vertel het hulle het tot 60 elwe 'n dag gevang en huis toe gevat. Ons het tot 30 visse getel wat een mens vang en hou. Dit maak my baie ongelukkig om te sien hoe word die elwe uitgeroei. Baie mense het nie eers permitte gehad nie en daar was nie inspekteurs wat na die mense kom kyk het nie. Ons gaan nie meer visse oorhou as dit so aangaan nie'.

[Pretorius] 'Ek was ook in Desember 1999 in Struisbaai – net so voor en na kersfees. Ek was ook tussen die hengelaars op die hawehoof toe die skole elf binne trefafstand verbygekom het. Soos Otto tereg sé 'n groot klomp ondermaat elwe is eenvoudig gehou en huis toe gevat – vissies van so klein as 20cm. Jy mag slegs 5 elwe van groter as 30cm per hengelaar per dag hou, die res moet jy terugplaas. Mens dink nie rasioneel as elfkoors jou beetpak nie – en dan moet elke ou vissie pan toe gaan, want môre kom die skole dalk nie weer verby nie. Sodoende oortree hulle die wet en verminer die vis sodat Otto en sy maats – wat nou maar 14 jaar oud is – se kinders eendag in 'n steriele see sal probeer visvang, want daar sal nie meer visse oor wees om te vang nie. Terloops, die kantore van die Mariene en Kusbestuur beamptes, wat o.a. die wette moet toepas wat die hoeveelhede en grootte van visspesie reguleer, is skaars honderd meter van die elfslagting op Struisbaai se hawehoof af. Wonder maar net waar was die manne?' Ignorance of the regulations applicable to the harvesting of recreational shore angling fishes was not considered by the Chief Inspectors to contribute in any significant way to the illegal harvesting of this resource.

Having to pay for the privilege of angling in terms of the new legislation is also something that the Chief Inspectors felt contributed to the illegal exploitation of shore angling fishes. The angler, having had free access to this resource for as long as one can remember, suddenly feels affronted by the new legislation which he/she perceives as being unjustly forced upon him/her and
rebels by helping him/herself to anything and everything that he/she catches in order to make the payment of the permit fee worthwhile, i.e., to get value for his/her money. It is also postulated that many shore anglers view themselves as soft targets that have been singled out for victimization by the authorities in an attempt to rectify the damage done through commercial and beach seine net fishing and therefore resist these attempts to regulate them, thereby placing even more pressure on the already vulnerable fish stocks in the waters off our coast. Van Rooyen (2000:2), maintains that in order to save the linefish resources from total annihilation all shore anglers, as well as the other sectors harvesting this resource, will have to make huge sacrifices and stand together so that future generations will also have the privilege of being able to catch a fish in the sea.\footnote{Translated from Afrikaans.}

This sentiment is, however, not shared by Smith (2000:77-78) who states, ‘No matter how much you limited the recreationals – it would not make a real difference. To the best of my knowledge, rod and reel anglers have never succeeded in exhausting the resources of the sea – not anywhere in the world’.

Illegal netting for scarce and sought after species such as galjoen, even though local prices for this species never really climb to more than R30,00 per fish, was considered to be undertaken primarily for the purposes of easy money as well as for, to a lesser degree, status reasons (Visser 2000).

Since the prohibition on the selling of galjoen in restaurants was instituted during the early 1980’s, the demand for this species has increased dramatically and has in the opinion of the researcher, compounded by the absence of effective policing, largely been instrumental in driving this species to the precarious status it now enjoys.

The Chief Inspectors were, furthermore, of the opinion that many anglers also illegally sold part or all of their catch to either offset some of the costs involved in the harvesting process or in certain instances to make, depending on the size and species of the catch, as well as the demand, a profit.

As reflected in the extracts from the two letters above and stated by the Chief Inspectors and Griffiths (2000:233), effective policing within this sector seems,
not surprisingly given the inadequate staff complement to which this task has
been entrusted, to be somewhat lacking. A recent national survey of the
various linefishery sectors revealed that less than 2% of recreational shore
anglers had been inspected whilst being engaged in shore angling activities
(Sauer et al. 1997:51-55), a statistic which is corroborated by Griffiths
(2000:234) who states that a mere 0.9% of Cape shore anglers are inspected
each year, reflecting the glaring inadequacies of the authorities to deter
potential offenders from crime in this sector and to satisfactorily ensure the
resource’s sustained viability for future generations.
Lastly, it is felt that uncertainty about whether or not an angling permit was
indeed necessary in terms of the new Marine Living Resource legislation
before participating/engaging in angling activities, also contributes to a certain
degree to the illegal exploitation in this sector.
It would seem that if the relevant sections and regulations stipulating the need
for angling permits, namely South Africa (1998a sects. 13(1) and 58) and
South Africa (1998b regs. 22(1)(b), 22(1)(c), (d) and 22(2)) are evaluated in
terms of the rules pertaining to the interpretation of statutes, the legislator has
not made it adequately clear, by interpreting the words according to the
ordinary meaning, and bearing in mind that in terms of the rules of the
interpretation of statutes a law should be so formulated that it will impact on
those for whom it is intended as little as possible, that such a permit is indeed
necessary for angling purposes (Die Zululander 1999:72).
Controversies such as this initiate confusion amongst the public and to a
certain degree cause them to lose faith in the authorities ability to effectively
administer the law. Being prosecuted under vague legislation also adds fuel to
the fire and only serves to antagonise the shore angler, resulting in fewer co­
operations from this group and further promoting the illegal exploitation of our
marine resources.

4.8 SUMMARY AND CONCLUSION

From the foregoing it can be deduced that although various motivational and
causational dynamics exist for the illegal exploitation of marine resources,
there are two shared qualities which are universal to all these fishery sectors
irrespective of where and how the resource is illegally exploited, namely inadequate law enforcement/control (deterrence) and greed (fiscal incentives). Although very little can be done about this inherent human trait (greed) per se, the absence of effective control/enforcement can most surely be addressed in order to reduce marine over-exploitation in general and at the same time deter greedy individuals from decimating our fragile and vulnerable marine assets. The absence of effective control, however, is without a doubt one of the most serious pitfalls within the marine fishing industry, which if not addressed as a matter of urgency could yet serve to drive many of the marine resources along our coasts past the point of no return.

It is ineffectual to have an exceptionally proficient and highly trained scientific and management component producing (high class) theoretical models whereby our marine resources are to be protected, without having adequate and motivated human resources to enforce the rules and regulations that necessarily accompany them at grassroots level. These and other enforcement issues will be addressed in subsequent chapters.
CHAPTER 5

THE EXTENT OF MARINE CRIME

LAW ENFORCEMENT AND CONTROL ISSUES
5.1 INTRODUCTION

As guarantor of the conservation of our marine resources, the state, and more specifically, the marine conservation inspectorate of the Department of Environmental Affairs and Tourism (Marine and Coastal Management Branch), as lead and accountable agency, is responsible for policing compliance with the Marine Living Resources Act, 1998, and related legislation.

Their mandate, importantly, also includes preventing marine related crime in order to promote and ensure the sustained viability, perpetuation and optimal utilization of the various marine resources in our oceans and along our coastlines.

Crime statistics usually provide a tangible indication of the degree of law enforcement/policing effort that is being directed at a particular form of crime and higher crime statistics can in most cases, apart from being viewed in a positive light by the general public, be associated with policing efficiency and commitment, implying increased awareness and deterrence within a given area.

There always remains, however, a dark crime figure, due to amongst others, under reporting, manpower shortages and the fact that it is usually only the less experienced criminals that are apprehended (Forsyth 1993:217-219), making the determination of the true extent of criminal activity in relation to any particular form of crime thus very difficult.

Notwithstanding the aforementioned, higher crime statistics in relation to marine crime, unfortunately do not necessarily also indicate conservation success and reveals to a certain degree the extent to which the authorities are unable to keep the organisms safely in the ocean and deter offenders from pilfering and injudiciously disturbing and damaging our province's fragile marine resources.

Abalone, and certain other inter-tidal zone organisms, for example, do not have any blood clotting ability and if injured whilst being removed carelessly or hastily (which is often the case during poaching activities) will ultimately die, even if replaced back into the ocean (Attwood 2001:4; Louwrens 2000c:5; Tyrell & Attwood 1999:14).
Even if not damaged in any way, by merely randomly returning these harvested organisms to the ocean most of them are, nevertheless, doomed unless they are individually replaced carefully onto suitable submerged locations, which is in most instances an unfortunate and practical impossibility. Similarly, netted pelagic or demersal fish and even shore angling fish returned to the ocean after having been caught will also usually die as a result of some or other trauma associated with the capture process. Rock lobster too, are often maimed or in some way injured in the process of extracting them from their concealed crevices, especially during diving operations, and even if replaced in the sea will quite often, due to their weakened state, more easily fall prey to natural predators or nonetheless die as a result of their injuries or diminished resistance. In order to assess the extent and effectiveness of policing of compliance with the Marine Living Resources Act, 1998 by fishery control officers at the various stations located within the Western Cape and to determine which types of contravention are being afforded the greatest attention, policing statistics for the period 1 January 1998 – 31 December 1999¹ will be examined and compared in this chapter.

5.2 LAW ENFORCEMENT STATISTICS

Policing statistics will be preceded by a succinct overview of the area serviced by each particular station, the species and marine related activity most commonly encountered in that area, as well as staff availability and primary function of the station. The coastline of the Western Cape will, in order to facilitate comparison, also be divided into two regions, namely, a West Coast (Yzerfontein to Doring Bay) and South West Coast (Sea Point to Knysna) region.

¹ All policing/contravention statistics provided by Mr V. N. Mayisela, Deputy Director: Inshore Resource Management, Marine & Coastal Management as a true and accurate reflection of policing effort at the relevant Inspectorate stations in the Western Cape. Due to a 'computer data base crash' all policing statistics prior to 1998 were permanently lost and therefore unavailable. (See Appendix 4.).
Port Nolloth, although being regarded by Marine and Coastal Management as part of the West Coast region, is omitted for the purposes of this dissertation due to the fact that it falls outside the political boundary of the Western Cape. All West and South West Coast situational information provided by Chief Inspectors, Visser and Van Eeden, respectively.

5.2.1 WEST COAST REGION: SITUATIONAL AND STATISTICAL INFORMATION

5.2.1.1 YZERFONTEIN
The Yzerfontein station is situated within a small local authority controlled fishing harbour in the town of Yzerfontein approximately 80km north of Cape Town.

The station has a staff complement of two permanent operational fishery control officers and services the area from Bokbaai in the south to Church Haven in the north, approximately 50km of coastline.

This area supports healthy populations of white mussel, rocky shore inter-tidal zone organisms, rock lobster, abalone and shore angling fishes and experiences extreme pressure during holiday periods when holiday makers swell the otherwise small permanent population by several thousand.

Pressure on the marine resources is also increased over weekends when large numbers of divers and fishermen descend on the area from the nearby Cape Metropole.

Of particular importance is the nearby Dassen Island around which excellent rock lobster and linefish catches are usually recorded attracting fishers from far and wide to the area. The station does not as a rule deal with demersal or pelagic fishing vessels although pelagic vessels do from time to time harvest pelagic fish in the vicinity of Dassen Island. The chief function of the station entails the monitoring of catches landed at the harbour slipway and general law enforcement.

*Total prosecutions, 1998: 7 (Cases withdrawn: 0)
*Total prosecutions, 1999: 21 (Cases withdrawn: 0)
*Total actual prosecutions, 1998 - 1999: 28
The Saldanha Bay station is situated adjacent to the bustling state controlled and well frequented fishing harbour on the outskirts of the town of Saldanha Bay. The station services the area, which, incorporates a rock lobster reserve, from Church Haven in the south to Groot Paternoster Point in the north, a coastline of approximately 70km in length.

The area is characterised by a rich variety of marine organisms and, like Yzerfontein, experiences seasonal fluctuations in population numbers and concomitant harvesting pressures.

The station has a staff complement of 10 fishery control officers of which 8 can be regarded as operational.

Quota control can be seen as one of the most important functions of the station, with large numbers of pelagic, rock lobster and demersal fish harvests being offloaded and monitored on an almost daily basis.

Restaurant and freezing facility inspections as well as boat and vehicle patrols also form part of the fishery control officer’s responsibilities at this centre.
Saldanha station, additionally augments the staff complements of other fishery stations in the region experiencing shortages as a result of work pressure, which consequently leaves relatively little time for general law enforcement patrols and the like, in the larger area.

*Total prosecutions, 1998: 39 (Cases withdrawn: 4)
*Total prosecutions, 1999: 43 (Cases withdrawn: 12)
*Total actual prosecutions, 1998 - 1999: 66

Figure 5.2: Prosecution statistics for the period 1998 to 1999 – Saldanha Bay.

5.2.1.3 St HELENA BAY

This station is situated within a state controlled fishing harbour in the town of St Helena Bay. It has a staff complement of 8 fishery control officers of which 6 can be regarded as operational, and services the area from Groot Paternoster Point in the south to Wildevarkensvallei approximately 30km to the north. A rich marine species diversity is encountered along this coastline and due to the presence of coastal resorts and housing estates in the vicinity harvesting pressure remains relatively high throughout the year.
The station's core business is monitoring the discharge of pelagic fish (occasionally also demersal longline) at the several pelagic canning and reduction plants in the vicinity throughout the year, as well as harbour management. Law enforcement patrols are only usually undertaken when vessels moor during holiday periods or during periods of inclement weather, but bearing in mind that staff also have to take leave, which is usually taken to coincide with these periods of pelagic vessel inactivity, very few such patrols are subsequently undertaken.

*Total prosecutions, 1998: 1 (Cases withdrawn: 0)
*Total prosecutions, 1999: 10 (Cases withdrawn: 0)
*Total actual prosecutions, 1998 - 1999: 11

![Prosecution Statistics Graph](image)

Figure 5.3: Prosecution statistics for the period 1998 to 1999 – St Helena Bay.

5.2.1.4 LAAIPLEK

Laaiplek station is situated within a local authority controlled harbour in the town of Laaiplek, and services the area from Wildevarkensvallei in the south to Draaihoek in the north, a coastline of approximately 35km.
The station boasts a staff complement of 2 fishery control officers, of which 1 can be regarded as operational. This staff complement is almost entirely involved with the monitoring of pelagic fish discharge in the harbour all year round, and is distended with extra personnel from Saldanha Bay during very busy periods.

This station’s operational area supports the largest concentration of net fishermen (both legal and illegal) on the West Coast as well as large concentrations of rock and surf anglers especially during galjoen season (1 March to 14 October).

In contrast, rock lobster, inter-tidal zone organisms (with the exception of white mussels) and abalone are relatively poorly represented in the area due to the rocky habitat essential for their proliferation being limited within the coastal zone. Submerged reefs and rocky substrate in certain areas do, however, support large concentrations of specifically west coast rock lobster populations and although less visible are easily accessible and exploitable by vessel. As with many coastal towns in the Western Cape their population numbers swell by many percentage points during holiday periods and the consequential pressure on the coastline and marine resources far exceed the capacity to police and protect them.

Poor policing capacity and deficient guardianship, necessarily implies poor deterrence and often serves as, what Brantingham & Brantingham (1998:37) term, a crime attractor, enticing criminally orientated individuals towards such an area, compounding an already serious problem.

Large stretches of open beaches with numerous escape routes as well as small town cohesion and loyalty towards one another make apprehension of marine criminals no mean feat. Familiarity between members of the public (both law abiding and non law abiding) and fishery control officers and even other officials responsible for the administration of justice could also become problematical in smaller towns, especially if law enforcement personnel are allowed to remain there for extended (>2 years) periods.

*Total prosecutions, 1998: 9 (Cases withdrawn: 0)
*Total prosecutions, 1999: 3 (Cases withdrawn: 0)
*Total actual prosecutions, 1998 - 1999: 12
5.2.1.5 ELANDS BAY

The Elands Bay station is situated adjacent to a state fishing harbour some distance south of the town of Elands Bay. It has a staff complement of 2 operational fishery control officers and services approximately 40km of coastline from Draaihoek in the south to Kreeftebaai in the north. Almost all of the relevant marine organisms, with the exception of abalone, are well represented in the area. The station's chief function is rock lobster quota control during the peak season (15 November to the end of February) and also general law enforcement. Manpower shortages, augmented by staff from Saldanha Bay, are often experienced during peak rock lobster season when all attention is on quota control resulting in the other marine resources being left to the mercy of all those who choose to abuse them.

*Total prosecutions, 1998: 6 (Cases withdrawn: 0)
*Total prosecutions, 1999: 9 (Cases withdrawn: 0)
*Total actual prosecutions, 1998 - 1999: 15
5.2.1.6 LAMBERTS BAY

The Lamberts Bay station is situated within a state controlled fishing harbour in the town of Lamberts Bay, and services the area from Kreeftebaai in the south to Rooiduin in the north, approximately 40km of coastline.

The station is staffed by 4 fishery control officers of which 2 can be viewed as operational and has as its main function the monitoring of pelagic and rock lobster discharge (quota control), day-to-day harbour management, routine restaurant/fish processing plant inspections, boat (sea) and general coastal law enforcement patrols.

Most of the organisms relevant to this dissertation, with the exception of abalone, which occur naturally to a slightly lesser extent, are well represented in the area.

*Total prosecutions, 1998: 13 (Cases withdrawn: 5)
*Total prosecutions, 1999: 18 (Cases withdrawn: 5)
*Total actual prosecutions, 1998 - 1999: 21
Figure 5.6: Prosecution statistics for the period 1998 to 1999 – Lamberts Bay.

5.2.1.7 DORING BAY
The Doring Bay station is situated within the small fishing village of Doring Bay and services the approximately 100km long bucolic coastline from Rooiduin in the south to Brakrivier (near the Western Cape / Namaqualand border) in the north. With the exception of abalone, all the other marine organisms are well represented throughout the stations operational area. The station is currently staffed by 1 fishery control officer but was prior to October 2000 staffed by 2 officers. No quota control is conducted at the station and general coastal law enforcement can be regarded as the primary responsibility of the station. The area to the north of the Olifants river is usually devoid of people, but becomes a vacation mecca for rock lobster seeking holiday makers during holiday periods. Similarly, the town of Strandfontein (approximately 5 km north of Doring Bay) swells its permanent population of approximately 100 to several thousand during these holiday periods placing immense pressure on
marine and coastal resources and requiring dedicated and extensive policing activities to address the concomitant harvesting pressures. Deficient law enforcement and the awareness hereof by the public, however, it is submitted, cause the Doring Bay area to act as a crime attractor where criminal activity feels reasonable, safe and easy to the offender.

*Total prosecutions, 1998: 2 (Cases withdrawn: 0)
*Total prosecutions, 1999: 3 (Cases withdrawn: 1)
*Total actual prosecutions, 1998 - 1999: 4

Figure 5.7: Prosecution statistics for the period 1998 to 1999 – Doring Bay.

5.2.2 CONSOLIDATED PROSECUTION STATISTICS FOR THE WEST COAST (1998 – 1999)

*Total prosecutions, 1998: 77 (Cases withdrawn: 9)
*Total prosecutions, 1999: 107 (Cases withdrawn: 18)
*Total actual prosecutions, 1998 - 1999: 157
5.2.3 EVALUATION AND DISCUSSION OF WEST COAST PROSECUTION STATISTICS

From the above statistics it can be deduced that the majority of prosecutions, namely, 110 (70%) were for rock lobster, 26 (17%) for shore angling, net or linefish, 8 (5%) for inter-tidal zone organisms, 7 (4%) and 6 (4%) respectively for abalone and other contraventions and 0 % for both pelagic and demersal fishes.

Given the abundance of the various species on this section of the coastline (with the possible exception of abalone), and especially the prominence of pelagic and demersal fish harvesting and discharge, it would appear that rock lobster harvesters, with due cognisance of the fact that rock lobster are a popular target by numerous harvesting sectors on this coast, are being singled out for attention by fishery control officers when on coastal law enforcement patrols and that a much lower priority is being afforded to the other harvesting sectors.
No stations recorded prosecutions for the entire spectrum of relevant fishery disciplines.

The absence of a more balanced distribution of prosecutions serves as evidence of the fact that certain types of contraventions are regarded as more important or perhaps even more prestigious than others, which unfortunately does little to promote the conservation/preservation of the fragile interrelations, found within the marine ecosystem.

Furthermore, the absence of prosecutions for high value and abundant (large biomass) quota species such as pelagic and demersal fishes goes a long way to corroborating a statement made elsewhere in this dissertation that crimes involving these species are committed in the relative seclusion of the open ocean, in the absence of any form of guardianship, before the discharge and monitoring process is set in motion.

The total prosecution statistics for the two-year period equates to, 0.9 cases per station per month, which in the opinion of the author, and with due regard to the fact that certain cases are likely to be of a more involved (protracted) and serious nature than others, attests to the fact that insufficient effort is being directed at marine law enforcement, and particularly those species other than rock lobster.

Of further concern is the fact that 27 (14.67%) of the already few cases on this coast were withdrawn, and although not applicable to all stations, is nevertheless, symptomatic of serious underlying problems with either the preparation and/or presentation of cases by fishery officers and/or on the part of the judiciary due to marine related cases possibly being regarded as trivial or even because of animosity towards the fishery officer who’s task could be regarded as menial.

Although lower crime statistics could be ascribed to a decrease in actual crime as a result of increased awareness and deterrence, these low statistics on the West Coast, it is submitted, is due to amongst others, the inadequate staff component and resultant deficient policing effort and will have to first reach unrivalled heights before a drop will in any way be indicative of crime reduction.
5.2.4 SOUTH WEST COAST REGION: SITUATIONAL AND STATISTICAL INFORMATION

5.2.4.1 SEA POINT
The Sea Point station is strategically situated within the Sea Point suburb of the sprawling Cape Metropole, and services the area, most of which is a rock lobster reserve, from Grotto Bay in the north to Llandudno in the south, a coastal area of approximately 80km.
Robben Island, and the adjacent poacher frequented, Whale Rock, around which healthy populations of rock lobster are said to reside, are also located within this stations operational area.
This station, which functions as the regions headquarters, has a staff complement of 19 fishery control officers of which 15 can be regarded as operational.
All the relevant marine species are well represented in the area and are subjected, because of their proximity to large numbers of people, to extreme and incessant harvesting pressures.
The station's core business involves quota control of, inter alia, the following species: West and South Coast rock lobster, demersal fishes (long line and trawling), abalone, pelagic fish, patagonian toothfish, swordfish, shark longline, tuna, etcetera, usually within the Cape Town docks (harbour) as well as general law enforcement within the operational parameters.
Quota monitoring in the harbour (docks) accounts for the largest percentage of the available manpower time and reaches intensities that on many occasions causes all available manpower to be allocated to this function leaving little time for functions such as inspections at airports, restaurants and the like, special investigations and so forth.
Officers often spend numerous days monitoring quota species discharge from vessels and during busy periods do nothing but count boxes of frozen fish and record their weights for comparison with the ships cargo manifest.

*Total prosecutions, 1998: 15 (Cases withdrawn: 1)
*Total prosecutions, 1999: 11 (Cases withdrawn: 1)
*Total actual prosecutions, 1998 - 1999: 24
5.2.4.2 HOUT BAY

The Hout Bay station is situated within the very busy, tourist orientated, proclaimed fishing harbour in the town of Hout Bay, and services the area from Llandudno in the north to Noordhoek (south of Chapmanspeak) in the south, a coastal zone of approximately 30 km in length.

All the relevant marine species are well represented in the area, and are, as in the case of the Sea Point area, subjected to extreme and continuous harvesting pressure. Hout Bay has a personnel component of 5, of which 4 can be regarded as operational.

The core business of the station can be regarded as quota control, with the following species being monitored on an almost daily basis: West Coast rock lobster, swordfish, demersal longline fish, pelagic fish and tuna resulting in the available staff being rendered ineffective for anything else than quota monitoring for large portions of the year. The station is, however, also responsible for the management and administration of the fishing harbour,
coastal vehicle and vessel patrols, and restaurant/fish processing/freezing facility inspections.

*Total prosecutions. 1998: 20 (Cases withdrawn: 1)
*Total prosecutions. 1999: 15 (Cases withdrawn: 4)
*Total actual prosecutions. 1998 - 1999: 30

**PROSECUTION STATISTICS: 1998-1999 (HOUT BAY)**

![Pie chart showing prosecution statistics for Hout Bay]

Figure 5.10: Prosecution statistics for the period 1998 to 1999 – Hout Bay.

### 5.2.4.3 KOMMETJIE

Kommetjie station is situated on the southern outskirts of the quaint town of Kommetjie near the Slangkop lighthouse, and services the coastal area from Noordhoek in the north to Cape Point in the south, a distance of approximately 20 km.

The station is currently staffed by 3 fishery control officers and is primarily concerned with West Coast rock lobster and abalone quota control but is also responsible for general coastal law enforcement. All the relevant marine species are represented in the area and are subject to heavy exploitation.
especially within the Cape Point nature reserve over weekends and holiday periods.

- Total prosecutions, 1998: 143 (Cases withdrawn: 25)
- Total prosecutions, 1999: 82 (Cases withdrawn: 16)
- Total actual prosecutions, 1998 - 1999: 184

![PROSECUTION STATISTICS: 1998-1999 (KOMMETJIE)](image)

Figure 5.11: Prosecution statistics for the period 1998 to 1999 – Kommetjie.

5.2.4.4 KALK BAY

This station is situated within the very busy proclaimed fishing harbour of Kalk Bay and lies alongside the scenic route connecting Muizenberg with places such as Fish Hoek, Simonstown and Cape Point. The station is staffed by 2 fishery control officers of which 1 can be regarded as operational, and services the area from Cape Point in the south to Swartklip in the north, an area of approximately 50 km. The station's core functions include the monitoring of quota discharge of especially West Coast rock lobster, pelagic fish and abalone, the administration of the harbour activities and general law enforcement activities within the stations operational boundaries.
All relevant species (with the exception of white mussels) are well represented in the area, with harvesting pressure being exceptionally heavy on species such as abalone, inter-tidal zone organisms and shore angling fishes.

*Total prosecutions, 1998: 48 (Cases withdrawn: 0)
*Total prosecutions, 1999: 23 (Cases withdrawn: 1)
*Total actual prosecutions, 1998 - 1999: 70

Figure 5.12: Prosecution statistics for the period 1998 to 1999 – Kalk Bay.

5.2.4.5 GORDON'S BAY

Gordon's Bay station is situated within the proclaimed fishing harbour on the outskirts of the town of Gordon's Bay near to the naval academy and the world famous Bikini Beach. The station is staffed by 5 fishery control officers of whom 4 can be regarded as operational, and services the area from Swartkilp in the west to Meerensee in the east, a coastal area of approximately 60 km.

The chief functions of the station include quota control in respect of West Coast rock lobster and abalone, administration of the busy harbour and
general law enforcement. All relevant marine species are well represented, with especially rock lobster and abalone experiencing heavy harvesting pressure in the Cape Hangklip/Kleinmond and Betty’s Bay abalone reserve areas during weekends and holiday periods.

*Total prosecutions, 1998: 93 (Cases withdrawn: 9)*

*Total prosecutions, 1999: 82 (Cases withdrawn: 17)*

*Total actual prosecutions, 1998 - 1999: 149*

![Prosecution Statistics: 1998-1999 (Gordon's Bay)](image)

Figure 5.13: Prosecution statistics for the period 1998 to 1999 – Gordon’s Bay.

5.2.4.6 HERMANUS

Situated within a proclaimed fishing harbour some distance west of the actual town of Hermanus, this station services the 80 odd kilometre stretch of coastline between Meerensee in the west to De Kelders in the east, incorporating the now infamous, Hawston/Mudge Point stretch of coastline. The station is currently staffed by four operational fishery control officers and is primarily responsible for, the quota control of pelagic fish and tuna longline
catches, day-to-day administration and management of the harbour, restaurant inspections as well as boat (sea) and coastal law enforcement patrols. Personnel strength at this station is regularly complemented by officers from other stations, both inside and outside the province, as well as by a Police Services contingent, known as Operation Neptune, in an attempt to impede the intentional marine related miscreant behaviour so prevalent in the area. All species germane to this dissertation (especially abalone) are well represented in the area and experience heavy exploitation pressure from most harvesting sectors. Hermanus and its surrounds (Onrust River, Vermont, Sandbaai, Kleinmond, Stanford) are popular holiday/tourist destinations and often promote and host, sea related festivals and events attracting huge numbers of people, many of whom exploit the ocean and/or marine resources in some or other manner during their stay.

*Total prosecutions, 1998: 72 (Cases withdrawn: 44)
*Total prosecutions, 1999: 69 (Cases withdrawn: 7)
*Total actual prosecutions, 1998 - 1999: 90

Figure 5.14: Prosecution statistics for the period 1998 to 1999 – Hermanus.
5.2.4.7 GANS BAY

The Gans Bay station is situated within a proclaimed fishing harbour and is basically surrounded by the town of Gans Bay and its sprawling residential holiday developments, to whit, Franskraal, Kleinbaai and De Kelders as well as the popular holiday resort/caravan park destinations of Pearly Beach and Uilenkraalmond.

The area serviced stretches from De Kelders in the west to Soetfontein in the east and encompasses a coastline of approximately 60km in length.

The station is staffed by 5 operational fishery control officers and is primarily responsible for quota control vis-à-vis the following species; pelagic fish, abalone and longline hake, day-to-day administration and management of the harbour, restaurant/fish processing plant inspections as well as boat (sea) and coastal law enforcement patrols.

Harvesting pressures tend to fluctuate seasonally, attaining unrivalled heights during holiday periods when these destinations literally burst at the seams.

PROSECUTION STATISTICS: 1998-1999 (GANS BAY)

![Figure 5.15: Prosecution statistics for the period 1998 to 1999 – Gans Bay.](Image)
*Total prosecutions, 1998: 69 (Cases withdrawn: 7)
*Total prosecutions, 1999: 27 (Cases withdrawn: 9)
*Total actual prosecutions, 1998 - 1999: 80

5.2.4.8 STRUISBAAI

The Struisbaai station lies within a proclaimed (state) fishing harbour in the small holiday town of Struisbaai, and services the area from Soetfontein in the southwest to Die Mond in the northeast, a coastal area of approximately 85 kilometres in length.

The station is staffed by 2 operational fishery control officers and has as its main function the monitoring of abalone quota landings, the administration and management of the harbour, restaurant/fish processing plant inspections as well as boat (sea) and coastal law enforcement patrols.

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**PROSECUTION STATISTICS: 1998-1999 (STRUISBAAI)**

![Prosecution statistics chart](chart)

Figure 5.16: Prosecution statistics for the period 1998 to 1999 – Struisbaai.

The relevant organisms are all relatively well represented in the area and although all subject to seasonal fluctuations in harvesting pressure, abalone are particularly heavily exploited as the poacher element, originally limited to
the Hawston area, expand their operations northwards to the more abundant abalone stocks still presently to be found in the Buffelsjag and Die Damme area.

As with many other South Coast towns, population numbers increase exponentially over the holiday periods and pressure on all the marine resources is intense and consistent.

* Total prosecutions, 1998: 10 (Cases withdrawn: 1)
* Total prosecutions, 1999: 18 (Cases withdrawn: 0)
* Total actual prosecutions, 1998 – 1999: 27

5.2.4.9 ARNISTON (WAENHUISKRANS)
The Arniston station is situated in the holiday orientated coastal village of Arniston near to the Overberg town of Bredasdorp, and is run from the small but occasionally very busy proclaimed harbour in the village. The station is staffed by a single fishery control officer, whose duty it is to ensure the efficient administration and management of the harbour, carry out regular boat (sea) and coastal law enforcement patrols, as well as perform restaurant and fish processing plant inspections.

This station's area of jurisdiction encompasses a coastal zone of approximately 200km from Die Mond in the southwest to Cape Infanta in the northeast much of which is under the hegemony of the South African National Defence Force (SANDF) and includes a large marine reserve area within the Western-Cape Nature Conservation Board managed De Hoop Nature Reserve some distance to the north.

From roughly the coastal area surrounding this station the representation of the relevant species changes quite considerably and few large natural populations of West Coast rock lobster or abalone are found further north. The pressures from recreational angling and inter-tidal zone harvesting are thus, due to these deficiencies, of more importance here.

* Total prosecutions, 1998: 5 (Cases withdrawn: 1)
* Total prosecutions, 1999: 4 (Cases withdrawn: 1)
* Total actual prosecutions, 1998 - 1999: 7
5.2.4.10 STILL BAY

The Still Bay station is, as is practically the norm, managed from within the proclaimed fishing harbour within the quiet, seasonally orientated seaside village of the same name. It is staffed by 2 operational fishery control officers who are responsible for the approximately 100km of coastal zone from Cape Infanta in the South to the Gouritsriver mouth in the north. The station's core business includes the day-to-day administration and management of the harbour, sea (boat) and coastal law enforcement patrols as well as routine restaurant/fish processing plant inspections.

Additionally, four spatially remote tidal rivers, namely, the Breede, Gourits, Punjie and Goukou have to be monitored for compliance with the Marine Living Resources Act, 1988, a function that, prior to the proclamation of this Act, was largely entrusted to the provincial nature conservation authority in terms of provincial legislation. No quota control activities are, however, undertaken at this station and recreational rock and surf as well as ski-boat
related fishing activities can therefore be regarded as the most important harvesting pressures.

*Total prosecutions, 1998: 10 (Cases withdrawn: 0)
*Total prosecutions, 1999: 6 (Cases withdrawn: 1)
*Total actual prosecutions, 1998 - 1999: 15

**PROSECUTION STATISTICS: 1998-1999 (STILL BAY)**

![Prosecution statistics chart](image)

Figure 5.18: Prosecution statistics for the period 1998 to 1999 - Still Bay.

### 5.2.4.11 MOSSEL BAY

The Mossel Bay station is located within the town's central business district and is staffed by 5 operational fishery control officers. The approximately 100km of coastline serviced extends from the Gouritsriver mouth in the south to Wilderness in the north. The station's primary task is the monitoring of the following quota species within the relatively large and perpetually busy local authority managed harbour adjacent to the town; demersal trawl fish, pelagic fish and hake longline catches.

These officers are additionally required to perform boat (sea) and coastal law enforcement patrols and restaurant/fish processing plant inspections. Rock
and surf and boat based angling as well as demersal trawling/longline harvesting and inter-tidal zone harvesting constitute the major forms of exploitation in this station's area of jurisdiction.

*Total prosecutions, 1998: 7 (Cases withdrawn: 0)
*Total prosecutions, 1999: 1 (Cases withdrawn: 0)
*Total actual prosecutions, 1998 - 1999: 8

![PROSECUTION STATISTICS: 1998-1999 (MOSSEL BAY)](image)

Figure 5.19: Prosecution statistics for the period 1998 to 1999 – Mossel Bay.

5.2.4.12 KNYSNA/PLETTENBERG BAY

This station is situated closest to the political boundary with the Eastern Cape and is responsible for the coastal zone from Wilderness in the south to Nature's Valley in the north, a distance of approximately 40 km and includes the Robberg marine reserve. Inter-tidal zone organisms, with the exception of white mussels, recreational angling fishes and demersal fishes are well represented in the area, and are, in the main, subject to the highest exploitation pressures. The station, which is sited in the town itself, has a staff complement of 3 operational fishery control officers and has as its key
functions the monitoring of quota discharge in respect of demersal fish, namely, hake longline, boat (sea) and coastal law enforcement patrols as well as routine restaurant/fish processing plant inspections.

*Total prosecutions, 1998: 4 (Cases withdrawn: 1)
*Total prosecutions, 1999: 19 (Cases withdrawn: 2)
*Total actual prosecutions, 1998 - 1999: 20

Figure 5.20: Prosecution statistics for the period 1998 to 1999 – Knysna.

5.2.5 CONSOLIDATED PROSECUTION STATISTICS FOR THE SOUTH WEST COAST (1998 – 1999)

*Total prosecutions, 1998: 496 (Cases withdrawn: 90)
*Total prosecutions, 1999: 357 (Cases withdrawn: 59)
*Total actual prosecutions, 1998 - 1999: 704
5.2.6 EVALUATION AND DISCUSSION OF SOUTH WEST COAST PROSECUTION STATISTICS

From the above histogram it can be deduced that an almost equal amount of rock lobster and abalone prosecutions, namely, 314 (44%) and 274 (39%) respectively, were instituted during the two-year period on the South West Coast. Notwithstanding this fact, significantly fewer cases in respect of the other species were registered, namely, 61 (9%) for shore angling, net and linefish, 48 (7%) for inter-tidal zone organisms, 6 (1%) for other contraventions and only a single case (0%) in respect of demersal fishes.

No prosecutions were instituted for any pelagic fish related contraventions. Although more balanced with regard to rock lobster and abalone prosecutions, there seems, as in the case of the West Coast, and given the species diversity on this coastline, to be considerable enforcement bias towards the so-called 'status' species at the expense, it is submitted, of both the less conspicuous
species as well as the high value, large biomass deeper sea, and consequently more difficult and expensive to monitor/police species, such as pelagic and demersal fishes.

No station, recorded prosecutions for the entire spectrum of marine species relevant to this dissertation, although on the whole prosecutions instituted were of a more diverse nature than those recorded on the West Coast. Cognisance is also taken of the fact, that due to localised poaching pressures, certain stations, namely, Hermanus and Gans Bay have out of necessity needed to direct most of their enforcement capacity towards combating species specific crimes and that these stations will therefore not necessarily be able to boast diverse prosecution statistics.

The total prosecution statistics i.e. actual prosecutions, irrespective of the verdict, for the two-year period equates to **2.44 cases per station per month**. Once again, given the harvesting pressures that this coastline experiences from the recreational, commercial and poacher elements alike, and bearing in mind the availability of the relevant organisms, the prosecution statistics attest to the fact that the policing figures are inconsistent with the actual amount of effort required to conserve this province's marine resources and especially those species other than rock lobster and abalone, some of which form the cornerstone of the fishing industry in this country.

A further disconcerting statistic is that **149 (17.47%)** of the relatively few total potential prosecutions (853) instituted on this coast, were withdrawn. This, as in the case of the West Coast, can be interpreted as being symptomatic of serious underlying problems within the Marine & Coastal Management Inspectorate and/or the criminal justice system.

**5.2.7 CONSOLIDATED PROSECUTION STATISTICS FOR THE WESTERN CAPE (1998 - 1999)**

- Total prosecutions, 1998: 573 (Cases withdrawn: 99)
- Total prosecutions, 1999: 464 (Cases withdrawn: 77)
- Total actual prosecutions, 1998 - 1999: **861**
5.2.8 EVALUATION AND DISCUSSION OF WESTERN CAPE PROSECUTION STATISTICS (1998 – 1999)

Prosecution statistics for the Western Cape basically reflect a similar picture to what has already emerged from a scrutinisation of the two regions comprising the Western Cape individually, namely, a severe overemphasis on the prosecution of certain types of marine crime or perhaps more accurately stated a gross under emphasis on the policing of certain types of crime, indifference towards, or a lack of policing effort in general as well as an unacceptably high rate of case withdrawals, promoting, precipitating and spawning, it is submitted, a broad based subculture of non-compliance. The total prosecution figure (actual cases, excluding withdrawn cases) for the two-year period amounted to 861 of which rock lobster (424 cases - 49%) and abalone (281 cases – 33%) prosecutions together accounted for 82% of all prosecutions.
A meagre 87 cases (10%) were registered for shore angling, net and linefish, 56 cases (7%) for inter-tidal zone organisms, 12 cases (1%) for other contraventions and 1 case (0%) for demersal fishing related activities. No cases were recorded for any pelagic related contraventions. On average, each of the 19 inspectorate stations in the Western Cape therefore registered 1.9 cases per month for the two-year period.

One hundred and seventy six cases (176) or 17% of the 1037 potential cases, almost the equivalent of all the actual prosecutions for shore angling, net and linefish and inter-tidal zone organisms for the two-year period combined, were withdrawn.

5.3 ROLE OF THE SOUTH AFRICAN POLICE SERVICES (SAPS) IN COMBATING MARINE CRIME

As upholders of law and order in society, the SAPS can theoretically address any form of crime regulated by any form of legislation, and it is thus relevant to evaluate and examine their contribution to marine law enforcement. Unfortunately many forms of legislation deal with specific matters, such as marine or other types of environmental crime and require specific training and knowledge, or stated another way, a certain degree of specialisation/expertise, in addition to a basic knowledge of law enforcement. Given this fact, the SAPS’s general shortage of operational staff, as well as the level of, call it, conventional crime in society today it is not surprising that the SAPS do not regard marine crime as a priority and do not as a rule specifically go in search thereof.

The Chief Inspectors, however, concurred that the SAPS were in most instances more than willing to assist M&CM with operations of a more serious nature and would additionally be on the look out for suspect persons, vehicles or vessels during routine duties, if so requested.

Should a marine related contravention be discovered by the police themselves, the assistance of the M&CM inspectorate will as a rule be called in specifically to satisfy, amongst others, the following stringent evidentiary requirements; was the organism measured by an officially approved and
calibrated measuring implement?, was it measured in the correct manner?, was the organism correctly identified?, and so forth. Such cases are then usually recorded as an M&CM case and are reflected in the particular stations prosecution statistics (Basson 1999).

Certain sections of the SAPS are also in close contact with selected M&CM personnel with regard to the provision of reciprocal crime intelligence (Van Eeden 2000).

5.3.1 OPERATION NEPTUNE

Due to the extreme nature of abalone, and to a lesser extent, rock lobster poaching in the Hawston/Mudge Point and surrounding areas, outcries from coastal communities, environmental organisations and community policing forums along the southwest coast, the incapacity of M&CM to effectively address the poaching problem as well as the fact that syndicates and gangs were increasingly being involved, thereby moving the crime problem beyond the sole concern of M&CM, an SAPS operation aptly named Operation Neptune was implemented in February 1999 (Hauck & Hector 2000:2).

According to Hauck & Hector supra, this operation, with its main objective the restriction of poaching activity along the southwest coast from Cape Hangklip to Quoin Point, and initiated by the SAPS but jointly implemented with M&CM, was initially planned for 6 months but was lengthened by an additional month and eventually terminated in October 1999. SAPS personnel, however, only withdrew in their entirety at the end of December 1999.

Hauck & Hector (2000:3-4) go on to state that the operation focussed on two elements, namely, the creation of an increased law enforcement visibility (omnipresence) along the coastline to deter poachers as well as an increase in the arrest tempo of poachers and the seizures of their plunder.

Hauck & Hector (2000:4-10), mention further that although the operation had a number of positive outcomes, predictably a number of negative influences were also identified. Notwithstanding the abovementioned, if one examines the abalone confiscations over the last few years (see figure 5.23) it can be seen that since the inception of Operation Neptune in February 1999, abalone confiscations dramatically decreased from the previous year.

Although it would be hazardous to accredit this reduction solely to the activities of Neptune, it would certainly not be too presumptuous to speculate
that poaching, and most probably incidental/recreational over exploitation to a certain degree within the operational borders of Neptune as well, were reduced or stunted as a result of the increased policing visibility, presence and enforcement actions.

According to Mackenzie (2000), 26 338 abalone were subsequently confiscated in January 2000, equating to almost 33% of the entire previous years confiscations, and therefore, would seem to indicate a resumption of poaching activities after the cessation of Operation Neptune (probably as a result of a reduction in risks).

If this assumption is correct it goes a long way to substantiating submissions made elsewhere in this dissertation to the effect that a lack of policing capacity is a causational factor of the illegal exploitation of marine resources.

Figure 5.23: Minimum number of abalone confiscations nationally 1994-1999. 2000** indicates confiscations for the month of January 2000 only (Mackenzie 2000).

5.4 SUMMARY AND CONCLUSION.

Why is marine law enforcement undertaken if not to ensure the perpetuation of viable populations of marine life along our coastlines and in our oceans for the benefit of present and future generations? This is the question one can rightly ask oneself after having perused this chapter.

Through the application, implementation, monitoring and particularly enforcement of conservation strategies, painstakingly formulated by marine scientists, fishery control officers hold the key, it would seem, to the success or failure of marine conservation in the Western Cape province.
They can be regarded as that link in the chain, which more than any other should not be susceptible to weakening or breakage so that effect can be given to scientific conservation models and strategies, lending credence to the state's commitment to marine conservation. All things being equal, such a chain of responsibility seems logical and feasible in order to attain the ultimate goals and objectives mooted by the Marine Living Resources Act, 1998, but is unfortunately, as has crystallized out of this chapter, not currently a practical and attainable reality.

It is evident from the exposition of policing statistics in this chapter that marine prosecutions are less than adequate in relation to the level of marine crime, given specifically the attractiveness and lack of guardianship of the province's marine resources, the level of importance attributed to the various species as well as the deficient centralised recording and preservation of crime statistics from which predictions and plans regarding crime prevention strategies should be made.

Although it is recognised that policing is not an end in itself, but a means towards the end of conserving marine bio-diversity, it is through the deterrent value of dedicated, vociferous and profusive policing that the current level of non-compliance and contra-legal activities in all harvesting sectors can be addressed, public support won and relations strengthened to such an extent that voluntary compliance will be promoted.

In an attempt to determine and elucidate the reasons for the less than adequate effort being directed at the conservation of marine resources in the Western Cape, the operational/functional milieu of the fishery control officer will be evaluated in the following chapter with specific reference to his/her background characteristics, motivation (or lack thereof), time-function allocation, enforcement techniques and general mind set/opinions.
CHAPTER 6

SURVEY QUESTIONNAIRE

EMPIRICAL FINDINGS – EXTENT OF MARINE LAW ENFORCEMENT/CONTROL AND RELATED INSTITUTIONAL DYNAMICS
6.1 INTRODUCTION

In an attempt to ascertain the realistic extent of marine law enforcement and control as well as the perceptions and characteristics of the operational fishery officers involved therein, and to seek out and highlight any significant correlations/trends/patterns that may emerge, the following section will examine and evaluate the feedback given by these respondents.

The survey amongst this target group was not only regarded as relevant but also as essential to this dissertation due to the fact that these officers, as the executive arm of M&CM, are primarily responsible for the implementation of most of the strategies and conservation initiatives developed by the scientific and top management components within the Branch.

A lack of sedulousness at this level, it is submitted, could render the most promising of conservation strategies ineffective and make any attempt at pursuing or realising the goals of the Marine Living Resources Act, 1998 an exercise in futility.

6.2 STRUCTURE OF SURVEY QUESTIONNAIRE

Sixty questionnaires, consisting of 25 closed ended (structured) questions and one open ended question (additional comments), were disseminated to all operational fishery control officers (FCO) during the period November 2000 to February 2001. The measuring instrument was basically, to facilitate data gathering, systematisation and analysis, subdivided into 6 sections.

The first section comprising questions 1 – 9 deals specifically with respondent demographics, background and characteristics and aims to place in perspective the functionary base responsible for enforcing compliance with marine conservation legislation in the Western Cape, i.e, to paint a picture of the group on which this enormous responsibility rests.

The second section, questions 10 – 18 and question 24, focuses on marine law enforcement effort and attempts to ascertain time-function allocations, policing techniques and general feelings/perceptions towards the current state of policing activity.
Section three, comprising questions 19 – 22 addresses motivational aspects and seeks to capture information relevant to how enthusiastic and inspired operational functionaries are about performing their functions as marine conservationists, and seeks out correlations between the deficient policing effort expounded on in the preceding chapter and the functional FCO milieu.

The next section, consisting of only one question, namely question 23, examines the feeling/confidence FCO’s have with regard to the judicial systems functioning and handling of fishery related cases and has been included due to its close nexus to, amongst others, the certainty, celerity and severity and naturally the success with which fishery/environmental cases are handled and disposed of as well as the co-operation this interaction elicits.

Question 25, as the penultimate question, required the respondents to indicate the degree of significance attributed to environmental education in the combating of marine crime and was felt to be of particular importance in evaluating the extent to which operational functionaries would support and promote environmental education initiatives as well as an indication of their willingness to liaise closely with and befriend the public and not merely function in isolation and secrecy.

The final question, question 26 was not only the last question but also the only open-ended question included in the measuring instrument.

This question was included specifically to provide the functionary with the opportunity to “speak” his/her mind and express this sentiment in the way deemed most suitable by the respondent.

It was also envisaged that the sentiment expressed here would be an important parameter with which the credibility of the feedback contained in the closed questions could be evaluated in order to enhance the reliability and validity of the research.

Questionnaires were disseminated by either personally hand delivering them to and collecting them from the respective fishery control stations or by posting them to senior staff after having discussed the further distribution and return thereof with them telephonically.

Thorough follow up resulted in the completion and return of all sixty questionnaires (n = 60) which represents the total operational fishery control officer complement on duty at the time of dissemination.
6.3 RESPONSE TO QUESTIONS

For the sake of clarity, and to facilitate ease of summation and comparison the answers to the survey questions are supplemented with histograms. Response evaluation and discussion will ensue in a subsequent section.

**Question 1: Gender?**
Fifty-eight (58) or ninety-seven percent (97%) of the respondents are male and two (2) or three percent (3%) are female.

![Figure 6.1: Question 1 - Gender?](image)

**Question 2: Age?**
The highest number of respondents, namely, sixteen (16) or twenty-six percent (26%) are between the ages of 31 – 35 followed by 14 (23%) between the ages of 26 – 30, 12 (20%) between the ages of 36 – 40, 7 (12%) each for both the ages between 41 – 45 and older than 45 and 4 (7%) between the ages of 20 – 25.

![Figure 6.2: Question 2 - Age?](image)
Question 3: Population group? Forty-one (41) or sixty-eight percent (68%) of the respondents are white, 18 (30%) are coloured and 1 (2%) is black.

Figure 6.3: Question 3 – Population group?

Question 4: Marital status? Forty-three (43) or seventy-two percent (72%) of the respondents are married, 13 (22%) are single and 4 (6%) are divorced.

Figure 6.4: Question 4 – Marital status?

Question 5: Educational qualifications? Twenty-five (25) or forty-two percent (42%) of the respondents possess an educational qualification of less than matric, 31 (51%) are in possession of a matric certificate, 3 (5%) have a technikon diploma and 1 (2%) is in possession of an other qualification.

Figure 6.5: Question 5 – Educational qualifications?
**Question 6:** If technikon/university or other qualification, is the qualification relevant to your present post?

Only four (4) or seven percent (7%) of the respondents indicated having a tertiary qualification.

Three respondents (75%) indicated that their qualification was partly relevant to their post while one (25%) indicated that the tertiary qualification was not relevant.

![Figure 6.6: Question 6 – Relevancy of tertiary qualifications?](image)

**Question 7:** How long have you been employed as a fishery control officer?

Nineteen (19) or thirty-two percent (32%) of the respondents have been employed for between 5 and 10 years, 18 (30%) have been employed for between 10 and 15 years, 12 (20%) for more than 15 years, 8 (13%) for between 2 and 5 years, 2 (3%) for less than a year and 1 (2%) for between 1 and 2 years.

![Figure 6.7: Question 7 – Length of service?](image)
Question 8: Where are you currently stationed?
Thirty-seven (37) or sixty-two percent (62%) of the respondents are stationed in or near a large town, i.e. Sea Point, Saldanha Bay, Hout Bay, Gordons Bay, Hermanus, Mossel Bay, or Knysna.
Twenty-three (23) or thirty-eight percent (38%) of the respondents are stationed near to or in a small town.

Figure 6.8: Question 8 – Where currently stationed?

Question 9: What is your annual salary?
Thirty-five (35) or fifty-nine percent (59%) of the respondents earn an annual salary of between R51 000 – R70 000, 11 (18%) earn an annual salary of <R30 000 and between R30 000 – R50 000 respectively and 3 (5%) earn a yearly salary of between R71 000 – R90 000.

Figure 6.9: Question 9 – What is your annual salary?

Question 10: What percentage, on average, of your available time per month is devoted to coastal patrols and actual marine law enforcement?
Sixteen (16) or twenty-seven percent (27%) of the respondents spend between 30% - 40% of their time on coastal patrols, 14 (24%) between 50% -
70%, 10 (17%) less than 10%, 9 (15%) more than 70%, 6 (10%) between 20% - 30% and 5 between 10% - 20%.

Figure 6.10: Question 10 – Percentage of available time devoted to coastal patrols and actual law enforcement?

**Question 11:** Do you think that this allocation is sufficient to address the over/illegal exploitation of our marine living resources?

Forty-three (43) or seventy-two percent (72%) of the respondents felt that their allocation to actual marine law enforcement was not sufficient, 10 (3%) felt that their allocation was sufficient and 7 (12%) were uncertain.

Figure 6.11: Question 11 – Sufficiency of allocation?

**Question 12:** If no, what percentage would you deem adequate to address the illegal exploitation of marine resources in the Western Cape?

Of the forty-three (43) or seventy-two percent (72%) of respondents that felt their allocation of time to law enforcement was insufficient 35 (81%) felt that >70% should be allocated to this function, 6 (14%) felt that 60% - 70% should be allocated and 2 (5%) felt that 50% - 60% should be allocated.
Figure 6.12: Question 12 – Percentage deemed adequate to address marine crime in Western Cape?

**Question 13:** To which activity is most of your time currently devoted per month? Twenty-six respondents (26) or forty-three percent (43%) indicated that they spent most of their time per month on law enforcement related activities, 25 (42%) indicated spending most of their time on quota control, 6 (10%) on administration and 3 (5%) on harbour duties.

Figure 6.13: Question 13 – Activity to which most time devoted per month?

**Question 14:** Are coastal law enforcement patrols undertaken on all weekends and public holidays?

Thirty-three (33) or fifty-five percent (55%) of the respondents indicated that patrols were not undertaken on all weekends and public holidays whilst 27 (45%) indicated that these activities did take place on all weekends and public holidays.

A larger percentage of respondents stationed in large towns (56%) indicated not working on all weekends and public holidays as opposed to those living in small towns (54%).
Figure 6.14: Question 14 – Are coastal patrols undertaken on all weekends/public holidays?

**Question 15:** If no, why not? Of the 33 (55%) respondents that answered this question in the negative, 22 (67%) felt that it was because there were no funds available for overtime, 10 (30%) felt that it was because of manpower shortages, and 1 (3%) felt that it was because of poor management.

Figure 6.15: Question 15 – If no, why not?

**Question 16:** In what manner are coastal law enforcement patrols generally carried out? Thirty-six (36) or sixty percent (60%) of respondents indicated that patrols were usually undertaken by means of a combination of sedan and 4x4 vehicle as well as foot patrols. Only two (2) of these respondents additionally indicated that use was made of boat patrols. Twenty-one (21) or (35%) respondents indicated that patrols were usually undertaken per 4x4 vehicle from beaches or roads and 3 (5%) indicated that patrols were undertaken solely per sedan vehicle from the roadside. No respondents indicated that foot patrols were the sole method whereby patrols were undertaken.
Figure 6.16: Question 16 – Manner in which coastal patrols generally carried out?

**Question 17:** How would you describe the M&CM law enforcement staff component in the Western Cape? Twenty-seven (27) or forty-five percent (45%) of respondents indicated that they thought the component to be less than adequate, 18 (30%) indicated that they thought it was extremely inadequate, 14 (23%) indicated that they were of the opinion that it was adequate and only one (1) person (2%) indicated that he/she thought the component to be extremely adequate.

Figure 6.17: Question 17 – Description of the M&CM staff component in the Western Cape?

**Question 18:** Do you think that this staff component is sufficient to address the illegal exploitation of marine resources in the Western Cape? Forty-five (45) or seventy-five percent (75%) of respondents were of the opinion that the staff component was not sufficient to address the illegal exploitation, 8 (13%) were of the opinion that it was sufficient and 7 (12%) were uncertain whether the staff component was sufficient to address the illegal exploitation of marine resources in the Western Cape province.
Question 18: Do you think staff component is sufficient to address marine crime in Western Cape?

Question 19: How would you describe your current level of motivation towards your job as fishery control officer? Twenty-two (22) or thirty-seven percent (37%) of respondents indicated that they have an average motivation, 18 (30%) indicated that they were demotivated, 10 (17%) indicated that they were highly motivated, 6 (10%) indicated that they were highly demotivated, 3 (5%) indicated that they were extremely demotivated and only one respondent (2%) indicated that he/she was extremely motivated.

Question 20: If demotivated or highly/extremely demotivated, to what would you ascribe this state of demotivation? Twenty-seven (27) or forty-five percent (45%) of respondents indicated that they were demotivated to some or other degree. Of these respondents 3 (11%) indicated that they were demotivated due to poor management, 1 (4%) because of few/no promotion possibilities, 7 (26%) due to poor salary and 2 (7%) due to lack of recognition.
Although requested in the foreword to the questionnaire, as well as verbally, before answering the questionnaire, to mark each answer with only one cross, 14 (52%) of respondents proceeded to mark four or more reasons for their state of demotivation and is accordingly depicted as a response category on its own (combination of reasons).

![Survey Questionnaire](image)

**Figure 6.20: Question 20 – Reason for demotivation?**

**Question 21:** Do you think that someone’s motivational state can influence his/her work performance and/or productivity?

Fifty-six (56) or ninety-three percent (93%) of respondents indicated that they thought a person’s motivational state can indeed influence his/her work performance and/or level of productivity.

Three respondents (5%) indicated that they were unsure about the relationship between motivational state and performance/productivity and 1 (2%) respondent indicated that he/she felt that someone’s motivational state would not influence a person’s work performance and/or productivity.

![Survey Questionnaire](image)

**Figure 6.21: Question 21 – Can motivational state influence work performance/productivity?**
Question 22: Do you think that someone's motivational state can influence his/her loyalty to his/her employer? Fifty-one (51) or eighty-five percent (85%) of respondents indicated that they did think a person's motivational state could influence his/her loyalty towards an employer. Six (10%) respondents felt that motivational state would not negatively affect loyalty towards an employer and 3 (5%) were uncertain about the issue.

Figure 6.22: Question 22 – Can motivational state influence loyalty towards employer?

Question 23: How would you rate the judicial system's handling of marine conservation related cases? Thirty-three (33) or fifty-five percent (55%) of respondents indicated that they felt the judicial system's handling of marine related cases to be poor. Equal numbers of respondents, namely 12 (20%) felt the handling to be extremely poor and good respectively and 3 (5%) respondents felt the handling to be very poor. No respondents indicated that they felt the judicial system's handling of marine conservation related cases to be either very good or excellent.

Figure 6.23: Question 23 – Judicial system's handling of marine conservation related cases?
Question 24: The new permit system for recreational harvesting and the equitable distribution of other fishing rights implies an increased level of monitoring and policing. Are you aware of any such increased activity? Twenty-eight (28) or forty-seven percent (47%) of respondents indicated that they were aware of an increased policing activity, 20 (33%) indicated that they were not aware of any increased activity and 12 (20%) were uncertain.

Figure 6.24: Question 24 – Awareness of any increased policing activity due to new recreational harvesting permits/equitable distribution of other fishing rights?

Question 25: An increased emphasis on environmental education will cause marine crime levels to drop? Twenty-two (22) or thirty-seven percent (37%) of respondents agreed with this statement, 17 (28%) disagreed with this statement, 11 (18%) strongly agreed, 1 (2%) strongly disagreed and 9 (15%) were uncertain.

Figure 6.25: Question 25 – An increased emphasis on environmental education will lead to less marine crime?
**Question 26:** Is there anything with regard to marine law enforcement or the lack thereof that you would still shortly like to mention?

The comments received from the respondents to this question are listed below. The frequency with which the particular or similar comment was received is indicated in parentheses.

- ‘Informasie bereik sub-stasies nie betyds. Visserinstansies en vissermanne weet altyd eerste’.
- ‘Almal is ten gunste van bewaring, maar wanneer geld benodig word trek almal skouers op’.
- ‘Voordat besluite deur bestuur geneem word – kry ooreenstemming van beamptes op grondvlak’ (5).
- ‘As beampte oortyd gewerk het wantrou bestuur sy tye van inspeksies’.
- ‘Beamptes offer hul naweke op – kry geen erkenning, geen oortyd’ (3).
- ‘Te kort aan oortyd fondse en mannekrag’ (2).
- ‘More visits to stations by senior staff necessary’.
- ‘Regular rotation of staff between stations so as to allow officers to get to know problems and work procedures at other stations’ (3).
- ‘If top management can’t do their job properly, e.g., arrange sufficient overtime, why must the officer suffer – yet this tendency has continued for a long time already’.
- ‘Poor/little support for environmental education’.
- ‘No weapons, skipper or other skills training’.
- ‘Slow processing of commercial and subsistence permits leave officers red faced’.
- ‘Too many conservation bodies should be one body seeing to law enforcement’.
- ‘Swak salarisse en geen bevorderingsmoontlikhede’ (4)
- ‘Help nie om te kla nie, niks word gedoen nie’.
- ‘Verbeter regsstelsel’.
- ‘Meer personeel’ (12).
- ‘Wetboek in orde kry’.
- ‘Werk nouer saam met ander owerhede’.
- ‘Geen ondersteuning van bestuur’ (5).
• 'Stel persone in gesagsposisies aan wat niks van mariene bronne of wet weet'.
• 'Inspector's safety inadequate' (3).
• 'State must realise importance of conservation and provide funds and plan before too late'.
• 'Te veel loopholes'.

6.4 EVALUATION AND DISCUSSION OF SURVEY QUESTIONNAIRE RESPONSE.

6.4.1 RESPONDENT DEMOGRAPHICS/CHARACTERISTICS.
Questions 1 – 9 provide an overview of respondent demographics and characteristics as well as insight into the situational background of, and milieu in which, the fishery officer functions.

Noticeably, the incumbents of fishery control officer posts are predominantly married males, quite possibly due to the perception that females are not suited to the role of law enforcer and/or do not possess the mettle to perform in such a vocation, subsequently being selected less readily for employment than males.

The researcher could, however, find no reason to suggest that females would not be able to perform the duties of a fishery control officer as effectively as males. In terms of race distribution, white males are most abundant followed by coloureds and blacks and although being addressed in the government service as a whole, as yet, this operational component does not conform to the prescriptions of the Employment Equity Act (South Africa 1998c). Forty-two percent (42%) of fishery control officers have an educational qualification of less than matric and only three (5%) have a tertiary qualification, which is partly applicable to the post of fishery control officer.

The low number of matriculants encountered in this vocation can most probably be ascribed to the fact that matric only became a prerequisite for appointment several years ago (Basson 1999). Before the introduction of this minimum educational requirement, standard eight, or even less, depending on relevant experience, would suffice for appointment, possibly detracting from
the acceptability of fishery control officer as a career and causing well qualified people to avoid being associated with a career perceived to have a low rating in the eyes of their friends, family and society as a whole. This statement is, to a large extent, corroborated by the age and length of employment distribution found within this component. The largest number of officers (47%) are between the ages of 31 - 40 and the average length of employment (62%) is between 5 – 15 years. According to Van Heerden (1988:148), minimum admission qualifications are a pre-requisite to curb the appointment of sub-standard personnel which could negatively affect relations with the community and furthermore, that the quality of service provided is determined, amongst others, by the abilities of the institutions personnel.

Few new appointments have been made over the last two years in the Western Cape province and could well be indicative of a perception amongst potential employees that the vocation is limited in terms of career advancement. The lack of tertiary qualifications can, it is submitted, not necessarily be ascribed to the fact that there exists no motivation amongst officers to pursue further studies but rather because of the lack of vocation specific courses available.

Furthermore, related and partly applicable courses such as the National Diploma: Nature Conservation are not recognised by M&CM as a pre-requisite for appointment as a fishery control officer in terms of the PAS (personnel administration system) and accordingly no incentive exists to pursue them. According to Beukes (2000), the necessity for a course catering specifically for individuals already in this vocation as well as those considering a career therein has recently been identified and the Cape Technikon will launch the National Diploma: Fisheries Resource Management in 2002.

It is understood that this qualification will be recognised by M&CM, and although education alone is not a panacea (Leonard 1980:80), should empower officers to function more efficiently, foster relations with the public, create a wider interest in this work field and promote marine conservation in general.

With regards to the geographic and spatial distribution of fishery control officers in the Western Cape province, 62% are stationed in or near to large towns and 38% are stationed at more rural orientated locations.
The significance of this distribution is that, due to the increased monitoring of catch and quota discharge at the larger centres, substantial numbers of staff are allocated to these protracted functions (which could easily be outsourced) at the expense of coastal law enforcement. This implies that the lesser staff components in rural locations are responsible for most of the law enforcement actions leading to an imbalanced, piecemeal and noticeably inadequate type distribution of physical, visible, reactive and pro-active policing and subsequent conservation effort in the province.

Salary structure within this sector is primarily centred (59%) between R51 000, 00 – R70 000, 00 per annum. At the lowest end of the scale this equates to a monthly salary of R4250, 00 and at the highest end of the scale R5833, 33, hardly an impressive salary considering the average length of duty of the officers and more significantly the enormous value and importance of the resource they are the custodians of.

6.4.2 MARINE LAW ENFORCEMENT EFFORT

Questions 10 – 18 and question 24 deal with the above issue and reflect the true extent of marine law enforcement as well as the perceptions of the officers towards this aspect.

Sixty-one percent (61%) of fishery control officers in the Western Cape spend less than 50% of their available time on coastal patrols and actual marine law enforcement. Of this percentage 60% devote less than 30% to this activity, statistics that are mirrored by the dismal prosecution figures expounded on in a previous section.

If one considers some of the objectives/principles set out in section 2 of the Marine Living Resources Act, 1998, such as the need to conserve marine living resources, preserve marine biodiversity and achieve optimum utilisation and ecologically sustainable development of marine living resources, the question may rightly be asked, how the purview of this Act is to be realised if so little emphasis is placed on policing and deterrence.

Those individuals best able to identify the enforcement shortcomings, namely the fishery control officers themselves, indicate unanimously (72%) that they believe the current allocation of time to be insufficient to address the over/illegal exploitation of the province’s marine living resources.
Furthermore, 81% of these functionaries are of the opinion that in excess of 70% of a fishery control officer's time should be devoted to actual marine law enforcement and coastal patrols in order to address the problem of marine crime. This state of affairs is, however, not unique and has according to the large number of functionaries approached informally during the compilation of this dissertation, as well as the Chief Inspectors, been a bone of contention for several years now.

Additional funds and manpower have, despite the decline and demise of our marine heritage been conspicuously absent and fishery officers are expected to address the ever-increasing and diversifying marine crime burden with fewer and fewer resources.

Forty-three percent (43%) of the respondents' time is devoted mostly to law enforcement. This figure although heartening does not, however, necessarily reflect the true extent of the officers time-function allocation, since frequently, the time spent on administrative functions, quota control, harbour duties and so forth, although perhaps less per function, when combined takes up more of the officers available time than the function of law enforcement per se.

Compounding this lack of dedicated law enforcement time, 42% of respondents indicated that they currently devote the greatest percentage of their time to quota control. Add to this the time necessarily spent on administrative duties, personnel management/supervision and other diverse activities per month and the actual percentage available for law enforcement drops even more!

Since the inception of the Marine Living Resources Act, 1998 and the introduction of amongst others the subsistence fisher programme, the prerequisite to obtain permits for previously free activities such as angling and bait collection, to name but a few, and the restriction of recreational abalone and rock lobster harvesting to weekends and public holidays, the need for law enforcement activities during weekend/public holiday periods (as well as during normal weekdays), has inescapably increased. It is surprising therefore that 55% of respondents indicated that coastal patrols are not undertaken on all weekends and public holidays.

Are the pledges of increased control (and implied enhanced conservation) said to be forthcoming from the permit fees and boldly propagated in press
releases and other media, as motivation for these initiatives, then to amount to empty promises and hypocrisy? The conservation minded public animal (and other harvesting sectors) will not take long to realise the incapacity of the authorities to police the increased legislation and concomitant harvesting intensity and will rebel/seek retribution, it is submitted, through non-compliance and animosity towards those charged with its execution as representatives of the accountable agency. Criminally motivated individuals will likewise take advantage of the situation and undermine even further the concepts of conservation, voluntary compliance and order maintenance. Once such a culture of non-compliance and cynicism has been established, the eradication thereof will be an extremely difficult and costly exercise, and one that, in the opinion of the researcher, could have been avoided by effective planning, prudence and co-ordination during the implementation (of the Marine Living Resources Act, 1998 and its prescriptions) process.

Increased control and enforcement necessarily imply increased funding and human resources, the very commodities the above-mentioned 55% of respondents deemed to be the reasons for the ineffectual enforcement capacity over weekends and public holidays. Sixty-seven percent (67%) of respondents attributed the problem to a lack of overtime funding and 30% to manpower shortages.

Coastal patrols, when undertaken, are most commonly (60%) carried out by a combination of methods, i.e., sedan vehicle, 4x4 vehicle and foot patrols and can, since their objective is to minimise crime precipitating conditions and opportunities, according to Calitz (1988:116) and Van Heerden (1988:176) be viewed as the most desirable and effective method of operation. Of concern, is the fact that only an occasional respondent (3%) mentioned the use of a vessel for patrolling at sea.

Given the number of harvesting sectors functioning in this “off-shore” locale and the potential for illegal exploitation, this lack of guardianship is problematical and almost certainly serves to promote non-compliance. Thirty-five percent (35%) of respondents indicated that coastal patrols were undertaken from a 4x4 vehicle solely and 5% indicated patrolling only by sedan vehicle, hardly methods conducive to thorough patrolling and deterrence through visibility and/or liaison/interaction with the public.
By patrolling from vehicles alone, functionaries are essentially cut off from the populace and cannot make a determined effort to eliminate crime-precipitating conditions (Van Heerden 1988:175).

Seventy-five percent (75%) of respondents felt that the current M&CM law enforcement staff component is either extremely inadequate or less than adequate and is insufficient to address the illegal exploitation of marine resources in the Western Cape. Only 25% of the respondents felt the staff allocation to be adequate or better, but interestingly only 13% of this percentage felt this adequate staff component to be sufficient to address the illegal exploitation of marine resources, whilst 12% were uncertain. These respondents are, therefore, it seems, of the opinion that there is a difference between adequate staff per se and adequate staff to address the illegal exploitation of marine resources. In the opinion of the researcher respondents either answered the former question ignorantly or were motivated to do so out of loyalty to their employer.

With regard to question 24, forty-seven percent (47%) of respondents indicated that they were aware of an increased level of monitoring and policing since the introduction of the new permit system and equitable distribution of rights approach as opposed to 33% who indicated being not aware and 20% who indicated that they were unsure.

Bearing in mind the high percentage of respondents that indicated a low percentage of time spent on actual law enforcement, it is submitted that the respondents answering this question in the affirmative are referring to an increase in the diversity of activities being policed/monitored, and not necessarily an increase in actual policing effort per se. Irrespective of this fact 53% of respondents either were not aware or were unsure of any increased activities and can be regarded as a relatively clear indicator of the policing situation subsequent to the implementation of the mentioned initiatives.

6.4.3 MOTIVATIONAL ASPECTS.

Questions 19 - 22 deal with the above issue and provide an indication of the degree of zeal and productivity with which fishery control officers approach their task and, therefore, also indirectly the extent to which marine conservation is addressed and promoted within the study area.
Forty-five percent (45%) of respondents indicated that they were demotivated to some or other degree with their job as fishery control officer, and 37% indicated that they only had an average degree of motivation towards their job. Only a small percentage (19%), indicated having a greater than average motivation. These statistics are, to say the least, disconcerting and attest to serious problems within this component's institutional structure. Job satisfaction and motivation are influenced by amongst others, the status of the chosen occupation and the degree to which individual needs are satisfied (Van Heerden 1988:126). With such a high incidence of demotivation it could prudently be speculated that the general/overall morale of fishery control officers is low and cause for great concern. Since morale is the mental attitude that encourages members of staff to be enthusiastic, display initiative, determination, devotion, perseverance and confidence, collectively directed towards the realisation of the institutional goal (Van Heerden 1988: 128), namely, marine conservation the current situation reflects all the signs of a component in crisis, rapidly, it is submitted, on the road to escalating dysfunctionality.

The formal structure cannot afford to ignore dissatisfaction and related attitudes arising within amongst its personnel (Van Heerden 1988: 130). If it does, the service provided will be adversely affected and functionary behaviour will conflict with institutional goals, strain relations with the public and reflect a poor institutional image.

Of the 45% of respondents that indicated being demotivated to some extent, 26% indicated that they felt it to be due to poor salary, 11% due to poor management, 7% due to lack of recognition and 4% due to few/no promotion possibilities. Of extreme significance, however, is the fact that 52% of these respondents, even though being requested in the questionnaire instructions and verbally immediately prior to completing the questionnaire to do so by making one cross per answer only, proceeded to complete this particular question by making four or more crosses.

This fact, in the opinion of the researcher, is indicative of serious frustration amongst the respondents, a statement that is corroborated by the fact that numerous respondents who indicated average or higher motivation also proceeded to complete this section although instructed not to (these answers
of course discounted for response purposes) as well as by the untidiness and apparent conviction with which respondents marked the answer blocks. In many instances all the blocks were marked, although no 'other' reasons were specified by demotivated respondents.

Frustration, according to Van Heerden (1988:124-7), may be regarded as a state of anxiety caused by internal and external restraints that prevent the attainment of aims. Problems such as staff shortages, low salaries, poor management, ambiguous rules, ineffectual training, and so forth, emphasise the individual's inability to realise the institutional objective in a satisfactory manner and the resultant frustration, clearly evident in the fishery inspectorate, is often countered by the use of objectionable methods, for example an indifferent, apathetical attitude towards law enforcement/policing or even aggressiveness towards the public, in an attempt to eliminate and or compensate for the limiting factors.

Although frustration tolerance differs from individual to individual, the resultant aggression is usually directed at the cause of the frustration i.e., the institutional structure, persons in command or the clientele.

The cause may, however, be out of reach in which case it will be replaced by more accessible persons or objects, such as equipment. One just has to look at the state of many inspectorate vehicles to realise that they have been the objects of continuous and repeated frustration related catharsis attacks, lending substance to the previous statement. When emotional conflict and frustration are constant but aggression is suppressed for fear of disciplinary measures, frustration is transmuted into an attitude of acquiescence resulting in apathy, bitterness and low productivity seen here in the poor prosecution statistics and high withdrawal rate of cases recorded throughout the province.

An institution plagued with a high level of frustration and low morale cannot hope to realise its aims effectively if it does not endeavour to identify and minimise the frustrating conditions leading to these problems which ultimately result in a volatile situation in which synergy and confluence is undermined.

Of further importance here, and a factor that can be regarded as contributory to the current levels of frustration and low morale in general, is that there are according to Van Eeden (2000), twenty-one (21) functionaries with the rank of
chief inspector in the Western Cape, subsequently leaving very little scope for vertical advancement and something to aspire to.

Fishery inspectors with a chief rank (even if functioning as a station chief), often resort under and report to another inspector with an equivalent rank and have to perform lesser type functions although possessing equivalent knowledge, skills, leadership and management qualities but are regarded as having less status than their peers. This, understandably often leads to dissatisfaction and animosity towards the person in charge, especially if the aggrieved individual is of the opinion that he/she is more competent/proficient than the other incumbent, and fuels negativity in general towards the job.

Ninety-three percent (93%) of respondents felt that someone's motivational state can influence his/her work performance as opposed to 2% and 5% who felt that it couldn't or were uncertain, respectively.

This sentiment speaks volumes and should, given the general morale of fishery control officers and the less than adequate prosecution statistics/degree of enforcement effort, immediately sound alarm bells within the senior management echelon of M&CM and prompt urgent examination/revision of existing protocols.

If one considers that fishery control officers are monitoring multi-million rand industries on, in the case of some stations an almost daily basis, the response to the question relating to the officers opinion as to whether a person's motivational state can influence the loyalty of that person towards an employer is even more disconcerting.

Eighty-five percent (85%) of respondents felt that someone's motivational state can influence his/her loyalty towards an employer, 10% felt that it couldn't and 5% were uncertain. It is submitted that officers have utilised this questionnaire (opportunity) as the forum through which to vent, in an unambiguous manner, their frustrations and possibly also intentions.

It should be borne in mind that demotivated functionaries, even those of great integrity and substance, will be more susceptible to corruption and manipulation by criminal elements than those with a more positive disposition towards their circumstances.

Although it is by no means the purpose of the researcher to attempt to manipulate M&CM management or for this dissertation to act as the vessel
wherby the inspectorate realise this aim, it is felt that the response to this question is of cardinal importance and that the warning therein should be recognised and addressed timeously in no uncertain terms as tangible evidence of state commitment towards and investment in marine conservation.

6.4.4 JUDICIAL INVOLVEMENT IN ADMINISTRATION OF JUSTICE PROCESS.

Eighty percent (80%) of respondents indicated that they felt the judicial system's handling of marine related cases to be poor or weaker. Only 20% felt that the handling was good and no respondents felt it to be very good or excellent. The sentiment expressed by the majority of respondents would seem to be significant in providing an answer to the relatively large percentage (17%) of cases that were withdrawn yearly by the courts. It can be reasoned that due to the low level of functionary motivation fuelled by a perception that the courts are against them (due to light sentences, low bail, dismissals based on technicalities and so forth) and disillusioned by the celerity with which wheels of justice turn, a large percentage of the inspectorate give expression to their sentiments through the apathetic manner in which prosecutions are handled.

Poor cases or the presentation thereof is not acceptable to the motivated prosecutor and he/she is not prepared to entertain sub-standard cases, consequently withdrawing many and resulting in the reduction of fishery control officer credibility in their eyes. Notwithstanding this fact, it is also quite possible, and much more likely that, problems are reciprocal and that both parties are to some extent to blame for the problems.

Prosecutors, especially in the larger centres, often rotate frequently between courts and due to the low incidence of fishery cases, therefore, seldom get to deal with fishery/conservation related cases on a regular basis. Subsequently, prosecutors don't liaise much with inspectors, understand the weight of marine cases and/or the punishment sanctions to request the court for, get much practise in actually trying fishery cases or get a chance to become au fait with the techniques used by defence lawyers in environmentally orientated cases. The trivialisation of fishery cases by prosecutors, due to amongst others, the above reasons are also a distinct possibility and could easily be a precipitating
factor enhancing friction between the executive function of the fishery control officer and the judicial function of the courts.

6.4.5 THE ROLE OF ENVIRONMENTAL EDUCATION IN COMBATING MARINE CRIME.

Thirty-seven percent (37%) of respondents agreed that an increased emphasis on environmental education will cause marine crime levels to drop, 18% strongly agreed with this statement, 28% disagreed, 2% strongly disagreed and 15% were unsure. From these replies it can be inferred that there are two distinct schools of thought regarding the concept of environmental education.

Given the limited contact that inspectors have with the public, both in terms of general manpower and time available for actual law enforcement patrols, and in the absence of the opportunity for these officers to address the more prominent environmental issues through dedicated as well as market orientated extension, contact with the populace is minimal and can, all things being equal, be regarded as inadequate, foiling attempts to form a positive alliance or partnership with the public, something which Van Heerden (1988:150) regards as an absolute prerequisite for the combating of crime/disorder.

It is, therefore, debatable whether those functionaries who are positively orientated towards environmental education will be able to make any noticeable impact in this sphere, which has as its goal the inculcation of an environmental ethos and the promotion of voluntary compliance with environmental legislation amongst the general public.

Given the large percentage of functionaries who were either unsure or disagreed with the education concept it would not be difficult for this contingent to undo any positive steps taken by their more education orientated colleagues in this field, especially considering that negative behaviour and an antagonistic/brusque attitude is remembered far more readily than positive actions/dispositions, causing the institution as a whole to be viewed with contempt and labelled accordingly.

In the light of the above-mentioned factors, it would seem that the fishery control component will continue to increasingly distance itself from and weaken relations with the community, undermining acceptance for their
unenviable task and reinforcing the negative stereotype of their profession and institution.

**6.4.6 ADDITIONAL COMMENTS BY FISHERY CONTROL OFFICERS.**

Question 26 was the concluding and only open-ended question incorporated in the survey questionnaire.

It was included so as to enable respondents to voice any additional comments regarding marine law enforcement/lack thereof or to address other related issues that they might feel strongly about.

With few exceptions, good use was made of this opportunity, providing the researcher with even more insight regarding the operational fishery control officers functional milieu and psyche.

From an evaluation of the responses received to this question it is noticeable that not a single one is positively orientated, and that indeed the vast majority of responses are tainted with dissatisfaction, suspicion, pessimism and cynicism. Such perceptions can according to Leonard (1980:75-76) be regarded as a catalyst for negative and cyclic functionary behaviour, which can extend to all aspects of his/her life and make it increasingly difficult to retain an idealistic attitude and positive outlook.

The responses, furthermore, reflect a feeling of demoralisation and helplessness, arbitrary rule, one-way communication and a "we-they" atmosphere reinforcing, as Van Heerden (1988:145) puts it, 'conflicts', instead of promoting sound relations, and ultimately leading to a state of alienation.

**6.5 SUMMARY AND CONCLUSION.**

It is clear from the above evaluation and discussion of the responses to the survey questionnaire that a number of serious deficiencies exist within the functional milieu of the operational fishery control officer.

The general lack of policing effort and associated deficient guardianship/conservation of, in most cases, the highly accessible (vulnerable) and attractive marine resources reflect a level of commitment and management, which is dire need of revision.

The widespread lack of motivation, morale and alacrity combined with the high levels of cynicism, frustration, suspicion and unhappiness encountered
amongst the functionaries compound, it is submitted, the problem of marine crime and give rise to a highly volatile situation, which is to say the least, not conducive to the realisation of the institutional goal. In essence, many fishery control officers are, due to circumstances, presently masquerading as protectors of the marine environment, doing little else but going through the motions to keep themselves employed.

Having looked at the levels of law enforcement and control and having elucidated the reasons for the current deficient effort directed towards it, it will now be expedient to examine the effect and repercussions that these levels have on the marine environment so as to highlight the reasons why it is so imperative that these levels be intensified.
CHAPTER 7
THE EFFECT OF MARINE CRIME
BIOLOGICAL AND SOCIAL IMPLICATIONS
7.1 INTRODUCTION

As has crystallised out of the preceding chapters of this dissertation, marine ecosystems in the Western Cape province are habitually disrupted by mankind through injudicious harvesting practices and over-exploitation (crime). Each year, these ecosystems are subjected to intense and growing pressure, and if not managed sensibly, will become depleted and degraded with a resultant collapse of the marine environment’s potential and socio-economic benefits. The destruction of the ability of natural dynamic processes to sustain the system eventually and inevitably leads to environmental degradation, which in turn leads to socio-economic degradation as economic opportunities through, amongst others, tourism, resource specific and related industries as well as resource exploitation are destroyed. The direct costs of resource depletion not only affect the rural poor, but are borne by people who might have used the resources in future, ultimately imposing costs on the whole of society, both now and in future (Mentis 1989:104). South Africa can be regarded as a maritime country with a very important fishing industry forming one of the cornerstones of the country’s economy (Kidd 1997:111) and providing an important basis for future economic development, poverty reduction and sustainable job creation not only in the Western Cape province but South Africa as a whole (Moss 1999:63). As a public asset, marine resources belong to all the people of South Africa and should therefore be afforded adequate protection so as ensure that the alienation of these resources is done with circumspection, in the best interest of the people’s rights and in a manner conducive to the balancing of socio-economic aspirations with sustainable utilisation. The effect and implications of the illegal exploitation of marine resources are best grouped and regarded as two-fold. Negative effects on both the marine environment (bio/ecological degradation) and social/socio-economic milieu (job-losses, crime, etc.) are a direct repercussion of the state’s incapacity to effectively police and control compliance with the relevant legislation. In the following chapter the ramifications of this deficient control vis-à-vis the biological and socio-economic effects will be examined and expounded upon.
7.2 **BIOLOGICAL IMPLICATIONS**

Unlike more conventional (and frequently more sensational/newsworthy) forms of crime often involving a definite victim(s), physical/psychological trauma and/or pecuniary losses, crimes against the environment, especially the marine environment, are in the main, far less conspicuous and newsworthy, do not involve a victim per se (marine resources can basically be regarded as *res communes*) and do not readily display, especially in the short term, any noteworthy ill-effects, subsequently rendering it difficult to identify and address. The effects of marine over-exploitation on individual species and ecosystems alike will, it is submitted, steadily and surreptitiously like a cancer develop and intensify over a period of time until it becomes prominent/noticeable, at which stage it will in all likelihood have approached, or rapidly be approaching, the threshold of its biological and economic viability. Once this unfortunate stage has been reached, it will be extremely difficult (and costly) to regain control over the destiny of any particular resource/ecosystem. Even if a potential problem is identified at an “early” stage, it should be ensured that implementing agencies possess the necessary capacity (and will) to execute the scientific strategies and models directed at the preservation and reinforcement/replenishment of a particular resource. Conservation strategists should also not at this stage become complacent and regard the initiative as a *fait accompli* and should meticulously and aggressively monitor progress to ensure that execution retains momentum and remains goal orientated. Continuous programme evaluation, revision and feedback to functionaries will sustain and promote interest, create the impression that the work being done is eminent and appreciated and ensure that the programme is ‘bought into’ and unreservedly supported, a pre-requisite, if success is to be strived for.

**7.2.1 ECOSYSTEM FUNCTIONING**

During the numerous interviews held with M&CM scientific personnel regarding the collection of eco/biological data about the species relevant to this dissertation, all were questioned about what they thought the effect of over exploitation on the particular species in which they specialised would be.
Without exception, the replies reflected the sentiment that any over-exploitation of marine species would, to some or other extent, have a negative influence on the marine ecosystem. In general scientists felt that with any substantial reduction in a particular species' biomass, other less desirable or even alien/exotic species could proliferate and move into the previous species' niche causing, since energy would be channelled into less desirable and lower order organisms, far-reaching negative changes in the ecosystem as a whole. Gene pools of particular species, as well as fecundity, would also be negatively affected resulting in a decreased yield from specific fish stocks (Griffiths 1999), and therefore, reduce the ability of a population to withstand variability in the environment or to recover from a decline (Shelton 1989:323). Because species within an ecosystem are interdependent, relying heavily on each other for survival, the reduction or removal of one or more species from an ecosystem will have a far-reaching chain reaction type effect on the other components thereof and even the marine environment as a whole. According to Macdonald (1989:71), altered predator relations will have massive implications for the long-term conservation of native species. Pelagic fish are for example, very important components in the marine food chain serving as a basic food source for numerous fish species. According to Van der Westhuizen (1999) the over-exploitation of these resources can lead to a major collapse within the marine biome, and the decimation of many popular line fish species, as well as negatively affecting the breeding success of sea birds such as the Swift Tern and the endangered African (Jackass) Penguin.1

The losses mentioned here will, to name but a few, result in poorer commercial harvests, reduced earnings, unemployment and bankruptcy of secondary industries (Armstrong & Thomas 1989:119), poor recreational fish catches and subsequent less demand for fishing/diving gear and related products, fewer tourist attractions as popular viewing species such as penguins dwindle and tourist orientated service providers experience proportionally less business, and so forth, highlighting the close relationship that ecological degradation has with the socio-economic milieu.

1 Translated from Afrikaans.
Similarly, the over/illegal exploitation of black mussels, a favoured prey species of the West Coast rock lobster, and as highlighted in the preceding chapter, a resource to which little importance is attributed and policing effort directed, could lead to other prey species such as urchins being more heavily preyed upon by the rock lobster.

This in turn could have serious repercussions for juvenile abalone that largely depend on these urchins for protection from predation (Attwood 2001:3; Mackenzie 1999) or could even lead to an increase in rock lobster mortality.

Such reductions would result in recreational diving/harvesting to a large extent losing its appeal, less recreational diving/harvesting subsequently taking place and therefore a lesser demand for related products and even a lesser demand to visit remote/rural locations whose very existence depends on the money injected by rock lobster, abalone, etc., seeking holiday makers, initiating unemployment and ultimately the demise of many smaller town economies. Such decay and the accompanying depopulation of rural/remote areas causes people to seek solace in the urban centres where jobs are hard to come by and crime is often seen as the only solution to alleviate the new hardships encountered and attain the aspirations strived for (Glick 1995:132).

Although a relatively simplistic example it serves to illustrate once again how important it is to apply marine laws equally to all species and approach the problem of marine crime in a holistic manner. The example further serves to highlight how closely and interwoven the various components of the marine ecosystem are and also how easily a disruption in this biome can have a negative effect on socio-economic relations in society. Shelton (1989:323) sums up the situation quite amicably by stating that the removal of one or more units of fish has a direct benefit to the person removing it, whereas the loss through the change in conservation status is spread over all the users.

7.2.2 BIOTIC DIVERSITY

According to Huntley (1989.ix), the world is currently losing species at

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2 Biotic diversity: can be defined as the variety and variability of all living organisms including the genetic variability within species and their populations, the variety of species and their life forms, the diversity of the complexes of associated species and of their interactions, and of the ecological processes which they influence or perform (Huntley 1989.ix).
least 1000 times faster than normal evolutionary rates and an extinction spasm is occurring, the like of which has not yet been experienced since the mass extinctions believed to have been triggered by enormous asteroid strikes some 65 million years ago.

There can be no doubt that the over/illegal exploitation of marine species detrimentally affects the larger system of which they are a part and can under sustained misuse eventually lead to their own, and this larger systems, demise.

According to Attwood (2001:4) and Louwrens (2000c:5), the over-exploitation of abalone in California, USA, resulted in the extinction of the white abalone and the total closure of the fisheries for all species of abalone.

It is this scenario that proponents of the maintenance of biotic diversity would dearly like to avoid in South Africa and although experiences in other countries should serve as a caveat and encourage serious crisis type management to be implemented to save our own snowballing problem there still seems to be a lack of firm commitment by the authorities to address the problem.

Figure 7.1: Sensationalist headlines such as this one on a Marine and Coastal Management information brochure indicates in no uncertain terms the precarious position in which this resource currently finds itself (Attwood 2001).

The various state initiatives such as Operation Neptune and its namesake successors are, however, acknowledged for their contribution to especially the predominantly short-term conservation of the abalone resource but due to their piecemeal type application, short duration and other negative outcomes
highlighted by Hauck & Hector (2000:5-8), they can be regarded as largely ineffective to address a problem of such ecological and economic magnitude and importance.

Although many of the species referred to in this dissertation are still relatively ubiquitous in the study area, others like the abalone have been exploited to the very brink of extinction prompting the publication of several appeals (see figure 7.1) and warnings to the general public to conserve this resource at all costs.

Dwindling abalone (as well as various other) resources and increased illegal exploitation by all harvesting sectors is not a new phenomenon and has long been recognised as a problem in M&CM circles.

Hauck (1999:221), mentions in this regard that as early as 1956 the Director of Sea Fisheries warned that unless law enforcement is greatly improved, and punishment on conviction is much increased in severity, the future well being of our valuable rock lobster fishery and industry is in extreme jeopardy.

Houthoofd (1997:306) also indicates that more recently both the SAPS and the Sea Fisheries inspectorate have complained to the Minister of Environmental Affairs and Tourism about a lack of resources and personnel to enforce legal restrictions on abalone divers.

Despite this awareness and state efforts to curtail marine over/illegal exploitation, it still seems that the likelihood of the abalone and certain popular line fish resources specifically (mentioned elsewhere in this dissertation), of maintaining their productivity and resilience, and ultimately surviving, for the benefit of mankind, are minimal (see figure 7.2).

Not enough pressure is being placed on Marine and Coastal Management as an integral part of the state’s (presumed) accountability matrix to accept overall responsibility for the effectiveness (or lack thereof) of policing actions, and in the final analysis, the environmental performance of the organisation.

Effective planning and implementation of crime prevention/reduction techniques will, it is submitted, be an investment to ensure the survival of those marine resources that drive vital life-support systems on which human survival and development depend, while at the same time protecting those
wild species which are of value as current or future suppliers of food, fibre, energy, medicines, (Smuts & Hobbs 1989:335) employment, recreation etc.

Figure 7.2: A cartoon depicting the demise of the abalone resource, illustrates the tragic reality and seriousness of the current situation (Rapport, 7 May 2000).

Bond (1989:3), is of the opinion that biotic diversity is, therefore, beneficial and should be maintained for, amongst others, the following reasons:

- the interdependence of nature, since if each species is part of an interdependent, holistic ecosystem, the loss of one part would lead to instability and eventual collapse of the whole;
- the scientific and cultural value of diversity which allows, among other things, application of the comparative method to understand evolution and adaptation; it also provides the inspiration and raw materials for making art, music and literature; and
- the aesthetic or collector's urge to preserve all rarities, which astute fund-raisers know has a powerful appeal to the public.

In a developing world in which ecosystems are being radically altered to provide man with resources, it is not possible to protect all forms of biotic diversity. Numerous species, some more prominent than others, have already been lost and this process is continuing. A concerted effort should, however, be made to save the earth's marine (and other) living resources in order to
ensure that this rich natural bank account can be drawn on in perpetuity without depleting it. Protecting biotic diversity can, according to the US Council on Environmental Quality (USCEQ) in Hobbs & Smuts (1989:345), be regarded as the highest form of thrift. If it is not achieved, Hobbs and Smuts supra warn that environmental resources will continue to be squandered, species extinction rates will escalate, and life-support systems will be irreparably damaged resulting in a situation in which it would neither be possible to ensure or sustain human progress or in the final analysis, human survival. Suffice to say therefore, that the loss of biodiversity will limit the resilience and productivity of marine ecosystems, eventually affecting people's livelihood, well-being and the interests of future generations.

7.3 SOCIAL IMPLICATIONS

As outlined briefly in the preceding sections, the effect of the illegal exploitation of marine resources is not only restricted to the biological and ecological realm but also has decidedly negative impacts and repercussions on social dynamics. Most social implications, however, result directly from, or are in some or other way related to, the abuse of marine resources and can thus be regarded as secondary effects, i.e., injudicious biological/ecological disturbance being a pre-requisite. The ramifications of this illegal exploitation and resultant degradation will be examined in the following section.

7.3.1 SOCIO-ECONOMIC EFFECTS

Of all the social effects resulting from the illegal exploitation of marine resources, the socio-economic effects are probably the most prominent and noticeable as well as having the most serious long-term negative consequences and wide-ranging corollary. Whole communities and economic sectors can suffer dire and significant consequences if uncontrolled exploitation is allowed to continue unabated along current trends. The fishing industry plays an important part in the Western Cape's economy with strong forward and backward linkages to ancillary sectors such as fish
processing and product transport, product manufacturing, boat building, maintenance, recreational/commercial gear/equipment manufacturing, tourism/hospitality, etcetera.

According to High (2000:1), the Western Cape has 87% of South Africa's fish species and generates about 90% of the value of the fishing industry nationally. This 300 year-old multi-million Rand industry, employing many thousands of people, dominates the economy of the Western Cape (Moss 1999:98) and it therefore follows, that any disruption therein will have far-reaching social ramifications. Resource depletion through unsustainable harvesting practices will result in many fishing industry workers (irrespective of whether land or sea based) being laid off work/retrenched as economic opportunities dwindle.

Alternative employment in many coastal towns is difficult to come by since most have been established by, evolved and owe their very existence to, the fishing industry. Often those individuals engaged in the fishing industry have little or no skills other than those required to acquire and maintain employment in the said industry and cannot subsequently be utilised for anything but the most menial of alternate jobs in society.

High rates of unemployment in such towns promote poverty and the general degeneration of living standards and circumstances, resulting in the eventual formation of slum conditions in residential areas (Researcher's own observations). Frustration and dissatisfaction with these conditions as well as the inability to realise their aspirations and maintain previous higher standards of living often cause people to turn to crime in order to survive and provide for their families (Bartol 1995:26, 93, 104-6; Glick 1995:132; Naudè 1988:18).

Crime may either be of a conventional nature or may even be marine or environmentally orientated. According to Hauck (1999:217), the poor, and those who barely eke out a living will poach natural resources because concerns about environmental degradation often take a back seat to concerns of survival.

Many unemployed individuals move towards urban centres to seek employment when life in their original towns becomes unbearable, placing an additional strain on the capacity of these centres to provide not only
employment but also accommodation (Hauck 1998:8). In such centres the hopes and aspirations of the often-gullible and naive migrant rural inhabitant are further dashed when employment is not readily found, they find themselves becoming deindividualised (Bartol 1995:110) and are exposed to a multitude of different cultures, languages, customs and procedures as well as realising that their traditional guidelines and rules are no longer effective within the new social structure (Conklin 1989:257; Glick 1995:124). In these centres, high numbers of criminal elements abound and frequent liaison with them can through the process of, amongst others, differential association and because of weakened social control, result in the acquisition of the motivation, techniques and philosophy for the commission of crime (Glick 1995:160). Exposure to (and often participation in) alcohol and drug abuse, prostitution, and the like, steadily erodes their predominantly Christian values and frequently serves as reinforcement for the need to partake in crime, thereby further exacerbating the problem.

Ancillary industries are also necessarily affected by the illegal exploitation of marine resources because as these resources decline and jobs within the fishing industry proper are lost (retrenchments), demand for products such as commercial and recreational equipment, for example, nets, navigation equipment, cans, boats, fishing rods, reels, line, wetsuits, bait, etcetera, decreases.

These suppliers, who are not only restricted to the Western Cape, will, in the absence of demand, in turn also be forced to lay off staff or even close their doors, affecting negatively the wider economy of not only the Western Cape province but also, it is submitted, the country as a whole.

Since many tourists are chiefly drawn to the smaller seaside towns specifically because of their fishing industry operational, scenic and historic appeal, to view nearby seabird breeding colonies, recreation, or to enjoy a maritime experience in general, the towns themselves, often relying on the regular fiscal injection from these tourists, will not remain economically viable and close down so to speak. Having lost their appeal, tourist numbers will dwindle accordingly and the tourist industry, employing according to Moss, (1999:103) in excess of 80 000 people in the Western Cape (5.2% of the province's
labour force) and conservatively valued at R7.7 billion, will experience a slump to the detriment of the local, provincial and national economy and will accordingly impact negatively on standards of living nationwide. Furthermore, a slump in the production of marine food, due to unsustainable/over-exploitation especially canned fish (pelagic fish such as pilchard and red-eye), often utilised as an inexpensive and basic source of protein by those at the lower end of the socio-economic status spectrum, and on which at least 3.6 million South Africans depend annually (Moss 1999:63), will cause this resource to become more scarce, sought after, and proportionately more expensive. Faced with such hurdles many coastal inhabitants will attempt, by utilising their acquired fishing skills and knowledge, to alleviate their new found hardships by exploiting, and in all probability, illegally exploiting, the marine resources in their vicinity, a phenomenon described by Bartol (1995:93) as a way of adapting or surviving under physical, social, or psychologically dire conditions. Oosterwyk (1999:3), argues in this regard, that, ‘without fish they [communities] cannot keep a roof over their heads. This means that the youth begin to engage in criminal activities which will impact negatively on the community and tourism’. Such activities will then only, in the absence of effective compliance regulation, serve to exacerbate crime in society and the already precarious state of many marine resources eroding community structures and further decimating vulnerable marine resources.

7.3.2 PERPETUATION AND INTENSIFICATION OF MARINE CRIME.

Whether marine resources are exploited illegally (pilfered/poached) on a small or large scale, on an ad hoc or regular basis, the benefits to the proponent(s) thereof can be seen as positive reinforcement for maintenance of these activities. In the absence of effective policing effort and therefore deterrence (fear of ‘consistent’ punishment), this positive reinforcement can further act as a crime attractor drawing more and more criminally susceptible people to partake in this form of exploitation. Through the process of social learning others in the social environment can acquire, mostly by means of association and observation, this criminal propensity (Bartol 1995:99; Schmalleger 1996:214; Williams & McShane
leading to, in the context of this dissertation, the undermining, instead of sustainable utilisation, of marine resources. Likewise, it is submitted, that by association and observation of deviant activities in the functional or operational environment, for example, during pelagic, demersal and/or other commercial fishing operations at sea, as well as being privy to the rewards (reinforcement) such illicit activities realise, the self-control of other more law abiding resource users within a specific harvesting sector can be eroded, tempting such individuals towards the illegal exploitation of the resource, and in so doing promoting and intensifying illegal marine resource exploitation to the detriment of society at large. Illegal exploitation can therefore, based on what has been acquired, be imminent, and depending on the reward/value the behaviour produces, suppress or reinforce future similar behaviour (Bartol 1995:99; Schmalleger 1996:216). Participation in illegal marine resource exploitation activities, even if at first on a small scale, enjoyment of the relatively risk free rewards (reinforcement), and in the absence of any effective policing effort (deterrence) can not only promote deviant behaviour but also possibly bring an individual into contact with other criminal elements which could provide the motivation/rationalisation for becoming involved in more serious illegal resource exploitation pursuits (intensification) or even encourage the diversification of criminal activities. Should such an individual be lured into more intense criminal involvement and be apprehended/prosecuted/convicted at some or other stage, the social ramifications in terms of the effect on the family structure could be severe. Children could be traumatised/victimised/ridiculed at school, current or future employment opportunities could be affected negatively, standards of living could drop and the family unit might even be ostracised from the community. This all because of, in the final analysis, the manifestation of criminal tendencies due to the attraction to harvesting a valuable, accessible and, to put it mildly, poorly guarded/protected marine resource, a phenomenon which, it is submitted, with goal directed dedicated law enforcement and extension initiatives would not be impossible to reduce or even prevent entirely. With regard to the more serious resource plundering/poaching sector the proponents of which are according to Gwatyu (2001:1) currently earning in the
region of R45 000 per day by poaching abalone and outwitting the police, it is not surprising that others are drawn to partake in this form of illegal activity given the enormous financial encouragement and impunity with which these activities can be performed.

Illegal exploitation as an activity, is witnessed by children, peers and others in the family or community situation, undoubtedly influencing them in some or other negative way especially if one considers that the family unit may be regarded as one of the primary institutions in the socialisation of the child providing not only role models, attitudes and values which the child can emulate, but also protection against a hostile environment (Jacobs 1988:60).

According to Bandura (in Bartol 1995:101), the more significant and respected the individual (role model) is, the greater the impact on those watching and the greater the likelihood of the observer imitating the behaviour witnessed. Based on this premise (and by way of example which can basically be applied across the board and to all harvesting sectors relevant to this dissertation) therefore, children, adolescents, peers, etc., partaking in or observing fathers/mothers/relatives (traditionally role models of high standing) and other role models (even high rolling gangsters) illegally dealing in or harvesting (diving recreationally and/or poaching) rock lobster or abalone or even removing excess/undersize fish, limpets/mussels/other organisms from the inter-tidal zone and later enjoying the rewards (reinforcement) there from in either the form of a tasty meal or some other, material, social or even financial manner, will undoubtedly be influenced by this behaviour, deem it to be acceptable and subsequently be likely to partake therein (or other forms of crime for that matter) to some or other degree.

Gottfredson and Hirschi (in Brown, Esbensen & Geis 2001:355 and Siegel & Senna 2000:182-3) argue in this regard that the roots of crime are already laid down in early childhood meaning that the ability to refrain from crime is also inculcated during this period.

By implication therefore, children growing up in a discordant/dysfunctional family without the necessary supervision and guidance will not, in the main, develop the necessary degree of self-control that will enable them to resist the temptations of crime and make a success of their lives.
This lack of self-control will according to Siegel and Senna (2000:182) result in such youths finding criminal acts attractive because of the easy and immediate gratification they provide and direct the impulsive youth down the path that leads to future criminality.

Gottfredson and Hirschi (in Brown et al, 2001:355 and Siegel & Senna, 2000:182) as well as Conklin (1989:248) sum up the foregoing succinctly and soundly by postulating that a child who lacks socialisation/self-control will tend to have a higher crime potential and accordingly stand a better chance of developing traits that will predispose him/her to crime.

Hauck (1998:7), also shows in this regard that poaching activities have led to the breakdown of conventional social structures within the community and that young children and adolescents are becoming increasingly involved in poaching, avoiding school and legitimate employment.

She shows further that the large sums of money acquired through poaching activities are in some cases recycled into drug and alcohol abuse, contributing to cycles of poverty and violence.

Gottfredson and Hirschi (in Siegel & Senna 2000:184), however, also posit that even individuals with strong social bonds and self-control can on occasion succumb to criminal temptation when the opportunity/incentives to partake in criminal activity are great enough to overcome self-control.

It is thus clear, that irrespective of the magnitude to which marine organisms are harvested illegally, those exposed to it, witnessing its rewards and experiencing little or no deterrence will tend to regard such activities as socially acceptable and a way of life, augmenting, promoting and perpetuating the retrogression of our fragile marine resources and eroding societal and cultural morals, relations, values and standards.

7.3.3 COMMUNITY DYNAMICS - ESCALATION AND DIVERSIFICATION OF CRIME.

The illegal exploitation of marine resources especially in (but not necessarily restricted to) communities where large scale poaching is prevalent often leads to other (diverse) forms of crime escalating and reaching serious proportions with the deleterious repercussions emanating there from reverberating throughout the local community(s).
Criminal syndicate/gang activity, although originally directed solely at illegal marine resource exploitation tends to diversify and expand, because of the large pecuniary rewards, to other forms of crime such as gun and drug dealing (Hauck 1998:7), money laundering, etc., and results in a great deal of tension and conflict amongst the various members of the community, directly undermining quality of life.

Hauck (1997:14), states that polarisation within a community is particularly evident where both legitimate and illegitimate resource users reside in the same community causing not only animosity among local residents but impacting negatively on decision making processes crucial to community progress and development.

People don't feel safe within their communities due to the encroachment of criminal and violent gang activities and are afraid to speak out for fear of reprisals and/or victimisation. Hauck (1998:7), postulates that local residents are turning a blind eye to poaching for fear of being targeted by violent poachers leaving them feeling helpless and increasingly despondent.

This state of affairs further serves to create conflict among communities and organisations, reducing opportunities for social cohesion (Hauck 1997:82). This situation furthermore, gives rise to questions being asked about the ability of the police to maintain law and order and spawns a broad based mistrust in law enforcement and police bona fides in general.

Allegations of police complicity in gang and poaching activities do little to remedy the situation and further the feelings of resentment with those charged with upholding the law.

Individuals, illegally (and successfully) harvesting marine resources become accustomed to what can be termed a criminal lifestyle as well as the rewards forthcoming, no matter what the scale of involvement happens to be. As marine resources are depleted, however, it becomes more and more difficult and risky to harvest the resource in those quantities to which the particular individual (large-scale poacher or ad hoc recreational pilferer), is familiar, but because he/she has become accustomed to the subsequent tangible or even social rewards/reinforcement that meet his/her biological and material needs and has probably even rationalised his/her behaviour he/she
continues with the activities risking the presupposed increased possibility of apprehension and/or possibly even diversifying to some other form of crime. On a smaller scale, illegal harvesting during, for example, recreational exploitation can lead to upheaval, disruption and discordance in the family unit as opinions both within and outside of this unit regarding the deviant behaviour differ.

The family member(s) partaking in the illegal harvesting activities will in all probability minimise, distort or deny the misconduct or reprehensible behaviour especially because as Sykes (in Bartol 1995:292) puts it, 'the individual's internal sentiments are more easily neutralised by the physical absence of a victim and because the perpetrator does not know the victim as a person, only as a target'. Should intensification or diversification of illegal activities occur due to this reconcilement, the concomitant increased risk can place additional strain on family relations and functioning and lead to large-scale social disruption with deleterious repercussions should the breadwinner or other prominent family member be apprehended or labelled deviant by the community.

7.4 SUMMARY AND CONCLUSION.

By way of compendium the preceding section dealing with the effects and implications of marine crime can be likened to a snowball beginning its decent from a high mountaintop.

As it commences its descent, it is small, hardly important enough to be noticed, travels relatively slowly, blends into its environment and causes little damage to the surrounds, just as the problem of illegal marine resource exploitation in the years prior to its value and import being fully appreciated, started and slowly progressed, with little fanfare, whilst impacting minimally on the ecological/biological and social milieu.

As the snowball continues it's descent, it's velocity increases, however, and it starts growing larger and proportionally more perilous. In terms of the illegal exploitation of marine resources this stage represents the various marine commodities becoming more valuable, economic dependence thereon
becoming entrenched, demand therefore increasing and the illegal activities associated therewith as well as the concomitant negative ecological/biological/social ramifications, increasing proportionally through the years.

Once well and truly on its path, the snowball continues to grow in size and in potential hazard, reaching a terminal velocity, which it maintains while its decent remains unhindered.

This juncture in marine crime context equates to the stage where the value of the resource has been fully ascertained and the sustainable exploitation benchmark of many species has been exceeded due to them being increasingly and illegally exploited with impunity and to the detriment of the marine biome and social milieu, as is currently the case in the Province.

At some stage the snowball could strike an obstacle such as a tree which might halt its downward momentum entirely or alternatively slow it down and cause some of its size to be lost or even modify its direction.

Should the latter be true, it will normally only be downsized/slowed/diverted temporarily, soon regaining its size and momentum and continuing on its inevitable downward path.

This stage can be seen to represent the futile, short-lived and, it is submitted, indifferent attempts by the authorities to implement and monitor goal directed conservation policing initiatives, to regulate resource retrogression/misuse effectively and promote lawful and sustained harvesting practices in all fishery sectors.

Government intervention, has on occasion, slowed down the demise of our marine resources but failure to prioritise, plan, budget and strategically manage effective short, medium and long term intervention programmes has merely resulted in the downward spiral being slowed temporarily and has made no long term inroads with regard to the negative effects within the eco/biological and social spheres.

On its downhill passage the snowball may well, depending on its route, cause large-scale damage and destruction to dwellings, other structures, natural features and so forth, before eventually terminating its spree by running out of
velocity or by slamming into some or other obstacle, causing it, and most probably the obstacle as well, to disintegrate, or be severely damaged. This final stage can be likened to the detrimental effect and implications that the illegal exploitation of marine resources has on marine biology/ecology and biodiversity as well as on social dynamics.

The final phase, furthermore, represents the resource being exploited to the brink of extinction or collapsing entirely (i.e., exploitation exceeds the marine ecosystem’s regenerative capacity) and social relations becoming destabilised and/or undermined to an irreparable extent, an inevitable consequence, it is submitted, for many marine resources and communities should drastic measures not be taken to curtail the velocity with which illegal exploitation is intensifying.

In the following, and final chapter of this dissertation, a number of recommendations will be made to address and hopefully assist in checking the burgeoning problem of illegal exploitation in both the short, medium and long term so as to ensure social regeneration and that those living marine resources regarded as critical are retained in populations capable of eventually reseeding denuded and severely depleted areas and preventing those whose populations can still be regarded as viable, from further degradation and misuse.
CHAPTER 8
SUMMARY, CONCLUSION AND RECOMMENDATIONS
8.1 INTRODUCTION

During the course of this dissertation, an attempt has been made to scientifically examine and evaluate the phenomenon of the over-exploitation of certain marine species as a form of environmental crime in the Western Cape province in order to provide the reader with a comprehensive and coherent exposition thereof, facilitating the understanding, visualisation and conceptualisation of this type of deviance, and additionally to place it in criminological perspective.

8.2 SUMMARY OF FINDINGS

In essence, two fundamental themes/issues are addressed, namely, the importance of investigating and elucidating the illegal exploitation of marine species, and secondly, the requirement to apply a comprehensive approach in researching and tackling this occurrence in order to ultimately regain some sort of control over marine resource destiny.

Through these mechanisms, and by the application of the criminological discipline to this particular aspect of environmental crime it is, furthermore, envisaged that an interest in 'conservation criminology' will be stimulated, promoted and developed realising more intense and frequent exploration of this field.

8.2.1 MARINE SPECIES

The initial phase of this study was directed at orientating and sensitising the reader to the various/relevant species, specifically with regard to their biology and ecology as well as their attractiveness, vulnerability and accessibility as targets for criminal exploitation.

From this, albeit relatively condensed exposition, it can be deduced that the various species are an integral part of the larger marine ecosystem and are, apart from being interdependent and reliant on each other, also inextricably linked to the health and well-being of the entire marine biome so crucial to human-kind's existence.
Over or injudicious exploitation/utilisation of any one (or more) of these species can, therefore, have a markedly deleterious effect on the equilibrium, homeostasis and functioning of this fragile ecosystem and subsequently the present and future viability of the resource.

8.2.2 EXPLOITATION

Having imbued the reader with an eco/biological understanding of the target species and following a concise overview of the particular harvesting sector the nature of the crime, in terms of a detailed exposition of the crime scenes and modus operandi per species and harvesting/user sector is provided.

The value/attractiveness of the various species specifically in economic terms is, furthermore, underlined. In this chapter the nexus between, and dynamics of, harvesting sectors, crime scenes, available opportunities, and exploitation techniques with regard to the various species were highlighted.

Of importance here is the finding that all target species are exposed to some or other degree of illegal exploitation, many at an unsustainable rate, and that several are surreptitiously exploited in remote and secluded locations.

It has irrevocably been established that marine impropriety is influenced/mediated by perceived opportunity and cost/benefit considerations. Illegal exploitation also occurs largely with impunity due to the hopelessly inadequate policing capacity and the concomitant inability of the state to promote voluntary compliance with marine living resources legislation.

Also noteworthy, is the fact that it is often the very sector, which depends on a particular resource for its livelihood that exploits it illegally, emphasising the opportunities at hand and the desperate need to, especially in certain high value fishery disciplines, pursue short-term fiscal incentives before the resource is depleted beyond the threshold of its ecological and/or economical viability.

Long-term sustainability and conservation, in essence 'idealism', is forsaken for 'realism' (making money whilst it can still be made, i.e., the 'if I don't do it someone else will' syndrome) to, in the final analysis, the detriment of both the socio-economic and environmental milieu.

A dominant theme emerging from this chapter is that although the Marine and Coastal Management Branch has a strong, well trained and motivated
research staff component that formulate conservation strategies and initiatives of an extremely high quality, the executive arm of this Branch, namely the operational fishery control officer sector responsible for, amongst others, monitoring compliance with the Marine Living Resources Act, 1998 is hopelessly inadequate.

It is, furthermore, argued in this chapter, and indeed throughout this dissertation, that without a strong executive arm to support the initiatives of the scientific section even the most well intentioned conservation strategies will be doomed from the start, implying the impending failure of the equitable distribution of fishing rights initiative and many other noble initiatives underwritten by the Marine Living Resources Act and of course leading to vast amounts of wasted expertise, time and tax payer money.

8.2.3 CAUSES AND MOTIVATIONS

With regard to the causes and motivations for the illegal exploitation of marine resources two central, and a number of secondary themes have been revealed as well as significant parallels drawn between the nature of the crime and these causes. Greed, in terms of the pursuance of financial incentives and lack of resource protection or guardianship (deterrence), in essence the creation of opportunities, emerged as the main reasons for becoming attracted to, involved in, and often remaining involved in, the illegal exploitation of marine resources.

It was shown that the high value of many species coupled with the inadequate capacity of the authorities to police compliance with resource exploitation, motivates, in terms of rational, hedonistic behaviour, recreational harvester, subsistence fisher, commercial fisher and poacher alike, to violate existing marine conservation orientated protocols.

Other reasons highlighted in this regard include; ambiguous legislation, some of which, it is understood still remains unclarified, leading to uncertainty about what is, and what is not legally required or allowed with regard to certain fishery activities; dissatisfaction with the implementation of fees for previously free exploitation activities and/or lack of promised additional resource protection (which has to date not been forthcoming) generated through the levying of these additional and higher permit fees; dissatisfaction/resentment
at the slow process of allocation of commercial and subsistence fishing rights and/or not being a successful applicant and of course political reasons, in the sense that legal access to resource utilisation was denied or limited by the previous political dispensation.

Paradoxically, poaching is often claimed as justified due to political motives, but this sentiment, bearing in mind that the very people advocating this viewpoint envisage entrance into the commercial fishery, which will then be dependant on a viable and sustainable resource, their motives are to be treated with circumspection.

8.2.4 POLICING AND CONTROL

Authors such as Hauck and Kahn maintain that historical (reactive) methods of policing marine resources have been ineffective and that there needs to be a shift towards community based resource regulation and management. This viewpoint is considered by the researcher to be somewhat flawed, anecdotal and idealistic in the sense that policing efforts and successes of an historically under resourced state sector have been evaluated and cognisance has not been given to the fact that if resources are not afforded immediate protection and prevented from breaching the threshold of their sustainability, there will be little or nothing left for the community to manage or regulate in the long-term.

Had policing been more efficacious in the past, assertions of ineffectiveness with regard to policing initiatives and the promotion of alternative strategies might not have been made so readily by these authors. Policing, it is submitted, remains the cornerstone of management success and is essential to regain control over the destiny of many marine resources.

Complacency with regard to the precarious state of many marine resources and the delays and impediments that can be expected whilst community management and regulation is implemented will, it is proffered, not be conducive to long term resource viability.

The foregoing should not, however, be construed as implying that there is no place for community involvement with regard to resource management but merely that resource protection/conservation and respect for the rule of law is of immediate importance whilst other interactive and cooperative initiatives,
essentially longer term, can be pursued after resource sustainability has been re-established and confirmed.
With regard to policing and control, two key issues have been revealed, namely, the overall lack of policing effort, to wit, 1.9 prosecutions per month per station for a two year period within the study area, and the unbalanced or unrepresentative distribution of prosecutions with regard to the various marine species prevalent within the operational boundaries of most of the stations in the Western Cape.
The conspicuous and disquieting absence of prosecutions, for high value harvests of species such as pelagic and demersal fish in the offshore locale, whilst contraventions are known to occur there on a regular basis, is emphasised as particularly problematical.
Both regions examined presented a similar picture and it can thus be regarded as a tendency throughout the study area and not just an isolated incident. The high withdrawal rate of cases, i.e., 17% of the total number of cases was also highlighted and ascribed to be symptomatic of serious underlying problems on both the part of the fishery control officer and justice department components.
It is thus shown in this chapter that such an ostensibly subservient approach to marine living resource contravention by the state and the application of ad hoc, piecemeal and short-term compliance initiatives, such as Operation Neptune, is not conducive to the adequate protection/conservation of the (diverse, complex and vulnerable) marine environment and, therefore, also not adequate to ensure sustainability, deter individuals from participation in marine related deviance, provide incentives for self-regulation and/or voluntary compliance, and in the final analysis, promote the goals advocated by the Marine Living Resources Act, 1998.

8.3 CONCLUSION

It has been implicit throughout this dissertation that if it were not for the lack of guardianship (deterrence) the conservation status of certain marine species wouldn't be in the predicament they are currently in. The moot question
answered by an evaluation of the empirical data collected via the survey questionnaire disseminated to all operational fishery control functionaries, is whether there are any further fundamental problems/issues that hamper or compound effective monitoring of compliance with marine conservation legislation and if there is any link between these results and ineffective policing effort?

Through an analysis of the answers received the interrelationships and dynamics between, amongst others, motivational state, functionary perceptions and deficient policing effort were revealed and it was unequivocally shown that the operational fishery functionary is in essence apathetic, demotivated, dissatisfied, cynical and contra-productive and does not necessarily reconcile his/her role with marine conservation but rather with a means to earn a living.

A conservation "calling" and the consequences that not heeding such a calling will have on the marine environment has to a large extent been superseded by the notion of "walk your beat and draw your pay" and compounds the ineffectiveness mentioned above.

The functionary, due to a lack of institutional support in terms of, amongst others, educational incentives, remuneration, perceived poor management/leadership, functional capacity, consultation and access to information is left isolated, but yet expected to protect marine resources of undeterminable biological, financial and social value/import.

Such conditions, consequently breeding despondency and making them susceptible and vulnerable to corruption and underhandedness as well as disloyalty towards their employer, which in the final analysis undermines the conservation of marine resources and deceives the public's trust.

By continuing to expose the functionary to an operational and institutional milieu with such deficiencies and being unreceptive to his/her needs, morale and productivity is seriously undermined, malfeasance is promoted and the Branch cannot hope to realise its stated objectives, even with a larger capacity.

The operational fishery functionary, furthermore, gives expression to this dissatisfaction in his/her daily activities and projects a negative image to the
outside world, which is not conducive to strengthening bonds and forging partnerships with the public, something which can be regarded as essential for gaining their understanding and support, for what can at most times be a trying, thankless and dangerous vocation.

Having firmly established the extent and scope of policing effort, the reasons therefore, as well as those compounding the situation, the effect of this less than acceptable situation, in terms of bio/ecological and social implications were discussed. It was highlighted that there are three distinct components to marine environmental deterioration. One is the over-exploitation or deterioration of essential resources (the relevant target species) for the maintenance of current and future harvesting rates and accompanying lifestyles, the second is the deterioration and destruction of ecological processes (ecosystem functioning and associated biotic diversity), which ultimately sustain life on earth and the third, although subordinate in the sense that they are dependant on environmental disturbance occurring, relating to socio-economic effects such as job losses and the perpetuation, intensification, diversification and escalation of crime, marine orientated or otherwise as target species are exploited beyond there sustainable levels.

'Conservation criminology', it can therefore be argued, is dependent not only on an acute awareness and understanding of what causes illegal exploitation but also on an appreciation of the implications this form of deviance can have on the natural and social environment as well as the intricacies and dynamics involved therein. In essence this form of criminology is based on the principle that the extensive illegal manipulation of the marine environment needs to be comprehended and dealt with within the criminological discipline so as to approach the phenomenon in a holistic manner and make a positive contribution to both marine conservation and the scientific study of crime in general.

8.4 RECOMMENDATIONS

In order to address some of the more serious problems and issues highlighted in this dissertation a number of recommendations, which should by no means
be considered exhaustive, are formulated below. It is envisaged that the application of these initiatives, either singularly or in combination, will facilitate the mitigation and/or prevention of marine related deviance and allow marine conservation to come to fruition in the Western Cape province.

8.4.1 EXPANSION OF OPERATIONAL CAPACITY

The deficient operational capacity of Marine and Coastal Management’s functional/executive sector (fishery control officer component) and the concomitant lack of deterrence forthcoming therefrom are regarded as the single most important dynamics hindering effective and efficient marine conservation in the study area.

According to Louw & SAPA (2001:8), 'Te min geld, 'n te klein personeel en te min en onvoldoende toerusting veroorsaak..., dat Mariene en Kusbestuur (MKB) baie van sy vernaamste take soos monitering en wetstoepassing nie kan uitvoer nie. ..., meer as 900 poste moet gevul word voordat dié seebron deurlopend gemonitor en bestuur kan word'.

Expansion of operational capacity in terms of this recommendation should not, however, be construed as meaning the increasing of staff numbers and provision of additional equipment only. The recommendation should also be seen to incorporate the capacitation of the functionary him/herself in terms of, amongst others, training and further education to elevate the status of the vocation and promote a favourable image of the function and those involved therein amongst the general populace. Furthermore, anticipated is the improvement of general working conditions within the institutional milieu aimed at, but not limited to, promoting and sustaining a motivated, content, goal orientated, informed, loyal, proficient and accountable work force which constantly strives to achieve service excellence for the benefit of both the bio/ecological and social milieus.

The state, as lead and accountable agency, needs to take urgent steps to address and terminate the retrogression of marine resources in all (underlining mine) harvesting sectors equally and regain control over resource destiny so that it can be holistically and sustainably managed.

Although capacity expansion is by no means a panacea, by inculcating a renewed respect for the rule of law in the relevant harvesting sectors/user
groups the state can demonstrate its *bona fides* and commitment to conserving natural and national assets, which will not only serve as a strong deterrent but lead to the suppression/discouragement of any and all forms of illegal marine resource exploitation and, furthermore, promote voluntary compliance. In essence the promotion of the so-called hedonistic calculus.

The state needs to form what can best be described as a *'cordon securitae'* (omnipresence) around these valuable resources, in essence limiting/reducing opportunities, and advocate a zero tolerance approach to marine related crime before attempting any more adventurous or innovative resource regulation initiatives and/or paradigm shifts in this regard.

This approach is by no means a new one and has been applied as a crime reduction strategy with success in New York and many other countries worldwide.

Recent strategies of high visibility policing in Cape Town and Johannesburg/Pretoria and the establishment, in the larger metropolitan centres, of extensive municipal police forces have according to Potgieter (2001:8), Van der Fort (2001:2) and Van Houwelingen (2001:4), yielded positive results and drastically reduced certain types of crime, indicating in no uncertain terms, that such confrontational and physical approaches are effective and therefore have merit.

The law and order approach recommended above, which tends towards criminal liability as a strategic tool, has one very simple purpose, that is to provide potential marine perpetrators with a persuasive incentive to voluntarily comply with Marine Living Resources laws, i.e., shape public opinion.

Once resource protection can be regarded as a *fait accompli*, the pursuance of the goals and principles contained in the Marine Living Resources Act will be meaningful and realistic and more diverse, perhaps less confrontational, regulation methodology can be explored and implemented.

### 8.4.2 SENSITISING THE PUBLIC TO MARINE RESOURCE PROTECTION (MARKETING)

Increased operational capacity, although an imperative strategy to address the current decline of valuable marine commodities, should not and cannot be implemented in isolation.
The above-mentioned initiative and its derivatives should be simultaneously launched with an exhaustive and vigorous programme/campaign in the mass media (all mediums) whereby the public is sensitised and orientated towards the imminent dangers of illegal marine resource exploitation and support for zero tolerance policing strategies won.

Whenever marine criminals are apprehended the subsequent media report/s should in addition to the normal reporting of the value of the bounty/cache and other sensationalist details, provide a succinct overview of the repercussions such crime has on the marine environment as well as the stringent punishment sanctions such deviance warrants. The praises of the marine inspectorate should also be sung more often by the mass media, and credit given where credit is due, with negative and sensationalist reporting, discrediting the activities of this component, unless serious and absolutely necessary in the public interest, being restricted to the minimum.

In this manner, it is envisaged, that the public at large will start to appreciate not only the extent of marine crime and the negative ramifications it holds for each and every citizen of the country, but also contribute significantly to relieving society of its environmental myopia thereby ensuring that the correct amount of censure is attributed to this form of criminality.

Media institution management, programme directors, editors and senior staffs should, in order to ensure cooperation and buy-in be consulted personally and persuaded that his/her efforts and the accompanying financial implications (of for example longer than normal coverage on the television news) are for the benefit of society at large and the well-being/preservation of the marine environment.

8.4.3 ESTABLISHMENT OF ENVIRONMENTAL/CONSERVATION ORIENTATED COURTS

Many marine related prosecutions end up in magistrate’s courts in which the prosecutor and/or presiding officer due to, amongst others, frequent rotations, have insufficient or no knowledge of marine related crime. These officials therefore also have little idea as to what weight/importance to attach to these types of cases and frequently view them as trivial, a fact that is all to often
reflected in the inadequate, inconsistent and unrealistic sentences imposed upon conviction. Having worked hard to apprehend an offender, the fishery control officer is thus regularly disillusioned by these actions, which tends to elicit conflict and antipathy with the very individuals that they should be working closely with, undermining productivity, and in the wider sense, marine conservation itself. Furthermore, slow clearance of cases, lack of sentencing guidelines, unprepared prosecutors (chiefly due to large case loads) and acquittals due to technicalities do not serve as an effective deterrent and can be seen as a source of encouragement for the involvement, or continued involvement in marine crime, basically a crime attractor.

Judging by the successes municipal courts specialising in traffic and municipal related offences have had in Cape Town (Essop, 2000:3) as well as the deterrent value strategically placed mobile courts, instituted as part of the arrive alive campaign, have had on road users specifically due to the celerity with which justice is meted out, the establishment of an environmental court or courts to handle the envisaged increase in prosecutions accompanying the expansion of operational capacity is considered vital. These courts should be staffed by magistrates and prosecutors that have been trained, or at least extensively orientated and sensitised to environmental issues, enabling them to attribute the necessary censure and importance to these cases, identify, prepare for and negate possible technicalities and effect applicable sentences (commensurate with the damage/disturbance caused) whilst alleviating the pressure and additional burden these cases would have placed on the mainstream judicial system.

According to Environmental Affairs Minister Valli Moosa, minimum sentences should also be set for the more serious type of offences to put poaching on a par with crimes such as murder, rape and hijacking thereby assisting in raising the profile of these crimes and turning the tide against illegal exploiters (Ludski, 2001:11), a sentiment/initiative strongly supported by the researcher. The establishment and formalisation of such courts and higher punitive sanctions will, however, not magically occur by themselves overnight and it is
subsequently necessary that M&CM top management afford such a project priority attention and fully throw their influential weight behind it. Additionally, by the application of the prevention of organised crime act, which allows an accused’s assets to be confiscated and remain confiscated until he/she can prove its legitimate acquisition, another legal tool can be used to bolster the authorities’ capacity and deter involvement in marine related crime specifically amongst syndicate, gang and organised crime components. If those that consider participation in marine crime know or believe that there is a good chance that they will be apprehended and punished speedily and extensively the involvement in marine crime will subsequently become proportionally less attractive and such deviance can be expected to reduce dramatically. The question should no longer be whether an accused will go to jail for serious marine deviance, but rather for how long.

8.4.4 OUTSOURCING OF MONITORING AND RELATED FUNCTIONS
As has been shown in this dissertation much of the operational fishery control officer’s time is taken up with activities relating to the monitoring of quota discharge. Although an important function in terms of regulating commercial harvests for total allowable catch purposes, it restricts the functions of the officer considerably and causes an imbalanced distribution of workload. By outsourcing these functions and employing monitors to handle these, albeit essential, but often menial and repetitive tasks, the operational fishery functionary is released from this responsibility leaving him/her free to direct more time and energy towards policing compliance with marine legislation in the community and broader operational environment. Care should, however, be taken with the appointment of monitors and pre-employment scrutinisation of the applicant’s conservation record, previous convictions, etcetera should be carefully undertaken, as corruption will be tempting due to the high value of the commodities being dealt with. Monitors, although foreseen to be an expensive programme to establish, implement and maintain, can furthermore be considered for duty as observers on demersal and pelagic vessels and even in the subsistence harvesting sector in order to promote compliance within these currently relatively
unpoliced harvesting sectors and even assist in gathering scientific and other data.

Once again it should be emphasised, that stringent appointment requirements/conditions should apply and swift and severe disciplinary actions should be taken against those violating codes of conduct and/or partaking in criminal activities in order to dissuade any thoughts of misalignment of loyalty. Funding for such initiatives need not necessarily be forthcoming from the Marine Living Resource Fund exclusively, but could also be obtained from the fishing industry by means of, for example a levy payable on tonnage harvested/landed.

Considering that control and management of the resource is in the favour of all those involved in the marine fishing industry and is, furthermore, dependent on effective and sustainable marine conservation, this kind of initiative should not be met with any but the slightest of resistance.

8.4.5 WIDER POWERS FOR FISHERY CONTROL OFFICERS

In accordance with the reduction of opportunities and deterrence approach, often termed physical crime prevention, broadly advocated in this dissertation, deterrence from participation in all forms of marine crime can further be promoted by issuing fishery control officers with wider powers. Although perhaps somewhat of an idealistic recommendation, envisaged is the power to conditionally rescind an individuals fishing right (permit/licence) if reasonably suspected by a fishery officer of committing/attempting to commit a marine related offence.

Coupled with this, and to overcome the constitutional restraints currently imposed on such actions (innocent till proven guilty) the presumption of guilt in such instances should be invoked and supported by the judiciary, at least until illegal exploitation of marine resource has been rooted out and viable populations re-established.

Basically the courts should be lobbied to minimize/relax the state's burden of proof in prosecuting marine environmental crime and be allowed to infer that offenders were aware of particular contravention/contraventions and acted in accordance with this knowledge.
8.4.6 EXPANSION OF MARINE PROTECTED AREA INITIATIVE AND USE AS AN ENFORCEMENT MECHANISM

With the increased capacity of the operational fishery control component, it is predicted that all sectors of the coastline and offshore harvesting locales will systematically be ensured of adequate protection against illegal exploitation activities.

Over-exploited and severely denuded areas will, however, need time to recover in order to re-establish viable populations of the organisms misused. Exploitation in these areas of any nature could, therefore, lead to disturbance and impede effective natural rehabilitation processes.

By proclaiming these areas marine protected areas (an area in which part or whole of a marine environment is protected) and by clearly stipulating permitted activities, if any, as well as by publicising the establishment extensively, successful rehabilitation can be effected.

By the same token, problem areas where a certain form of marine deviance is encountered or rears its head, for example, the serious abalone-poaching problem near Hawston, can be proclaimed a marine protected area outlawing any marine harvesting or related activities (e.g., diving) within a demarcated area.

Fishery control officers and observers/monitors, if utilised as recommended elsewhere in this section, then have an easier surveillance/enforcement task, as anyone found diving or harvesting organisms within such an marine protected area (coastal or off-shore) would be contravening legislation and could simply be confronted (and fined), and if necessary, apprehended.

Fishery officers do not therefore have to spend hours observing potential criminals in such an area not knowing if they are harvesting illegally or not and can at a glance, so to speak, determine if the law is being contravened or not. Should these initiatives result in illegal activities being shifted to other locales, this tendency will quickly be noted by the increased operational component active throughout the Province and can either be addressed through the intensifying of policing activities in the area, or by the application of the marine protected area initiative (or both) as mentioned above.
Once viable populations of the particular over-exploited resource have re-established, the status of the area can be relaxed and under strict scientific and enforcement supervision opened up to sustainable public/commercial/subsistence exploitation.

8.4.7 COOPERATION AND LIAISON WITH GOVERNMENTAL AGENCIES/STAKEHOLDERS AND OTHER ENTITIES

Although the operational fishery control officer corps will, with its increased capacity, be a formidable crime fighting and prevention unit (nucleus) it should not function in isolation but make use of other established governmental and semi-governmental agencies/structures to augment its capacity.

The South African Navy and Airforce undertake regular sea and air patrols over zones of the coast and ocean that might for logistical or practical purposes be less accessible to fishery control officers, and police officers are often exposed to marine crime in the course of their normal duties. Through close liaison with these agencies, important intelligence and crime information can be obtained and reciprocated, leading to an even greater degree of deterrence, in particular those harvesting sectors operating in remote and secluded locations.

Often other state/semi-state conservation entities such as national parks or nature conservation boards/services and even municipalities (as representatives of local government) incorporate, abut or lie adjacent to marine protected areas or otherwise extensive tracts of sea and coastline.

Close liaison with these entities can thus be advantageous in terms of surveillance, availability of expert witnesses, expediting of criminal prosecutions, deterrence and marine conservation in general.

Many such authorities have highly trained and skilled conservation/law enforcement functionaries and the appointment of these officers as fully fledged fishery control officers can further supplement the permanent operational fishery control officer body.

The use of the general public as so-called honorary fishery officers (who have no prosecution powers) should be terminated with immediate effect and all appointment certificates withdrawn due to, in many cases, the misuse/abuse of the system.
Many of those applying for appointment to honorary officer status do so because it is fashionable in certain circles to be involved in conservation but make no measurable contribution to marine conservation during their appointment period. Others could even apply for appointment so as to infiltrate the fishery enforcement structure in order to obtain inside information on officer activities and operations so as to promote their own or accomplices illegal pursuits. In the main therefore, a very risky system that holds little or no benefits for the Branch or its ideals.

The cultivation and management of civilian informers, who remain anonymous and are remunerated for successful prosecutions, especially from those communities where illegal exploitation is rife, is however, recommended as a policing technique and can not only assist in apprehensions and prosecutions but also reduce perceived opportunities and therefore promote deterrence. Establishment of private bodies and/or public/private partnerships to assist in marine law enforcement, monitoring, education and conservation are part of the more adventurous initiatives, expounded upon elsewhere in this section, that could be considered once resource protection and respect for the rule of law has firmly been established.

8.4.8 ESTABLISHMENT OF EFFECTIVE AND COMPREHENSIVE PROSECUTION DATA BASE

Prosecution statistics can be considered a vital management tool for any law enforcement orientated institution. Not only can policing successes be measured through this mechanism, but patterns and trends can be revealed/established on the basis of which crime occurrence can be predicted, prevention strategies devised and planned and priorities identified. Databases with regard to modus operandi, suspicious individuals/vehicles/vessels, etcetera in the various harvesting sectors, could also contribute significantly to implementing policing or even pro-active programmes, initiatives or strategies.

As with all computer generated and stored data secure backups should be made and security protocols instituted. To have a situation reoccurring in this modern day and age where a computer system "crash" results in a number of
years of statistics being lost permanently as experienced by the researcher after attempting to obtain five years of prosecution statistics from Marine and Coastal Management’s head office in Cape Town (See appendix 4.) is not only unacceptable and unprofessional it is unthinkable.

8.4.9 ADJUSTMENT OF THE MINIMUM AGE FOR PERMIT ACQUISITION

This recommendation is aimed more specifically at reducing illegal exploitation in the inter-tidal zone, rock lobster and abalone harvesting sectors, in particular the recreational and dedicated exploitation components. As mentioned elsewhere in this dissertation, juveniles (below 18 years old), but usually of a very young age, are often used (exploited by parents/elders against their will or by willing participation) to collect/dive and/or transport illegal hauls of abalone, rock lobster and/or inter-tidal zone organisms due to them being more ‘difficult’ to prosecute in terms of South African criminal law – presumption of diminished criminal capacity.

By increasing the legal age for permit acquisition to 18 years and older this loophole can effectively be plugged, foiling the efforts of those brazenly abusing the system.

8.4.10 ENVIRONMENTAL EDUCATION AND EXTENSION

Although the last recommendation made in this dissertation it should by no means be regarded as the least. Marine environmental education is considered to be somewhat of a specialist function and is currently undertaken by two or three individuals within the Marine and Coastal Management Branch.

This, as can be imagined is an almost impossible task for such a small component to handle effectively given the diverse and large amount of people that need to be sensitised and orientated towards marine conservation. Instead of expanding this education section per se it is, therefore, recommended that use be made of all ranks of the increased and capacitised operational functionary personnel component to, as part of their daily task, identify target groups within their particular operational area in need of education/extension and formulate and execute conservation programmes commensurate with the need/s identified.
Each and every functionary should, in addition to being a law enforcement officer, consider him/herself a conduit through which the marine conservation cause can be promoted, subsequently negating the need for a separate specialist section entirely.

Through such hegemonious actions, fishery officers will not only contribute to a better understanding of marine related matters and ecosystem functioning amongst those approached and educated, but also portray a much more positive and friendly image to the general public encouraging partnerships and promoting self regulation and voluntary compliance.

8.5 SUGGESTIONS FOR FURTHER RESEARCH

Because marine crime is not merely restricted to the Western Cape province it would be prudent, interesting and indeed of great value to investigate the dynamics and gamut of this phenomenon in other coastal provinces/neighbouring states so as to be able to compare results and draw analogies from them.

The issue of marine protected areas (as well as other target hardening techniques) and their value as crime prevention and marine conservation strategies/mechanisms, which could be implemented to dissuade people from non-compliance with marine orientated legislation, as well as their contribution to the amelioration of degraded marine ecosystems, can be investigated in detail.

Should the introduction of a monitor and observer programme be considered as a viable project by the Marine and Coastal Management Branch to augment and alleviate personnel shortages, thereby facilitating trained enforcement personnel to concentrate on the core business of marine crime prevention in all harvesting sectors, the effectiveness and contribution of such a programme can be researched and evaluated.
Although envisaged as somewhat problematical, consideration could also be given to the formulation of an environmental (marine and terrestrial) offender profile through the evaluation of incarcerated environmental offenders and recidivists.
APPENDIX 1
SURVEY QUESTIONNAIRE TO ESTABLISH THE EXTENT AND EFFECTIVENESS OF LAW ENFORCEMENT/CONTROL BY FISHERY CONTROL OFFICERS IN TERMS OF THE MARINE LIVING RESOURCES ACT, 1998 IN THE WESTERN CAPE PROVINCE.

OPNAME VRAELYS OM DIE O MVANG EN DOELTREFFENDHEID VAN WETSTOE PASSING/BEHEER DEUR VI SERRYBEHEERBEAMPTES IN TERME VAN DIE MARINE LEWENDE HULPBRONNE WET, 1998 TE KONSTATEER IN DIE WES-KAAP PROVINSIE.

1. PLEASE ANSWER ALL THE QUESTIONS IN PEN AND PLACE THE COMPLETED QUESTIONNAIRE IN THE ENVELOPE PROVIDED.

ANTWOORD ASSEBLIEF ALLE VRAE IN PEN EN PLAAS DIE VOLTOOIDE VRAEL YS IN DIE KOEVERT VERSKAF.

2. THE ANONYMITY OF YOUR RESPONSE IS GUARANTEED AND NO ATTEMPT WILL BE MADE TO MATCH THE RESPONDENTS TO THESE QUESTIONNAIRES. THE INFORMATION GATHERED FROM THIS SURVEY WILL BE USED PURELY FOR SCIENTIFIC PURPOSES.

DIE NAAMLOOSHEID VAN U TERUGVOER WORD GEWAARBORG EN GEEN POGING SAL AANGEWEND WORD OM RESPONDENTE AAN HIERDIE VRAEL YSTE TE KOPPEL NIE. DIE INFORMASIE WAT VAN HIERDIE OPNAME VERSAMEL WORD SAL UITSLUITLIK VIR WETENSKAPLIKE DOELEINDES GEBRUIK WORD.

3. SIMPLY MARK THE APPLICABLE SQUARE WITH A CLEARLY MADE CROSS, E.G.

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(UNLESS OTHERWISE REQUESTED PLEASE MARK EACH ANSWER WITH ONE CROSS ONLY)

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2. **AGE / OUDERDOM:**

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3. **POPULATION GROUP/ BEVOLKINGSGROEP:**

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4. **MARITAL STATUS / HUWELIKSTAAT:**

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5. **EDUCATIONAL QUALIFICATIONS: (MARK ONLY HIGHEST QUALIFICATION)**

**OPLEIDINGSPEIL: (MERK ALLEENLIK HOOGSTE OPVOEDKUNDIGE KWALIFIKASIE)**

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OTHER/ANDER

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6. **IF TECHNIKON / UNIVERSITY DIPLOMA/DEGREE OR OTHER QUALIFICATION IS THE QUALIFICATION RELEVANT TO YOUR PRESENT POST?**

**INDIEN TECHNIKON / UNIVERSITEITSGRAAD/DIPLOMA OF ANDER KWALIFIKASIE IS DIE KWALIFIKASIE TEN OPSIGTE VAN U HUIDIGE POS RELEVANT?**

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7. **HOW LONG HAVE YOU BEEN EMPLOYED AS A FISHERY CONTROL OFFICER?**

**HOE LANK IS U AL WERKSAAM AS 'N VISSERYBEHEERBEAMPTE?**

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8. WHERE ARE YOU CURRENTLY STATIONED?
WAAR IS U TANS GESTATIONEER?

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<th>NEAR OR IN &quot;SMALL TOWN/ NABY OF IN &quot;KLEIN DORP</th>
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*LARGE TOWN/GROOT DORP = SEAPPOINT/SEEPUNT, SALDANHA, HOUTBAAI/BAY, GORDONSBAAI/BAY (STRAND), HERMANUS, MOSSELBAAI/BAY, KNYSNA.

*SMALL TOWN/KLEIN DORP = ALL STATIONS NOT MENTIONED ABOVE/ALLE STANDPLASE NIE HIERBO GENOEM NIE.

9. WHAT IS YOUR ANNUAL SALARY?
WAT IS U JAARLIKSE SALARIS?

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10. WHAT PERCENTAGE, ON AVERAGE, OF YOUR AVAILABLE TIME PER MONTH IS DEVOTED TO COASTAL PATROLS AND ACTUAL MARINE LAW ENFORCEMENT?
WATTER PERSENTASIE, OOR DIE ALGEMEEN, VAN U BESIKSBARE TYD PER MAAND WORD AAN KUS PATROLLIES EN WERKLIKE MARIENE WETSTOEPPASSING TOEGEWY?

<table>
<thead>
<tr>
<th>&lt;10%</th>
<th>10% - 20%</th>
<th>20% - 30%</th>
<th>30% - 50%</th>
<th>50% - 70%</th>
<th>&gt;70%</th>
</tr>
</thead>
<tbody>
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<td>2</td>
<td>3</td>
<td>4</td>
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</tbody>
</table>
11. **DO YOU THINK THAT THIS ALLOCATION IS SUFFICIENT TO ADDRESS THE OVER/ILLEGAL EXPLOITATION OF OUR MARINE LIVING RESOURCES?**

   DINK U DAT HIERDIE TOEKENNING VOLDOENDE IS OM DIE ONWETTIGE/OOR-BENUTTING VAN ONS LEWENDE MARIENE HULPBRONNE AAN TE SPREEK?

<table>
<thead>
<tr>
<th>YES/ JA</th>
<th>NO/ NEE</th>
<th>UNCERTAIN/ ONSEKER</th>
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12. **IF NO, WHAT PERCENTAGE WOULD YOU DEEM ADEQUATE TO ADDRESS THE ILLEGAL EXPLOITATION OF MARINE RESOURCES IN THE WESTERN CAPE?**

   INDIEN NEE, WATTER PERSENTASIE SOU U AS GENOEGSAAM BESKOU OM DIE ONWETTIGE ONTGINNING VAN MARIENE BRONNE IN DIE WES-KAAP PROVINSIE AAN TE SPREEK?

   | <30% | 30% - 50% | 50% - 60% | 60% - 70% | >70% |
   | 1    | 2         | 3         | 4         | 5    |

13. **TO WHICH ACTIVITY IS MOST OF YOUR TIME CURRENTLY DEVOTED PER MONTH?**

   (PLEASE INDICATE AN ESTIMATE OF THE % APPLICABLE IN THE BLOCK MARKED)

   WATTER AKTWITEIT NEEM MEESTE VAN U TYD PER MAAND IN BESLAG? (GEE OOK ASSEBLIEF 'N AANDUIDING VAN DIE % TYD TER SPRAKE IN DIE BLOKKIE GEMERK)

<table>
<thead>
<tr>
<th>ADMINISTRATION/ ADMINISTRASIE</th>
<th>QUOTA CONTROL/ KWOTA BEHEER</th>
<th>HARBOUR DUTIES/ HAWEN DIERSTE</th>
<th>OTHER/ANDER SPECIFY/SPESIFISEER</th>
</tr>
</thead>
<tbody>
<tr>
<td>( %)</td>
<td>( %)</td>
<td>( %)</td>
<td>( %)</td>
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</tbody>
</table>
14. ARE COASTAL LAW ENFORCEMENT PATROLS UNDERTAKEN ON ALL WEEKENDS AND PUBLIC HOLIDAYS?

WORD KUS WETSTOEPASSINGSPATROLIES OOR ALLE NAWEKE EN OPENBARE VAKANSIE DAE ONDERNEEM?

<table>
<thead>
<tr>
<th>YES/ JA</th>
<th>NO/NEE</th>
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<tbody>
<tr>
<td>1</td>
<td>2</td>
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</table>

15. IF NO, WHY NOT?

INDIEN NEE, HOEKOM NIE?

<table>
<thead>
<tr>
<th>POOR MANAGEMENT/ SWAK BESTUUR</th>
<th>NO VEHICLES/ GEEN VOERTUIE</th>
<th>MANPOWER SHORTAGE/ MANNEKRAGTE KORT</th>
<th>NO FUNDS FOR OVERTIME/GEEN FONDSE VIR OORTYD</th>
<th>OTHER/ANDER (SPECIFY/SPESIFISEER)</th>
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16. IN WHAT MANNER ARE COASTAL LAW ENFORCEMENT PATROLS GENERALLY CARRIED OUT?

IN WATTER MANIER WORD KUS WETSTOEPASSINGS PATROLLIES OOR DIE ALGEMEEN UITGEOVER?

<table>
<thead>
<tr>
<th>PER SEDAN VEHICLE FROM THE ROADSIDE/PER SEDAN VOERTUIG VANAF DIE PAD</th>
<th>PER 4X4 VEHICLE ON BEACHES AND OR ROADS/PER 4X4 VOERTUIG OP STRANDEN EN/OF PAAIE</th>
<th>PER FOOT/TE VOET</th>
<th>COMBINATION OF 1 AND 3 OR 1 AND 2/KOMBINASIE VAN 1 EN 3 OF VAN 1 EN 2</th>
<th>OTHER/ANDER (SPECIFY/SPECIFISEER)</th>
</tr>
</thead>
<tbody>
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7/...
17. **HOW WOULD YOU DESCRIBE THE M&CM LAW ENFORCEMENT STAFF COMPONENT IN THE WESTERN CAPE?**

**HOE SOU U DIE M&KB WETSTOEPASSINGSPERSONEEL KOMPONENT IN DIE WES-KAAP PROVINSIE BESKRYF?**

<table>
<thead>
<tr>
<th>EXTREMELY INADEQUATE/ UITERS ONVOLDOEende</th>
<th>LESS THAN ADEQUATE/ MINDER AS VOLDOEende</th>
<th>ADEQUATE/ VOLDOEende</th>
<th>MORE THAN ADEQUATE/MEER AS VOLDOEende</th>
<th>EXTREMELY ADEQUATE/ UITERS VOLDOEende</th>
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18. **DO YOU THINK THAT THIS STAFF COMPONENT IS SUFFICIENT TO ADDRESS THE ILLEGAL EXPLOITATION OF MARINE RESOURCES IN THE WESTERN CAPE?**

**DINK U DAT HIERDIE PERSONEEL KOMPONENT VOLDOEende IS OM DIE ONWETTIGE ONTGINNING VAN MARINE HULPBRONNE IN DIE WES-KAAP PROVINSIE AAN TE SPREEK?**

<table>
<thead>
<tr>
<th>YES/ JA</th>
<th>NO/ NEE</th>
<th>UNCERTAIN/ ONSEKER</th>
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19. **HOW WOULD YOU DESCRIBE YOUR CURRENT LEVEL OF MOTIVATION TOWARDS YOUR JOB AS FISHERY CONTROL OFFICER?**

**HOE SOU U, U HUIDIGE MOTIVERINGSVLAK TEENOOR U WERK AS VISSERY-BEHEERBEAMPTE BESKRYF?**

<table>
<thead>
<tr>
<th>EXTREMELY DEMOTIVATED/ UITERS GEDEMOTIVEER</th>
<th>HIGHLY DEMOTIVATED/ HOOGS GEDEMOTIVEER</th>
<th>DEMOTIVATED/ GEDEMOTIVEER</th>
<th>AVERAGE MOTIVATION/ GEMIDELDE MOTIVERING</th>
<th>HIGHLY MOTIVATED/ HOOGS GEMOTIVEER</th>
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<thead>
<tr>
<th>EXTREMELY MOTIVATED/ UITERS GEMOTIVEER</th>
<th>6</th>
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</table>
20. IF DEMOTIVATED OR HIGHLY/EXTREMELY DEMOTIVATED TO WHAT WOULD YOU AScribe THIS STATE OF DEMOTIVATION?

**INDIEN GEDEMOTIVEER OF HOOGS/UITERS GEDEMOTIVEER AAN WAT SOU U HIerdIE GEDEMOTIVEERDE TOESTAND TOESKRYF?**

<table>
<thead>
<tr>
<th>Poor Management/Swak Bestuur</th>
<th>Few/No Promotion Possibilities / Weinig/Geen Bevorderings Moontlikheide</th>
<th>Poor Salary/Swak Salaris</th>
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<tr>
<th>Poor Working Conditions/Swak Werksomstandig Heide</th>
<th>Little/No Overtime Remuneration/Weinig Of Geen Oortyd Betaling</th>
<th>Lack of Recognition/Gebrek Aan Erkenning</th>
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<td>4</td>
<td>5</td>
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<thead>
<tr>
<th>Little/No Job Satisfaction/Weinig Of Geen Werks – Bevrediging</th>
<th>Other/Ander Specify/Spesifieer (..................)</th>
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<tbody>
<tr>
<td>7</td>
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21. DO YOU THINK THAT SOMEONE’S MOTIVATIONAL STATE CAN INFLUENCE HIS/HER WORK PERFORMANCE AND/OR PRODUCTIVITY?

**DINK U DAT IEMAND SE MOTIVERINGSVLAK SY/HAAR WERKSPRESTASIE EN/OF PRODUKTIVITEIT KAN BEINVLOED?**

<table>
<thead>
<tr>
<th>Yes/ Ja</th>
<th>No/ Nee</th>
<th>Uncertain/ Onseker</th>
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<td>2</td>
<td>3</td>
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</table>
22. **DO YOU THINK THAT SOMEONE'S MOTIVATIONAL STATE CAN INFLUENCE HIS/HER LOYALTY TO HIS/HER EMPLOYER?**

*DINK U DAT IEMAND SE MOTIVERINGSVLAK SY/HAAR LOYALITEIT TEENOOR SY/HAAR WERKGEWER KAN BEINVLOED?*

<table>
<thead>
<tr>
<th>YES/ JA</th>
<th>NO/ NEE</th>
<th>UNCERTAIN/ ONSEKER</th>
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23. **HOW WOULD YOU RATE THE JUDICIAL SYSTEMS HANDLING OF MARINE CONSERVATION RELATED CASES?**

*HOE SOU U DIE REGSSTELSEL SE HANTERING VAN MARIENE BEWARINGS VERWANTE SAKE BESKRYF?*

<table>
<thead>
<tr>
<th>EXTREMELY WEAK/UITERS SWAK</th>
<th>VERY POOR/BAIE SWAK</th>
<th>POOR/SWAK</th>
<th>GOOD/GOED</th>
<th>VERY GOOD/BAIE GOED</th>
<th>EXCELLENT/ UITSTEKEND</th>
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24. **THE NEW PERMIT SYSTEM FOR RECREATIONAL HARVESTING AND THE EQUITABLE DISTRIBUTION OF OTHER FISHING RIGHTS IMPLIES AN INCREASED LEVEL OF MONITORING AND POLICING. ARE YOU AWARE OF ANY SUCH INCREASED ACTIVITY?**

*DIE NUWE PERMIT STELSEL VIR ONTSPANNINGS ONTGINNING VAN MARIENE BRONNE EN DIE GELYKE DISTRIBUSIE VAN ANDER VISVANG REGTE IMPLISEER N' VERHOOGDE VLAK VAN MONITERING EN POLISIEERING. IS U BEWUS VAN ENIGE SULKE VERHOOGDE AKTIWITEITE?*

<table>
<thead>
<tr>
<th>YES/ JA</th>
<th>NO/ NEE</th>
<th>UNCERTAIN/ ONSEKER</th>
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25. AN INCREASED EMPHASIS ON ENVIRONMENTAL EDUCATION WILL CAUSE MARINE CRIME LEVELS TO DROP?

N' VERHOOGDE KLEM OP ONGEWOINGSOPVOEDING SAL LEI TOT N' DALING IN MARIENE MISDAAD VLAKKE?

<table>
<thead>
<tr>
<th>STRONGLY DISAGREE/STEM</th>
<th>DISAGREE/STEM</th>
<th>AGREE/STEM</th>
<th>STRONGLY AGREE/STEM</th>
<th>UNCERTAIN/ONSEKER</th>
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<tbody>
<tr>
<td>NIE SAAM NIE</td>
<td>NIE SAAM NIE</td>
<td>SAAM</td>
<td>SAAM</td>
<td>SAAM</td>
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26. IS THERE ANYTHING WITH REGARD TO MARINE LAW ENFORCEMENT OR THE LACK THEREOF THAT YOU WOULD STILL SHORTLY LIKE TO MENTION?

IS DAAR ENIGIETS MET BETREKKING TOT MARIENE WETSTOEPASSING OF DIE GEBREK DAARAAAN WAT U GRAAG NOG KORTLIKS WOU NOEM?

THANK YOU FOR YOUR TIME AND INPUTS
DANKIE VIR U TYD EN INSETTE
APPENDIX 2
### CATEGORY 5

**INTERTIDAL ZONE ORGANISMS**

**INTERVIEW NO:** ..................................  **DATE:**  ..................................

**INTERVIEWEE:** ..........................................................

**DESIGNATION:** ..........................................................

**YEARS SERVICE:** ..........................................................

1) **SPECIES REPRESENTED BY THIS GROUP?**

<table>
<thead>
<tr>
<th>(COMMON NAME)</th>
<th>(SCIENTIFIC NAME)</th>
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<tbody>
<tr>
<td>LIMPET</td>
<td></td>
</tr>
<tr>
<td>PERIWINKEL</td>
<td></td>
</tr>
<tr>
<td>SEA URCHIN</td>
<td></td>
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<tr>
<td>BLACK MUSSELS</td>
<td></td>
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<tr>
<td>WHITE MUSSELS</td>
<td></td>
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<tr>
<td>VENUS EAR</td>
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2) HABITAT AND POPULATION TRENDS?

HOW WOULD YOU DESCRIBE THE HABITAT OF THESE SPECIES IN ECOLOGICAL TERMS?

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(INCLUDE INFORMATION ON BREEDING HABITS, SURVIVAL RATES, FEEDING HABITS, AGE / SIZE AT WHICH LEGALLY HARVESTABLE, DAILY ACTIVITIES, NOCTURNAL/DIURNAL, LIFESPAN, ETC).
WITH REGARD TO THE DISTRIBUTION OF THESE SPECIES, WHERE ARE THEY FOUND MOST OR LEAST ABUNDANTLY IN THE WESTERN CAPE AND WHY? (EG: HABITAT REQUIREMENTS, COLD/WARM CURRENTS, NUTRIENTS, ETC)

WHAT STATISTICS ARE AVAILABLE W.R.T. POPULATION TRENDS SINCE 1995 (GRAPHS/HISTOGRAMS) AND IF ANY FLUCTUATIONS, WHY?
HOW ARE THESE STATISTICS DETERMINED AND DO YOU REGARD THEM AS ACCURATE AND A TRUE REFLECTION OF THE ACTUAL SITUATION?
ARE CURRENT POPULATIONS OF THESE SPECIES IN A HEALTHY STATE OR NOT? IF NOT TO WHAT DO YOU ASCRIBE THE DETERIORATION? (EG: INCREASED DEVELOPMENT=OVER UTILISATION)

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ARE ANY OF THE MENTIONED SPECIES HARVESTED FOR ECONOMIC GAIN? IF SO WHICH ONES AND WHAT IS THAT PARTICULAR INDUSTRY WORTH IN ECONOMIC TERMS? WHAT WOULD YOU SAY THESE SPECIES ARE WORTH FROM A RECREATIONAL POINT OF VIEW?

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IF ANY OF THE SPECIES ARE HARVESTED COMMERCIALLY WHAT ARE THE CATCH STATISTICS OVER THE LAST 5 YEARS. IF ANY FLUCTUATIONS WHY?
ARE THE PRESSURES ON THESE SPECIES FROM EITHER A COMMERCIAL OR RECREATIONAL POINT OF VIEW GREATER IN ANY PARTICULAR AREA AND IF SO WHERE AND WHY?
3) RESTRICTIONS ON THE CATCHING OR HARVESTING OF THESE SPECIES

WHAT MEASURES/RESTRICTIONS ARE IN PLACE TO PROTECT THESE SPECIES FROM OVER EXPLOITATION IN THE WESTERN CAPE? IF BAG OR SIZE LIMITS APPLY WHY ARE THEY IMPOSED?
HOW ARE THESE PROTECTIVE MEASURES DETERMINED, WHEN WERE THEY IMPLEMENTED AND ARE THEY REGULARLY REVISED OR ADAPTED BASED ON THE HEALTH OF THE PARTICULAR SPECIES/POPULATION?
WHAT IMPACT, IF ANY, HAS THE MARINE LIVING RESOURCES ACT IN YOUR OPINION HAD ON THE PROTECTION OF THESE SPECIES?

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ARE THESE SPECIES PROTECTED BY ANY RESERVES OR NO-GO ZONES? IF SO WHERE AND WHAT PROTECTIVE MEASURES?

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DO YOU THINK ENOUGH IS BEING DONE TO PROTECT THESE SPECIES AT PRESENT? IF NOT MOTIVATE.
ARE THERE ANY MAJOR INITIATIVES AFOOT TO AFFORD THESE SPECIES MORE PROTECTION?

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DO YOU THINK THE NEW LICENSE SYSTEM IMPOSED BY THE MARINE LIVING RESOURCES ACT W.R.T THE COLLECTION OF WHITE MUSSELS OR ANY OTHER OF THE SPECIES IN QUESTION WILL CONTRIBUTE TOWARDS A REDUCTION IN CRIME INVOLVING ANY OR ALL OF THESE SPECIES?

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4) ILLEGAL EXPLOITATION OF INTERTIDAL ZONE ORGANISMS

HOW WOULD YOU SAY THESE SPECIES AS A GROUP ARE MOST OFTEN ILLEGALLY HARVESTED?
WHICH SPECIFIC SEGMENT OF THE POPULATION (IF ANY) DO YOU THINK IS MOST RESPONSIBLE FOR OVER/CRIMINALLY EXPLOITING THESE SPECIES, AND WHY?

WHAT WILL THE EFFECT, IN YOUR OPINION BE, ON THE ECOSYSTEM IF THESE SPECIES ARE CONTINUALLY CRIMINALLY OVER EXPLOITED WITH REGARDS TO BAG LIMIT, SIZE (WHERE APPLICABLE) AND LOCATION?
WHAT DO YOU THINK CONSTITUTES THE MAJOR REASON/S FOR THESE SPECIES BEING CRIMINALLY EXPLOITED/ILLEGALLY HARVESTED?
WHAT KIND OF SOCIAL AND/OR ECONOMIC PROBLEMS COULD IN YOUR OPINION THE CRIMINAL EXPLOITATION OF THESE RESOURCES LEAD TO IN THE SHORT AND LONG TERM?
DO YOU THINK THAT THE MARINE INSPECTORATE AND/OR THE POLICE OR EVEN POLICY MAKERS ARE DOING ENOUGH AND ARE COMPETENT ENOUGH TO ENSURE ADEQUATE PROTECTION OF THIS PRECIOUS AND OFTEN OVERLOOKED RESOURCE?

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IS THERE ANYTHING W.R.T. INTERTIDAL ZONE ORGANISMS THAT YOU WOULD LIKE TO ADD?

THIS THEN CONCLUDES THE INTERVIEW. THANK YOU VERY MUCH FOR YOUR TIME AND VALUABLE INPUTS!
RECREATIONAL FISHING PERMITS – SALES STATISTICS WITH REGARD TO THE VARIOUS HARVESTING ACTIVITIES

1. Your telephonic conversation with Mr N Daniels on 8 August 2000 as well as your follow-up facsimile message dated 14 August 2000, refers.

2. With reference to your enquiry, I have classified our response as follows;
   - Permits sold and revenue generated since 16 November 1998

Prior to 1996, recreational Abalone and Rock Lobster were sold through certain magistrate courts and the main centres of the Receiver of Revenue. Copies of the permits sold were returned to the Department for reconciliation in order to conduct a telephonic survey on catches.

During 1996, the Department of Justice served notice to the Department that they could no longer assist with the selling of the recreational fishing permits. The South African Post Offices LTD (SAPO) was then approached and accepted to act as an agent for the selling of these permits. During November 1997, SAPO commenced with the selling of only recreational Abalone and Rock Lobster permits through 45 identified outlets as per agreement. The permits were available to our agents in the form of a face-value book with a bar code to facilitate control and capturing of information within SAPO. At that stage, the KwaZulu-Natal Nature Conservation Services was responsible for the selling of recreational fishing permits in that province.

With the implementation of the Marine Living Resources Act on 01 September 1998, the scenario changed dramatically. Before any fishing activities could commence, the fisher was required to obtain a permit and this resulted in the number of recreational permit types and activities to increase to the current ten. In order to incorporate this new requirement urgently before the commencement of the 1998/1999 season, it was agreed with SAPO to utilise and amend the software for the selling of TV-licences to fit our requirements.

The counter staff would then be required to capture all relevant details of the applicant before the permit could be finalised. The captured information is then electronically transferred to a central point before the daily sales details are transferred to M&CM. Occasions did arise where duplicate permit information was transmitted to M&CM which complicated the reconciliation of the actual permits sold per type. At the time of implementing this system, no additional staff was made available to analyse the data and as an interim measure, the Information Technology staff was used for this function.
Considering that the number of transactions have increased quiet substantially, the data transmitted has grown accordingly. Due to the fact that the counter staff captures all data that is available on the permit form – although certain fields are compulsory on the permit, unusable data is however also transmitted. This situation has resulted in great difficulty to determine the actual number of permits sold per permit type. The problems experienced by M&CM has been continuously reported to SAPO but due to the limitations placed on IT system enhancements by their management as a result of the Y2K scenario, improvements to our requirements were delayed. In addition, SAPO is in the process of updating their IT systems and it is hoped that this situation would improve our permit selling process. A request for the auditing of permits sold has been forwarded to SAPO and we are awaiting the outcome.

Income generated from the sale of permits is electronically transferred to our banking account and allocated in accordance with Section 10 of the Marine Living Resources Fund, Act 18 of 1998. Since implementation of the new permit system, no increases in the commission payable to SAPO has been discussed or negotiated – in actual fact the commission was reduced after one year and remains at that rate.

In the case of KZN-NCS, they sell recreational fishing permits in that province only in conjunction with SAPO. Through their outlets, sales are reconciled at the Permit Office in Durban and the information transferred later to Marine and Coastal Management.

Appended is a schedule of sales for the Western Cape as requested marked - Annexure A.

- Improved control mechanisms

Over the past few years, we have observed that permits are fraudulently obtained and the classic case being the use of a stamp to duplicate the information printed onto a permit by SAPO. In KwaZulu-Natal, fishers have reproduced the receipting details of a permit onto a stamp and by stamping the receipt details on other permit forms, are selling them to other fishers at a reduced price. Other lessons include the use of computer printers to print receipt details or the colour copying of permits through sophisticated copiers.

Various proposals have been tabled which includes the following;

a. The introduction of a smaller credit card sized permit whereon the permit information is printed by our agents and sealed over the face forming a sealable pouch. This process would require our agents to acquire special printers and this capital outlay would have to be covered by the department – quite a costly exercise.

b. In 1997, it was envisaged to sell permits utilising smart-card technology. This would require quite extensive IT involvement and hardware to be made available to all outlets of our agents. In addition, the cost of smart cards is quite expensive due to the fact that a programmable card (SIM) would be required. All law enforcement officers would also have to be equipped with a scanning device in order to read the information contained on the card.

The Department of Home Affairs is in the process of acquiring smart cards to replace the current ID documents. This achievement would in future assist our proposed process whereby these smart cards could possibly be utilised to accommodate the permit information. Until Home Affairs have finalised their acquisition programme, this office would reconsider this option.

In order to remedy the current situation the following improvements to increase control have been proposed and would be implemented as soon as possible;

- Permits issued by SAPO have been numbered.
The introduction of a self-destructible hologram to be pasted on the permit after the prescribed fees are paid, is under consideration. It is envisaged that sales would possibly double through this process but is also dependent on continuous and visible compliance. The application to register a Hologram is being processed and would probably be implemented early next year.

Discussion will also commence shortly regarding introduction of the Smart Cards.

- Improvements from SAPO

The SAPO has now finalised its acquisition programme of new software and resultantly, the permit sales process will be enhance through the issuing of a detailed receipt of the permit bought by the applicant. Although this process will require the permit holder to retain his receipt with the permit, the possibility of losing or damaging the receipt is of concern and was addressed with SAPO. Within 90 days from date of sale, duplicate receipts will be available free on condition that the applicant has requested the duplicate from the original Post Office of sale. The legal implication of this process is currently under review. A copy of the new receipt format is appended as Annexure B.

- Use of Income generated from the Sale of Recreational Fishing Permits

Section 10 of the Marine Living Resources Act makes provision for what income can be paid into the Fund as well as what expenditure can be incurred. The appointment of Public Servants is done in accordance with the Public Service Act and the National Treasury provides funds for all related expenditure including the payment of overtime. Since the transfer of the Marine Control component from the previous Cape Provincial Administration in November 1996, this Department had to reprioritise its budget in order to accommodate this component. The transfer of the component did not include the transfer of a viable budget in the following years and hence the funding for this component had to be accommodated within our normal budget allocation. Since 1998, this situation has changed dramatically through the mechanisms outlined in Section 10 of the Act.

The income derived from the sale of recreational fishing permits is allocated to the Fund, as is the case with all other income. This, together with the budget allocation received from the Department (grant) is used as a basis for the following year’s expenditure budget. Through our budgeting process, the priorities of M&CM are taken into account when allocations are made for the following year. The mechanism of Supplementary Budgets is also available in instances where the original budget requests have to be changed.

3. Although replying to your enquiry has taken some time, it was incumbent on us to supply you with as accurate information as possible in order for you to finalise your dissertation.
## Annexure A

### Schedule of Permit Sales in the Western Cape since November 1997 to August 2000

<table>
<thead>
<tr>
<th>MONTH</th>
<th>TRANSACTIONS</th>
<th>TRANSACTION/YEAR</th>
<th>INCOME TO THE FUND</th>
<th>INCOME/YEAR</th>
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<td></td>
<td>R 541,368.90</td>
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<td>Feb-98</td>
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<tr>
<td>Apr-98</td>
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<td>-R 91.50</td>
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<tr>
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<td>R 1,677.50</td>
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<tr>
<td>Jun-98</td>
<td>5</td>
<td></td>
<td>R 188.52</td>
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</tr>
<tr>
<td>Jul-98</td>
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<td></td>
<td>R 0.00</td>
<td></td>
</tr>
<tr>
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</tr>
<tr>
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<td>May-00</td>
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<td>Jun-00</td>
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<td>Jul-00</td>
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<td>Aug-00</td>
<td>11535</td>
<td>178489</td>
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</tbody>
</table>

**TOTAL**  466181  466181  R 21,481,021.87  R 21,481,021.87

Please Note: the figure above represents sales according to the previous demarcation of the Western Province and includes the Northern Cape.
APPENDIX 4
Following your request this office has submitted the statistics for 1998, 1999 and up until the end of August 2000.

As has been confirmed telephonically our data base with the transgressions as of 1995 until 1997 has crashed with the result that we cannot provide you with statistics as of that period.

If you need any further assistance please do not hesitate to contact this office.

Yours sincerely

Mr V N Mayisela
DEPUTY DIRECTOR : MARINE AND COASTAL MANAGEMENT
DATE :
REFERENCES
REFERENCES


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