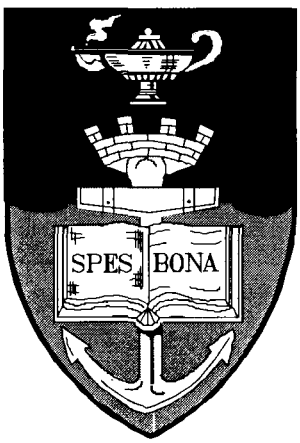
Legal Pluralism in Environmental Management:

Informal rules and non-compliance in the Karbonkelberg Marine Protected Area.

Thesis in partial fulfilment of a
MPhil in Environmental Management,
Department of Environmental and Geographical Sciences
University of Cape Town



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ACKNOWLEDGEMENTS

I would like to thank Yahweh for his strength, wisdom and guidance.

I would like to thank Dr. Richard Hasler, my supervisor, for his honest critique, wisdom, guidance and patience with me. I would also like to thank Maria Hauck, for her guidance during my field work and support.

I would like to thank the fishers and community members of Hangberg, who welcomed me into their community and homes, and allowed me to carry out my research. Their willingness to share intimate information about their lives livelihoods will always be appreciated. I would also like to thank all MCM and SANParks enforcement staff who participated in this research for taking time off their busy schedules.

I would like to thank my parents for their love, encouragement and support.

I would like to thank my friends: Emma Keenan, for editing my work and for offering her support and encouragement unconditionally; Muondakweli Kaniki, Oladayo Salami, Nancy Tumba, Benon Muwonge and Neema Ndunguru, for their prayers, support, encouragement when my strength was weary.

ABSTRACT

Within South Africa, there is an issue of non-compliance with government policy among small-scale fishing communities. This has a detrimental impact on the sustainable governance of fisheries. It is important to understand underlying factors that influence individuals' decisions whether or not to comply with national law.

This paper is a case study of the Karbonkelberg Marine Protected Area in which fishers from the Hangberg community illegally harvest West Coast Rock Lobster. Through a legal pluralism perspective, this research seeks to determine whether the high level of non-compliance is a result of the existence of more than one legal order. The research reveals there is an organised informal fishery amongst fishers from Hangberg with informal rules and practices. Therefore, the Karbonkelberg demonstrates a dual presence of normative practices amongst illegal fishers from the Hangberg community, within a formal legal order.

This study suggests that the issue of non-compliance is related to the perceived legitimacy of the formal legal order. This is better understood when environmental, social and economic factors are taken into consideration. The issue can be effectively addressed when there is proactive involvement of government authorities at a grassroots level.

ACRONYMS

CPMPA	Cape Peninsula Marine Protected Area
CPR	Common-Pool Resources or Common Property Resources
DEAT	Department of Environmental Affairs and Tourism
FAO	Food and Agriculture Organisation of the United Nations
FCO	Fishery control officer
HDI	Historically Disadvantaged Individuals
IUCN	International Union for Conservation of Nature and Natural Resources
MCM	Marine Coastal Management
MLRA	Marine Living Resources Act of 1998
MPA	Marine Protected Area
NEMA	National Environmental Management Act of 1998
PDG	Prisoner's Dilemma Game
SANParks	South Africa National Park
SFTG	Subsistence Fisheries Task Group
TAC	Total Allowable Catch
TAE	Total Allowable Effort
TMNP	Table Mountain National Park
TMNP MPA	Table Mountain National Park Marine Protected Area
WCRL	West Coast Rock Lobster

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GLOSSARY OF TERMS

Black is the former generic term in South Africa for those ethnic groups identified by previous apartheid policies as "Indian", "African" or "Coloured".

Coloured is a term coined during the former apartheid regime referring to a diverse group of 'mixed race' people descended from slaves, the indigenous Khoisan peoples, black people, European settlers and others.

Common-Pool Resource or CPR is a class of resources for which exclusion is difficult and joint use involves subtractability.

Legal order is "where coercive means, of a physical or psychological kind, are available; ...in other words wherever we find a consociation specifically dedicated to the purpose of 'legal coercion' (Weber, 1954)."

Legal pluralism is the presence in a social field of more than one legal order or the different legal mechanisms applicable to identical situations.

Local law refers to the mixture of customary (or folk) law, new forms of self–regulation, elements of old and new state law, donor laws and social norms that are expressed and used at a local level.

The prisoner's dilemma game is a noncooperative game in which all players possess complete information[1]...communication among players is forbidden or impossible or simply irrelevant as long as it is not explicitly modelled as part of the game

Property rights define the uses that are legitimately viewed as being exclusive and designate who enjoy these exclusive rights. Thus property rights grant entitlements regarding resource use and prescribe rules under which these entitlements are exercised.

Rock lobster trap means any trap, pot or other implement of whatever constructor, intended or used for the fishing or holding of rock lobster, but does not include a rock lobster ring-net.

Small-scale fisher refers to commercial fishers who harvest with low technology and capital input and is labour intensive.

State law refers to law enacted by the authoritative governing power of a country or nation.

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[1] When all players have 'complete information' it implies they know the payoffs of each outcome and know the structure of the game (Ostrom, 1990:4).

Subsistence fisher, according to the South African Subsistence Fisheries Task Group (SFTG), "are poor people who harvest marine resources as a source of food or to sell them to meet the basic needs of food security; they operate on or near the shore or in estuaries, live in close proximity to the resource, consume or sell the resources locally, use low-technology gear (often as part of a long-standing community-based or cultural practice), and the kinds of resources they harvest generate only sufficient returns to meet the basic needs of food security" (Hauck and Sowman, 2003:345).

West Coast Rock Lobster in this thesis refers to the species *Jasus lalandii*, also known as Cape rock or spiny lobster or kreef.

1 INTRODUCTION

1.1 Common Pool Resource Management and Legal Pluralism

Over the last thirty years, the sustainable governance of Common-Pool Resources or CPRs in environmental management has been, and continues to be, a highly debated issue amongst policy-makers, scholars and users alike. A memorable article by Hardin (1968) on CPRs described what he referred to as the 'Tragedy of the Commons'. Hardin argued that the individual decisions of a 'rational' user of an open access CPR will inevitably culminate to a tragic overuse and destruction of the commons (Hardin, 1968). Hardin's proposed solution for the sustainable governance of CPRs was either state or private property ownership of the commons. Hardin's model was supported by other theories such as 'Rational Choice Theory' and 'Prisoner's Dilemma Game'. These three theories conceptualised that users of an open access CPR would exploit the resource until its irreversible degradation. Hence the nationalisation and/or privatisation of CPRs such as forests, fisheries and water sources was institutionalised in policy making and management systems in the form of property rights.

Four major broad types of formal property rights systems used to regulate CPRs have evolved. Feeny et al. (1990) categorise them as (1) open access, (2) group property, (3) individual property, and (4) government property. Open access refers to the absence of property regime. Group, individual or government property regimes grant rights or privileges to others to use or exploit the resources with guidelines and restrictions imposed by the group, individual or government respectively. Under a government property regime, access to marine resources is sometimes referred to as sea tenures (Cordell, 1989:1 cited by Bavinck, 2005:811), and the most common form of tenure right is a quota. A quota defines the weight amount of a particular species that can be harvested in a specific area during a specific period of time for each right holder.

Ostrom et al. (1999) believe that the effective and sustainable governance of CPRs is not dependant on a single type of property regime, but rather on the ability to restrict access and create incentives for users to not overexploit the resource. In addition Hardin's assumption of the 'Tragedy of the Commons' in open access CPRs has been challenged over the last thirty years. Research has revealed evidence that for hundreds of years, people have self-organised and devised informal traditional and/or customary institutions for governing CPRs without the state imposing regulations on the resource use (Ostrom, 1990; McCay and Acheson, 1987). Case studies have also revealed the existence of informal customs, rules and institutions which either restrict or control access to the sea or to the resource itself. Examples include the trawling fishery in the New York Bight region (Berkes et al., 1989), the Maine lobster fishery in the United States (Acheson, 1975), and in the Coromandel Coast of India (Bavinck, 2005).[2] These customs and rules are not legal in terms of being established and enforced by the state, but can be regarded as a 'legal order'. Weber defines a legal order as "wherever we find a consociation specifically dedicated to the purpose of 'legal coercion'" (Weber, 1954: 17, cited by Griffiths, 1986:40). Therefore, although states establish sea tenure regimes to govern their fisheries, there is evidence of "different legal mechanisms applicable to identical situations" (Vanderlinden, 1972:20 cited by Bavinck, 2005:811), otherwise referred to as legal pluralism (Griffiths, 1986).

1.2 Significance of legal pluralism in South African fisheries

The influence of informal rules on the effective governance of fisheries has only recently entered the debate on governing CPRs. Both Bavinck (2005) and Acheson and Gardner (2004) evaluate the potential for conflict between the formal laws and sea tenure systems, and informal rules in the Coromandel Coast of India and the Maine lobster fishery of the United States respectively. There is, however, little known about the presence or absence of informal rules in small-scale fishing communities in South Africa. This gap in the literature requires further study for two reasons. The first reason relates to the history of apartheid in South Africa. Although small-scale fishing communities faced political and

[2] These examples are given in more detail in section 2.2.2

economic discrimination during apartheid, they found ways to survive and sustain their livelihoods. The current government needs to understand how communities organized themselves, whether they devised informal systems and rules to govern their fishing patterns and behaviour during the apartheid regime, and to identify if these informal rules play a significant role in fishing communities today. Secondly, by understanding the informal rules and their significance in the small scale fishing communities, the underlying cause of conflict between fisheries management and small-scale fishers may be better understood. This conflict often manifests itself as non-compliance, which has been a continuous challenge in South Africa since the new democratic era, after the abolishment of the apartheid regime.

1.3 Background and purpose of research

In the quest to understand why there is non-compliance, a fishery compliance research project was initiated in South Africa. This research is conducted as part of a Norwegian-South African (NORSA) partnership on fisheries research. The aim of the project is to develop an analytical compliance framework for understanding and addressing non-compliance in small-scale fisheries in South Africa. Primary research in four case studies in South Africa is being conducted. These include the following:

i. Abalone Case Study in the South Western Cape;
ii. Swartkops Bait Fishery in the Eastern Cape;
iii. Institutional arrangement existing between the Ezemvelo KwaZulu Natal Wildlife Department and local communities; and
iv. Rock Lobster fishery in the Table Mountain National Park Marine Protected Area.

There are a number of key factors to be considered in selecting case study sites in the NORSA fisheries compliance project, and these have included the following:

i. Value of resource (high, medium, low)
ii. Management approach (co-management, delegation, law enforcement etc.)
iii. Institutional structure
iv. Geography (political representation of provinces)

v. Success/Failure of compliance strategies
vi. Logistics (if background info is available or previous relationships).

Preliminary factors identified in the project for understanding compliance include institutional, historical, political, social, economic and ecological opportunities and constraints. Informal rules are also one of the preliminary factors.

This thesis research is part of the NORSA fisheries compliance project and focuses on the Rock Lobster fishery in the Table Mountain National Park Marine Protected Area (TMNP MPA). This thesis seeks to understand non-compliance in the Karbonkelberg no-take zone within the TMNP MPA through a legal pluralism perspective. It draws on literature from common-pool resource management and legal pluralism. The aim of this research is to determine if there is legal plurality in the Karbonkelberg and to investigate the presence of informal rules in a small-scale commercial fishing community called Hangberg in Hout Bay, Western Cape. Fishers from the Hangberg community have been engaging in illegal fishing of West Coast Rock Lobster (WCRL) in the Karbonkelberg which has led to an increased concern over non-compliant behaviour by SA National Parks (SAN Parks) law enforcement officials.

The research also aims to answer whether these informal rules play a significant role in the methods, patterns and behaviour of the fishers in Hout Bay and their compliance or non-compliance to state fishing regulations. This research answers the following questions:

1. Whether or not there is legal plurality in the Karbonkelberg;
2. What the informal rules are amongst the small-scale poaching groups in Hangberg;
3. What the significance of these informal rules are in the behaviour, the fishing patterns of fishers and their decisions; and
4. Whether the informal rules influence the fishers' compliance to the state law imposed on them.

1.4 Structure of thesis

This thesis has six chapters. Chapter 2 gives the conceptual context of the research in terms of two bodies of literature: common pool resource management and legal pluralism. Chapter 3 details the methodology used to answer the research questions, before going into the background to the case study in Chapter 4. Informal rules identified in the informal fishery, within the system of formal national laws, are presented in Chapter 5. Lastly, the research conclusions and recommendations are presented in Chapter 6.

2 LITERATURE REVIEW

The conceptual context of this research is based on two broad bodies of literature. This research is focused on fishing activities in the Karbonkelberg MPA. Fishing is regarded as a common-pool resource; therefore literature on common-pool resource governance was reviewed. The nationalisation and privatisation of common-pool resources (CPRs), drawn from the conventional wisdom that open access would lead to the detrimental degradation of CPRs, has been adopted by policy makers.[3] However, this conventional wisdom has been challenged. Empirical evidence has shown that 'open access' CPRs are not actually open to all, as users and local communities have developed informal community rules and norms which they use to manage the resource.[4] In the Karbonkelberg, the high level of non-compliance is in part due to the existence of an informal fishery with its informal rules. To understand the possible implications that the presence of informal rules may have on the governance of fisheries, a second body of literature on legal pluralism was also reviewed. Due to the fact that this research centres on a small scale fishery, examples of informal rules in small-scale fishing communities were reviewed, and their legitimacy and potential for conflict is also discussed.[5]

2.1 Common Pool Resources

CPRs refer to natural and human resource systems, regardless of the property rights involved. CPRs have two main characteristics:

i. Exclusion of beneficiaries through physical and institutional means is especially costly (Feeny et al, 1990:3 and Ostrom et al., 1999:278) because of the physical

[3] For example, the Marine Living Resources Act of 1998 nationalises all marine living resources in South Africa.
[4] Discussed further in section 2.2.2
[5] Small-scale fishers are defined by Bavinck (2005:806) as "fishers who use beach-landing craft and passive fishing gear and have a limited range of operation. Generally their occupation is less capital-intensive, and catches are less voluminous per unit effort".

nature of the resource. For example, it is difficult to restrict access to fisheries, wildlife, forests, ground water, the high seas, the atmosphere, and so on.

ii. The exploitation by one user reduces resource availability for other. Berkes et al. (1989:91) and Feeny et al. (1990:3) refer to this as subtractability.

Hence the definition of CPRs adopted for the purposes of this research is that given by Berkes et al. (1989:91), who defines a CPR as "a class of resources for which exclusion is difficult and joint use involves subtractability."

The terms 'common-pool resource' and 'common property regime', although sometimes used interchangeably, are not the same thing. A common pool resource describes the characteristic of the resource, while common property regime describes a type of property rights regimes used to govern a resource (Ostrom et al., 1999: 278). For the purpose of this dissertation, the term CPR is used in the sense of a common-pool resource. The next section describes the various property right regimes common in the field of CPR policy.

2.1.1 Property Rights

Property rights assign benefits from the utilisation of a resource and are characterised by specific exclusivity, transferability, inheritability, alienability and enforcement mechanisms (Hauck and Sowman, 2003:15).

> "Property rights define the uses that are legitimately viewed as being exclusive and designate who enjoy these exclusive rights. Thus property rights grant entitlements regarding resource use and prescribe rules under which these entitlements are exercised." (Hauck and Sowman, 2003:15)

In terms of sea and marine resources, property rights are also sometimes referred to as sea tenures. Sea tenure is about "sea-based property rights" and the utilization of fish stocks (Cordell, 1989:1 cited by Bavinck, 2005:811).

The regulations and rules specific to each type of rights will differ, depending upon the particular regime governing the CPR. The characteristics of CPRs affect how they are governed. These characteristics include: the size and carrying capacity of the resource system; the temporal and spatial availability of the resource (whether the resources move or are stationary); how fast the resources regenerate, or the speed of resource regeneration; the storage capacity of the system; how harvesting technologies affect regeneration; and how easy it is to measure the resource (Ostrom et al., 1999:279).

Four main property-rights regimes have evolved: open access, private property, communal property and state property (Berkes, 1989; Feeny et al., 1990:4-5 and Hauck and Sowman, 2003:16).

1. Open access, or *res nullius*, refers to the absence of well-defined property rights. The resource is unregulated, giving free and open access to all.
2. Communal property, or *res commune*, refers to a situation when an identifiable community holds rights to the resource and is able to exclude others and regulate the use of the resource. The users in the community are interdependent, and the rights are usually of equal access and use (Feeny et al., 1990:4). Forests, inshore fisheries, groundwater, and irrigation systems are some examples of resources that can be held under common property rights.
3. Private property, or *res privatae*, refers to the right of the individual or corporation to exclude others from using the resources, and to regulate its use. Private property rights are usually "exclusive and transferable" (Feeny et al., 1990:3); for example, privately-held rangelands or forests.
4. State/government property, or *res publicae*, gives the government exclusive rights to the resource. The government controls both access and the level of exploitation. This is also sometimes referred to as state governance. State property may allow the general public equal access and use rights; for example, national parks. The state, however, unlike a private owner, has "coercive powers of enforcement" (Feeny et al., 1990:5). For state governance to be effective, exclusivity must be ensured, which is dependant on the financial and human resource available for monitoring and enforcement (Grafton, 2000:507).

South Africa follows a similar typology of property regimes for the governance of their CPRs. In addition, there are co-management regimes that share the responsibilities and decision-making powers in managing a resource between government, resource users and other stakeholders (Berkes et al., 1991 cited by Hauck and Sowman, 2003:3). In South African fisheries, the resource is either governed under government property or co-management regimes.

Conversely, it is viewed that CPRs are held in a combination of several overlapping types of rights.[6] Ostrom (2003) classifies these rights in terms of the action permitted rather than the owner of the resource.

1. *Rights to use or access*: gives rights to enter a defined area and enjoy non-subtractive benefits; for example, hiking. Holders are thus authorized entrants.
2. *Rights to withdraw*: gives rights to obtain resources units or products of a resource system; for example, allowing someone to catch fish.
3. *Rights to management*: gives rights to regulate internal use patterns, to control the users and transform the resource by making improvements; for example, setting quotas in fisheries.
4. *Rights to exclusion*: gives rights to determine who will have access and how that right may be transferred; for example, setting criteria for who can apply for a quota.
5. *Rights to alienation*: gives rights to sell or lease exclusion, management or withdrawal rights. (Ostrom, 2003: 249)

In this classification, a CPR user is one with rights to access and withdraw, and a claimant is one who has access, withdrawal and management rights (Ostrom, 2003: 250). A proprietor of a CPR is considered to have access, withdrawal, management and exclusion rights, while a full owner of a CPR has all rights as a proprietor but also has the right to alienation (Ostrom, 2003:252). All these rights can be held by individuals or

[6] Schlager and Ostrom (1992), Benda-Beckmann and Spiertz (1997 cited by Meinzen-Dick and Pradhan 2001) and Ostrom (1999; 2003)

collectives (Ostrom, 2003:250). Therefore, an individual, a private corporation, a government or a communal group can have full ownership rights. However, common-property regimes have participants who are only proprietors. Ostrom argues that these rights "better reflect the status and organization of the holder of a particular right, than the bundle of property rights held" (Ostrom, 2003:252).

The difficulties in exclusivity leave CPRs as highly exploitable resources, and the nature of subtractability implies that overexploitation endangers their long-term biological and economic viability. Three models are commonly used by policy makers and decision makers to explain why CPRs are highly exploited to the point of being endangered; these include the Hardin's *'Tragedy of the Commons', Rational Choice Theory* and the *Prisoner's Dilemma Game* (Hauck and Sowman, 2003:17). These models have had significant influence in defining the policies and regulations governing CPRs in South Africa. In order to fully understand the context of the policies affecting fishers in Hangberg, it is necessary to examine the assumptions underlying these models which influence the decision making process. Assessing the relevance and appropriateness of these models at the local level will shed light on the suitability of the formal policies and reasons for non-compliance amongst the Hangberg fishers.

2.1.2 Tragedy of the Commons

Hardin's theory of the 'Tragedy of the Commons' claims that "freedom in a commons brings ruin to all" (1968: 1244). The 'Tragedy of the Commons' is an early theory addressing the issue of the governance of CPRs. The theory paints a picture that in an infinitely increasing population where each person inherently seeks to maximise their resources, yet lives in and is dependent on the earth's finite resources, the result is the degradation of the common resource (Hardin, 1968:1244).

To elaborate, the utility of a common resource has both a positive and a negative component. The positive component refers to the benefits of adding more effort in harvesting the resource. The negative component refers to the off-take from a limited

source, thus leaving less of the resource available. The 'Tragedy of the Commons' model hypothesizes that each 'rational' user in an open access system of a resource is driven to maximise their own benefits, thus they continue to harvest regardless of the effects on others. The more users of the resource, the more resource harvested, leading to the ruin of the resource (Hardin, 1968:1244). This model posits that appealing to people's consciousness will not suffice as a means of preventing the destruction of the commons. Thus humans need the CPRs to be managed under government or private property if they are to be managed effectively. However, over the last thirty years, research has provided evidence that has contested Hardin's theory of the 'Tragedy of the Commons'[7].

What do we mean by a 'rational' user? The second model of rational choice theory helps to understand what Hardin refers to as a 'rational' user.

2.1.3 Rational Choice theory

Olson argues that "unless the number of individuals is quite small or unless there is coercion or some other special device to make individuals act in their common interest, rational, self-interested individuals will not act to achieve their common or group interest" (Olson, 1965:2). In this statement, Olson challenges the view of a rational self-interested individual depicted in group theory.

Group theory claims that if a group of people have a common objective or interest and if they would all be better off if that objective or interest is achieved, then all the individuals in that group, if rational and self-interested, would act to achieve that objective (Olson, 1965:1). Group theory presumes that "individuals with common interests would voluntarily act so as to try to further those interests" (Ostrom 1990:5), which Olson argues against and posits that if people cannot be excluded from the benefits of collective action, they will have no incentive to voluntarily act to further their common interests. This argument is based on Rational Choice Theory.

[7] See section 2.1.5 for more detail

Rational choice theorists explain outcomes and events in terms of the attitudes, expectations and interactions of individual actors whose actions are seen to be rational if they "constitute the best way of achieving some given goal" (Hindmoor, 2006:2). Rational choice theorists also assume that people will always act entirely out of self-interest, that people have reasons to believe what they believe, and that they hold the best possible beliefs given the information they have available (Hindmoor, 2006:2). Therefore, rational choice theorists assume that people are rational not only because they have reasons to act, but also because their actions are the best possible actions they could have taken given their beliefs and desires (Hindmoor, 2006:190).

In short, rational choice theory explains that in their own self interest, people will make decisions that they believe are the best to achieve a given goal. In relation to CPRs, the goal of a CPR user, from a rational choice perspective, will be to maximise their benefits from the resource. If one assumes that they know the subtractability nature of CPRs, and that an individual will always act in their self interest, a 'rational' CPR user will act so as to maximise their own benefits from the CPR by harvesting as much as they can for the maximum amount of profit, regardless of other users. However, if all CPR users maximised their returns from a CPR resource every time, the resource would become overexploited, rendering the resource unprofitable for other users. Thus, individual rationality in the long run can become less profitable for CPR users because of the resulting overuse and destruction of the resource. This is the same logic as in Hardin's 'Tragedy of the Commons'.

This theory of individual rationalism does not always imply that collective governance of a resource is impossible. It may be in the interest of individuals to engage in collective use and management of a CPR.[8] Anthropologists argue that historically, natural resources have been sustainably governed through the collective action of individuals. Evidence of collective governance of natural resources revealed over the last thirty years has led to a

[8] Berkes et al., 1989:91; Feeny et al., 1990

debate over the validity of the rational choice and the 'Tragedy of the Commons' models.[9]

It is argued in this study that the behaviour of the fishers in Hangberg follows the pattern of a 'rational' user, as depicted in the rational choice theory. Although the fishers are exhibiting non-compliant behaviour, they believe that their decisions and actions are the best alternative to the formal laws placed to maximise their benefits from the resource. The research seeks to determine whether the fishers participate in collective action to maximise their benefits. Therefore this research investigates whether the fishers harvest and/or manage the resource collectively, and whether there are any norms or informal rules amongst them.

2.1.4 Prisoners Dilemma Game

Hardin's 'Tragedy of the Commons' has been formalised by the Prisoner's Dilemma Game (PDG) (Wade, 1987; Ostrom, 1990:2; Acheson and Gardner, 2004:297) and is one of the analytical models used in Game Theory (Hauck and Sowman, 2003:17).[10] The Prisoner's Dilemma Game is described as follows:

> "a noncooperative game in which all players possess complete information[11]...communication among players is forbidden or impossible or simply irrelevant as long as it is not explicitly modelled as part of the game" (Ostrom, 1990:4).

If there is communication between players then any agreements made in this game are not binding and are therefore not enforced by an external actor (Ostrom, 1999). The PDG is described in Ostrom (1990:3-7) and Acheson and Gardner (2004:297) where each player has a dominant strategy which is referred to as the 'defect' strategy. The authors describe that the individual player is always better off choosing this strategy because it

[9] This debate is briefly summarised in section 2.1.5.
[10] Game theory is used to study problems of collective action (Knudsen, 1995 cited by Hauck and Sowman, 2003)
[11] When all players have 'complete information' it implies they know the payoffs of each outcome and know the structure of the game (Ostrom, 1990:4).

maximises their profit or returns from the natural resource, no matter what the other player(s) choose. Each player also has the option of the 'cooperate' strategy in which the profit or returns of each player is equally shared amongst all players. The optimal strategy is for all players to collectively choose to cooperate (Ostrom, 1990:4). However there can be scenarios where one player can choose to cooperate while another player chooses to defect. In this case, the player who chooses to cooperate loses some of the benefits while the player who chose the dominant strategy (to defect) gains more. Lastly, all players can choose the dominant strategy, which leads to zero profits or returns for all of them. Ostrom (1990:4) refers to this as the 'Hardin herder game' or 'Game 1', illustrated in the matrix in Figure.1 below with two players.

		Player 2	
	STRATEGY	cooperate	defect
Player 1	cooperate	6:6	0:8
	defect	8:0	2:2

Figure 1. Hypothetical Prisoner's Dilemma Game. (Acheson and Gardner, 2004:297)

The numbers in the matrix represent the payoff each player receives that is determined by the costs and benefits of a number of variables (Acheson and Gardner, 2004:297). The first number in each cell in the matrix indicates the payoff for player 1, and the second number the payoff for player 2. If player 2 chooses not to cooperate, player 1 loses out and player 2 gets 8 units of profit. Therefore player 1 would still be better of by not cooperating because if player 2 chooses not to cooperate, player 1 still gets 2 units of profit. Thus, regardless of the action of the other player, it is in the best interest for a player not to cooperate and to maximise their benefits. This however is not the optimum option.

In the game, the optimal outcome is for both players to cooperate. However, given the assumptions of non-cooperation and lack of communication in the game, the best *individual* strategy is the defect strategy - to use or harvest as much of the resource as possible to incur maximum profit. The PDG illustrates that assuming there is no

cooperation and communication between users of a CPR, "individual rational strategies lead to collectively irrational outcomes" (Ostrom, 1990:5). Herein lies the 'Tragedy of the Commons' which Hardin illustrated: each rational user will choose to maximise their own gain from the resource, yielding no profit for either of them.

It is argued in this case study that the fishers in Hangberg do not live and fish in isolation and that there is communication amongst the fishers. This research will determine whether fishers in Hangberg have chosen the defect strategy to fish alone, or whether they have chosen to cooperate and harvest crayfish together. Therefore this research explores what strategy the fishers use to maximise the benefits from the resource, and how the fishers organise themselves.

2.1.5 Implications and Critique of the Tragedy of the Commons

According to both Hardin and the conventional models of CPR exploitation, the open access regime would inevitably lead to degradation of the resource. The conventional wisdom of managing the commons in the 1960s to 1980s has followed Hardin's argument. The degradation of common-pool resources was seen as inevitable unless government regulations were instituted or it was converted into private property (Berkes, et al. 1989:91). Hardin and others[12] perpetuated the support of government control, private property rights and inheritance systems to be institutionalised to govern CPRs.[13] Consequently, policy makers have developed policy based on these assumptions. Although nationalisation aims to distribute the benefits of a CPR over a larger number of people by allowing them to apply for rights to exploit the resource, there is a danger of over exploitation without effective monitoring of the number of CPR users in a limited resource. Privatisation allows for few individuals to invest in exploiting a CPR efficiently to maximise benefits from the resource, but may exclude other individuals who depend on the CPR without access to exploit the resource.

[12] Hardin and Baden, 1977

[13] Hardin's recommendation to place CPRs under government control or in private property regimes complimented the economic theory of CPRs perpetuated by Gordon (1954) and Scott (1955)

Conversely, the conventional wisdom that degradation is inevitable unless common property is regulated by instituted government controls or converted to private property has been challenged. A critique of Hardin's model of CPR management, offered by Berkes et al. (1989:93), outlines four assumptions of the model that have been challenged over the last twenty years. Firstly, Hardin's model assumes that open access leads to overexploitation because it equates CPRs with open access. Secondly, the model assumes that users are incapable of self-regulation, and that there is no means by which they can act collectively. Thirdly, Hardin ignores culture, and assumes that resource users do not conform to the prescribed and enforced rules of conduct that often exist within communities. Fourthly, the model undermines the role of social institutional arrangements which exclude and regulate the use of CPRs (Berkes et al., 1989:93 and Feeny et al., 1990:13).

Further studies have shown that in the absence of any property rights regime, communities dependent on CPRs adopted "various institutional arrangements to manage the resources, with varying degrees of success in achieving sustainable use" (Berkes et al., 1989:91). Studies have shown that CPR users are capable of acting collectively to devise methods to exclude and regulate users of the CPR, and conform to prescribed and enforced rules.[14] These studies give evidence that contradict the assumptions under Hardin's model, showing that not all CPRs are open access. Therefore, these findings imply that privatisation or nationalisation is not the only definitive solution to the CPR problem of potential overexploitation. Rather, the solution to CPR problems depends on the ability of restricting access and creating incentives for users not to overexploit the resource (Ostrom et al., 1999).

Empirical studies show that "no single type of property regime works efficiently, fairly, and sustainably in relation to all CPRs" (Ostrom et al.1999: 279). Recently Dietz, Ostrom and Stern (2003:1909) have pointed out that successful governance of commons is attainable when the following factors are in place:

1. The use of resource can be monitored at low cost;

[14] See McCay and Acheson (1987), Berkes (1989), Berkes et al. (1989), Ostrom (1990)

2. There are no rapid changes in the resource;
3. Changes in user populations, technology or other social and economic conditions are moderate;
4. Community members have face-to-face communications and trust amongst them increases;
5. Exclusion of outsiders is not expensive; and
6. Users are able to monitor and enforce the agreements they collectively designed.

Therefore what these studies show is that the effective governance of a CPR is attainable not only by nationalization or privatization, but also under common property regimes. In addition, there are studies showing that in some communities there is more than one form of property regime or legal system governing the use of a CPR. In fisheries, these case studies have revealed the existence of informal rules and institutions, devised at a local level, that either restrict or control access to the sea or to the resource itself.[15] The presence of more than one legal system or the presence of informal rules, norms and customs at the local level can lead to a situation of plurality in the law at a local level. This is elaborated further in the next section on legal pluralism, which forms the second stream of literature reviewed in this research. The next section also reviews the implications of such plurality in fisheries management.

2.2 Legal Pluralism

The law can be regarded as the "sovereign" or "rule of recognition" which is essentially given, afforded by the factual power of the government (Griffiths, 1989:3). Moore defines the law as

> "a very complex aggregation of principles, norms, ideas, rules, practices, and the activities of agencies of legislation, administration, adjudication and enforcement, backed by political power and legitimacy" (Moore, 1973:719).

[15] See section 2.2.2 for examples of case studies

However, it has been identified that between the governing political body and the individual, there are interposed various smaller organized semi-autonomous social fields to which the individual "belongs" (Moore, 1973:721). Within these social fields, the actions of individuals are regulated, and compliance can be coerced or induced through customs and rules devised by individuals (Moore, 1973:721,743) or legal orders (Weber, 1954: 17, cited by Griffiths, 1986:40).

Therefore at the local level, there are different normative and cognitive orders generated and maintained in a social field (Meinzen-Dick and Pradhan, 2001:11). These may not be very distinguishable, obscured by a mixture of customs, norms and rules used at the local level (Meinzen-Dick and Pradhan 2001:11). This is often referred to as local law, which is defined as the mixture of customary (or folk) law, new forms of self–regulation, elements of old and new state law, donor laws and social norms that are expressed and used at a local level (Benda-Beckmann and Spiertz, 1997 cited by Meinzen-Dick and Pradhan 2001).

Therefore legal pluralism is "the presence in a social field of more than one legal order" (Griffiths, 1968:1). [16] Legal pluralism does not describe a situation regarding the law or legal system, but one of a social nature. A situation of legal pluralism is when there is a presence of various local laws, customs, norms or rules used at a local level that regulate individual actions and decisions, and even coerce or induce compliance at a local level.

Woodman (1991:35, cited by Prill-Bret, 1994:688) observes that legal pluralism is created in any of three ways:

1. A people observing a customary or local law may be immersed in a field of state law when inhabited areas are brought within control of the country's governing authority.
2. A people observing a customary or local law who migrate into an area under state jurisdiction may still retain their customs and cultural identities.

[16] Examples of legal orders are state law, religious law, customary law, donor law and local law. (Meinzen-Dick and Pradhan, 2001:11)

3. A new form of customary or local law may emerge within a state.

For the purpose of this dissertation, legal pluralism is only going to be applied in the realm of property right regimes that govern CPRs. Property rights have been regarded as unitary and fixed, rather than dynamic and diverse; thus policy makers have attempted to consolidate well-defined property rights (Meinzen-Dick and Pradhan 2001:10). However, in reality there are different bundles of property rights that exist, and multiple legal and normative frameworks can coexist (Meinzen-Dick and Pradhan 2001:10). This case study seeks to determine whether the presence of norms and rules amongst fishers from the community of Hangberg constitutes legal plurality.

State or government law and regulations on property rights are referred to as the formal legal order; the authoritative governing power of the country enacts legislation that is to be adhered to by all citizens in their jurisdiction. Norms, customs and rules at the local level are recognized by lawyers as 'socially enforced binding rules' (Moore, 1973:745). In this research, these are referred to as the informal legal order which consists of informal rules and norms created and enforced by a particular group of people in society, and that may not be adhered to by all citizens. Ostrom et al. (1999) describes the evolution of informal rules and social norms as a result of the interactions between users of the CPR that is dependent on the social capital between the users. This is briefly reviewed in the next section.

2.2.1 Evolution of informal rules

Informal rules among CPR users evolve over time because not all users have the same interests or objectives. Four main kinds of CPR users can be identified:

1. Narrow self-interested users who never cooperate in dilemmas - 'free-riders';
2. Those unwilling to cooperate unless assured that they will not be exploited;
3. Those willing to initiate reciprocal cooperation hoping others will give them their trust; and

4. Genuine altruists trying to achieve higher returns for the group as a collective. (Ostrom et al., 1999:279)

If there is high social capital amongst CPR users, interactions will favour those who gain trust of others through reciprocity (Ostrom et al., 1999:279). In time, other users will become more willing to work with them to manage CPR dilemmas, increasing their benefits (Ostrom et al., 1999:279). The social capital Ostrom refers to is the connections between individuals and entities, the social networks that include people who trust and assist each other, and relationships between individuals and firms. Pretty (2003) describes three kinds of connectedness: bonding, bridging and linking.

> "Bonding social capital describes the link between people with similar objectives often in local groups…; bridging social capital describes the capacity of these groups to make links with others that may have different views; and linking describes the capacity of such groups to engage with external agencies, either to influence their policies or draw on useful resources" (Pretty, 2003:1913).

Therefore, social capital encourages trust and reciprocity between people who can then develop common rules, norms and sanctions that are mutually agreed upon to ensure that group interests are complementary with those of individuals (Pretty, 2003:1913).

In a review of various access restrictions to sea resources, Durrenberger and Palsson state the following:

> "the common property concept is neither universal nor natural. Where it does exist, there may be control of access through informal and even illegal means, control of information, intimidation, gear destruction, or other methods….where fishermen defend fishing spots against others, there is a kind of ownership" (Durrenberger and Palsson,1987:511).

More and more case studies are revealing the various kinds of unspoken informal rules and informal institutions amongst fishers. Informal rules can be traditional, customary,

territorial, in the form of informal governance institutions, or economic control mechanisms, to mention a few.

2.2.2 Evidence of Informal Rules: types and places

Ostrom (1999:509) categorizes the different types of informal rules into seven rule types from various case studies over 14 years. These are described as follows.

1. ***Boundary rules:*** rules that affect the characteristics of the participants by controlling the type of participants who interact with each other. The aim is to have participants who have long-term interests in the sustainability of the resource and the community, and who have a level of trust and reciprocity. The participants are restricted by various rules; for example, residency, citizenship, ethnicity, clan/caste, the technology they use or by how they acquire appropriation rights.
2. ***Position rules:*** define positions and the capabilities and responsibilities of those holding positions.
3. ***Authority rules:*** "affect the actions that participants in positions may, must, or must not do" (Ostrom, 1999: 513). These rules can include specifications on locations, when a resource is permitted to be harvested, and how many units of the resource are allowed to be harvested in a given period.
4. ***Scope rules:*** affect the outcomes that are allowed, mandated, or forbidden; therefore they can limit harvesting activities in some regions.
5. ***Aggregation rules:*** Affect how individual actions are transformed into final outcomes.
6. ***Information rules:*** affect the kind of information present or absent in a situation. Smaller and informal systems often rely on voluntary exchange of information.
7. ***Payoff rules:*** Affect assigned costs and benefits to actions and outcomes by the imposition of fines, incarceration, or by the loss of appropriation rights.

Case studies in small-scale fisheries have revealed the informal systems that are used to govern and manage the resource. It is useful to review these previous case studies in

order to create a wider context in which to examine the informal fishery in the Karbonkelberg.

Informal institutions that regulate the number of fishers

The trawling fishery in the New York Bight region, USA, has a fishermens' cooperative specializing in the whiting fishery. They have access to the best whiting grounds; they limit entry into the fishery and establish catch quotas among members, maintaining high prices for members (Berkes et al., 1989:92). The cooperative has a closed membership policy and controls access to docking space, effectively excluding non-members from whiting grounds and markets. Estimation of what the cooperative can sell to the regional market determines the quotas given to members (Berkes et al., 1989:92). The cooperative is seen as flexible and helps address the problem of access in the eyes of fishermen.

Informal institutions that control information

In Newfoundland, Canada, fishers controlled production-related information which governs access to the resource (Anderson, 1979). Such information and knowledge would include the location of the fish and the most effective tactics of catching them for the successful exploitation of sea resources.

Informal institutions of territories that restrict access

The Maine lobster resource, USA, although vulnerable to overharvesting, has shown stability since 1947 (Berkes et al., 1989:92). Although the government has regulations on the lobster fishery in Maine, they do not limit the number of licenses. There is a traditional fishing rights system which excludes anyone who is not accepted by the community. In the Maine lobster industry, the fishers defend territories where fishing is good (Acheson and Gardner, 2004). In the eyes of the fishers, these territories are seen as their property. Using cost-benefit logic on costs of losses in gear and catch versus potential benefits from access to better fishing grounds, fishers can either defend a territory or incur the cost of invading another territory (Acheson and Gardner, 2004). If fishers organize to defend themselves then they keep other fishers out; if they cannot or do not then they lose the area to others. In Maine, the fishers are well organized, and they

deny community outsiders access to their territory. A similar example is found in New Zealand in two crayfishing villages. In one community, fishers were given 'de facto usufruct rights' to fish while they were there, in another community, each fisher defended their gears, boats and fishing spots that are bought and sold as fishing units (Levine, (1984) cited by Durrenberger and Palsson, 1987: 511).

Informal systems that control types of gear used

The "cultural principles of ecological interdependence and social justice" underline the collective regulation of fishing along the Coromandel Coast of Tamil Nadu, India (Bavinck, 1996:476). The Coromandel Coast has 232 hamlets, each administered by a council called *panchayats* that regulate and control local affairs along the coast. In the northern reaches of the Coromandel Coast there are specific gear bans pronounced by the councils: the *kachaavalai* (bait traps for snails) and the ray net (Bavinck, 1996:479). These bans were administered by the councils because the introduction of the snail traps had a negative effect on the small fish that the fishers harvested, and also to ensure equality and fairness because fishers felt that not everyone would benefit from using the gears.

Informal institutions of differential access to limit access

Fishermen in Newfoundland, Canada, formed groups according to gear types and established formal fishing regulations which could be enforced by a fisheries officer (Martin, 1979). They limited other fishers who used other kinds of gear access to some areas and kept them for themselves.

Each case study is based on a distinct social, economic and physical environment; the informal rules which emerged are specific to these environments, and are justified by perceived needs. Although none of these rules in the previous examples were initiated by state, they are considered to be legitimate by the communities and by the fishers who adhere to them. In some cases, national governments have adopted informal rules as part of their fisheries policies (for example, in the Maine Lobster fishery, USA).

2.2.3 Legal pluralism and Legitimacy

It is a common assumption that the government is the only institution that has the power to enact and enforce a particular legal order for the governance of CPRs. Although the government is an important legitimating institution, it is not the only one; local community institutions (community, village or group of users) can establish their own legal order, including their own property regimes (Meinzen-Dick and Pradhan (2001). Meinzen-Dick and Pradhan conceptualize property rights as "claims to use or control resources by an individual or group that are recognized as legitimate by a larger collectivity" (2001:11). They posit that property rights are only as strong as the institution or collective that supports them. Following this argument, it is thus possible that the property rights established by local community institutions may be regarded as more relevant, legitimate or important than the rights which the government institutes. Thus legality does not necessarily imply that the laws or management regimes are seen as legitimate: "To be legitimate, a management system must be justified according to some moral principles and values" (Jentoft, 2000:142).

Weber (1978 cited by Jentoft, 2000:143) views legitimacy as an "impression created by the affecting interests' decision and judgement". In relation to fisheries management, Jentoft conveys that this concept of legitimacy calls for research on "users' interpretations and opinions on issues such as rationality, equity and fairness" (2000:143). Jentoft (2000) also suggests that this is rarely considered either prior to or after the design and implementation of fisheries management schemes. Jentoft reports that governments rely on the input they get from organized user-groups. Unfortunately, many of the users do not belong to these groups; those who do often go unheard in the decision making process. The organisations which the government consult do not represent the user-groups (fishers), rather present their own personal interests, and as a result, the management system may not have support at grass-root level (Jentoft, 2000:143).

Legitimacy is thus important because it influences how people respond to laws, rules or norms, and which laws they will comply with. There are two main responses fishers may

choose to a regulatory regime that they perceive to not be in their interest or legitimate. The first response is described as an "exit", where fishers "show their discontent by disobeying the rules that the management system has produced" (Hirschman, 1975 in Jentoft, 2000:141). The second response is "voice"; fishers "carry their disappointments to the forum...to try and influence the managers by winning general or peer group support for their criticisms" (Hirschman, 1975 in Jentoft, 2000:141). Voice can be expressed publicly (through media), indirectly (through interested organizations) or directly (to courts or to the management agency) (Jentoft, 2000).

To sum up, the government is not the only legitimating institution able to set laws. Fishing communities can have their own informal rules. The plurality of legal orders in a fishing community due to the presence of informal rules does not always imply that the fishers will not comply with state law. However, non-compliance can result if the fisher's perception is that the state law is not legitimate and they follow Hirschman's exit response. Depending on which law and definition of rights the fishers and the government are abiding to, legal pluralism may also cause conflict. In this case study, it is argued that the fishers in the Karbonkelberg have adopted an exit strategy in Hirschman's terms, which has resulted in conflict and non-compliance.

2.2.4 Legal pluralism and conflict

Conflicts emerge when the interests of two or more parties clash, and at least one of the parties pursues and asserts its interests at the expense of another party's interest (FAO, 1998: 199). Conflict does not always mean violence, and does not always end with a negative outcome. In terms of CPR management, conflict is often assumed to be related to difference in material interests between stakeholders (Adams et al., 2003:1916). However, the issues can be much wider. Conflicts are not only of conflicting material interests, but are also due to different interpretations of what the key issues of resource use are (Adams et al., 2003:1916). These varying perceptions are dependent on the following factors:

1. ***The knowledge of the empirical context.*** The resource user will have direct personal experience, whereas other stakeholders will have insights from theoretical and empirical research to perceive what the problem is.
2. ***Knowledge of laws.*** The local user of the CPR may not have the knowledge of the legal and institutional frameworks which often bind the state to act in a particular way.
3. ***Beliefs, ideas and ideologies.*** Ideas based on either wisdom about theory or on informal/ 'folk' knowledge, coupled with moral convictions, religious beliefs or norms all influence how people evaluate and understand what the key problem is. (Adams et al., 2003:1916)

Conflicts are sparked when there is a perception that "one group is gaining (or, in economic terms, maximizing their utility) at the expense of another" (Bennett et al., 2001:366). There are seven main causes for conflicts in fisheries.

1. Competition for fish stocks and space[17] that Bavinck insightfully states is a struggle for income and livelihood (Bavinck, 2005:809);
2. A difference in priorities pursued by different fisheries players (Charles, 1992:383);
3. Demographic change by a sharp influx of newcomers that adversely affects the economic or ecological well-being in other sectors (Bennett et al., 2001:367);
4. Institutional failure in relation to the ability of the formal or informal institutions to withstand and adapt to change (Bennett et al., 2001);
5. Developmental pressures; for example, government increasing the industrial fisheries sectors at the expense of traditional fishers (Bennett et al., 2001:367);
6. Structural injustices (legislation that restricts or denies a group within society access to a resource (Bennett et al., 2001:367);
7. Plurality (in laws, culture, norms) (Bavinck, 2005).

Conflicts arise due to plurality because different bodies of law compete for "the loyalty of a group of people subject to them" (Prill-Brett, 1994: 687). Meinzen-Dick and Pradhan

[17] The term 'space' refers to the fishing grounds and landing grounds used by fishers

(2001:11) observe that "laws are but one resource used in the strategies of individuals and groups to acquire, establish, protect and continue their rights". Individuals can make use of different laws to "rationalize and legitimize their claims, decisions and behaviour...depending on which law or interpretation of law they believe is most likely to support their claim" (Meinzen-Dick and Pradhan, 2001:11). They caution that if more than one legal order is applied at the same time, people will be abiding to different orders and definitions of rights, and the assurance of predictability can be eroded. Following this train of thought, the overlap of different legal orders or legal systems prescribing varying uses of the same CPR resource can result in conflict between users, if the users and the state officials are abiding to different laws and definitions of rights.

The Coromandel Coast in Tamil Nadu, southern India is a good example of this. Bavinck (2005) describes how there are three different sea tenure systems. The first tenure system is rules made by the *uur panchayat,* or hamlet councils. These give territorial privilege and regulate harmful technology. Secondly, the trawler owner association also have their own rules limiting the size of the trawler fishing group. Thirdly, the government of Tamil Nadu's Marine Fishing Regulation Act of 1983 determines where trawler and small-scale fishing activities are conducted. These three tenure systems are administered in the same area and each have their own enforcement mechanisms and sanctions. Therefore, fishers' response is highly dependent on which legal order they are following, which may oppose each other.

Charles (1992) and Warner (2000:11 cited by Bennett et al., 200:368) propose typologies of conflicts, which Bennett et al. (2001:369) combines. A summary of the types of conflict is given in Table 1 below.

Table 1. Types of conflicts. (Charles (1992); Warner (2000) and Bennett et al. (2001))

Charles' typology of fishery conflicts				
Jurisdiction conflicts	Management mechanism conflicts	Internal Allocation conflicts	External Allocation conflicts	
Over who owns and has access control to what	Over how policy is carried out; e.g. the consultative process harvest levels, or enforcement	Resulting from how different fishery stakeholders interact	Resulting from how fishery groups and 'outside activities' interact	
Warner's typology of natural resource conflicts				
Intra micro-micro conflicts	Inter micro-micro conflicts	Micro-macro conflicts		
Over boundary disputes, community differences, elite capture of benefits	Resulting from lack of co-operation between communities, disparities of wealth, and between new migrants and initial resident community	Resulting from cultural disputes, contradictory resource needs, disputes between project sponsors and the community, and environmental problems		
Bennett et al. typology of fisheries conflicts				
Type I	Type II	Type III	Type IV	Type V
Over who controls the fishery; e.g. access issues, exclusion from access	Over how fishery is controlled; e.g over enforcement issues, quota allocation, etc	Resulting from issues between different groups of fishers (based on ethinicity, language, religion); between different scales of fishers (e.g artisanal, industrial)	Resulting from interaction between fishers and other marine resource users	Resulting between fishers and non-fishery issues like the environment, politics, corruption, economic change, etc

2.3 Relevance of literature to the research

It can be seen that over time studies have provided evidence that there is more than one legal order in fishing communities, and that some of these legal orders have been

sustainable. The significance of this evidence is its challenge to the ideology that sea resources are best governed under state control or private property, as Hardin and others claimed.[18] This evidence also raises questions: Are these informal rules present in small-scale fishing communities in South Africa today? Do these informal rules play an important role in dictating the behaviour and fishing patterns of fishers today, and if so how?

In the context of this research, there is little known about the presence of informal institutions in South African fishing communities. There is also little known as to whether these informal rules cause conflicts between the state and fishers, and between fishing sectors, resulting in non-compliance. This gap in the literature is crucial, as the government of South Africa has gone through a period of rapid transformation in the governance of CPRs, especially sea resources under the Marine Living Resources Act of 1998. This information will also be useful because these conflicts could help explain and better understand the reason and nature of non-compliance in some South African small-scale fishing communities. Non-compliance in the Karbonkelberg is important because non-compliance can erode the potential conservation and fisheries management benefits of the MPA (CPMPA, 2002).

Government regulations that facilitate efforts of CPR users to self-organize to address CPR problems are more likely to be adopted by the community (Ostrom et al., 1999:281). Regimes that assume that all decisions must be made centrally, or regimes that ignore resource problems, are more likely to be opposed by the community (Ostrom et al., 1999:281). If rules are imposed by the state without consulting local CPR users, "local users may engage in a game of 'cops and robbers' with outside authorities" (Ostrom et al., 1999:281). Following this argument, externally imposed institutions can be greatly resisted by the community if those institutions do not acknowledge, complement or support their informal rules and institutions. This is what this research, through a legal pluralism perspective, is aiming to investigate.

[18] Hardin and Baden, 1977

3 METHODOLOGY

The information sought for in this research is qualitative in nature. Therefore a qualitative social science methods approach was employed in the research.

3.1 The methods

Information was gathered via interviews, direct observation, focus groups and documentation. The interviews, focus groups and direct observations were carried out in the field research component, which was initially scheduled for six weeks. The field component was however carried out over a period of three months: June, July and September 2006. This was to give enough time to introduce the research to the community members in Hangberg and to build rapport with the fishers. Review of documentation was ongoing throughout the research. The limitations of the methods used to gather information are discussed in section 3.4.

3.1.1 Research process

The field component was carried out in partnership with Maria Hauck, another researcher from the NORSA fisheries compliance project. Mrs. Hauck has over ten years research experience in compliance issues in small-scale fishing communities and played a significant role in the research. Although the research was carried out as a partnership, Mrs. Hauck's research included case studies along the whole west coast of the Western Cape Province. With respect to this case study, Mrs Hauck focused more on the law enforcement and institutional aspects relating to the informal WCRL fishery in the Karbonkelberg, while I focused more on the informal rules and how the informal fishery is organised. All interviews, observations and focus groups were carried out with Maria Hauck. Both researchers followed up on contacts and were both involved in organising interviews with informants. Mrs. Hauck's experience and participation in the research was very valuable in identifying key informants to interview, in guiding the interviews, and in analysing the conversations with respondents.

Furthermore, the presences of two female researchers on this case study of mixed ethnicity (of Canadian and Tanzanian descent), aided in gaining rapport with the community. The fishers targeted in this research are all males, who according to the national law are involved in an illegal activity. The presence of female researchers posed less of a threat, and was less intimidating to the fishers and the community of Hangberg, than if two male researchers had entered the community.

3.1.2 Participants

Relevant stakeholders to be interviewed were identified as:

Table 2. List of research stakeholders

Stakeholder	**Number interviewed**
Legal and illegal rock lobster fishers in Hangberg	12
Rock lobster salespersons within Hangberg	2
Boat owners or renters, fisher gear owners or renters	2
Fishery officers working in Hout Bay who would include MCM staff in Hout Bay and MPA staff.	6
Hangberg community leaders and Hangberg community members	6

Initial contact with the manager of the MPA patrol staff and the head MCM officer for Hout Bay through which the other enforcement staff were contacted was initiated through Dr. Merle Sowman, a researcher in the Environmental Evaluation Unit at the University of Cape Town. Initial contact with the illegal fishers was also achieved through Dr. Sowman who introduced us to a Hangberg community member who was also a fisher, and acted as the gatekeeper to Hangberg. Due to the unfamiliarity of Hangberg and the security in the area, the initial interview with this respondent was carried out in Hout Bay. All subsequent interviews were then conducted within Hangberg, which opened up opportunities to walk through Hangberg.

Due to the fact that the research was targeting participants in the illegal fishery, some of the participants were initially guarded and not open to share details. It was therefore very important for the research not to be perceived by the community as a threat or endangerment to the fishers. To gain rapport with the community, Hangberg was frequently visited which allowed the community to get used to the presence of

researchers amongst them, and to demonstrate that our presence was not a threat in any way. All visits to Hangberg and interviews were kept very informal, allowing the fishers to get to know the researchers and ask questions.

In total, interviews were conducted with ten illegal fishers interviewed either in the community or during direct observations, and two of the four legal small-scale WCRL permit holders were interviewed. Over thirty illegal fishers participated in the direct observations conducted on four separate occasions.[19] The total number of illegal fishers could not be estimated during research due to the limited time available for the research. Besides the fishers, five MCM staff, fourteen Table Mountain National Park Staff and seven community members were also either interviewed or involved in participatory observation or focus group workshops see appendix 6.2 for details. The few numbers of participants involved in the research was primarily due to time constraints and the use of a gatekeeper, discussed further in section 3.4.

3.1.3 Interviews

The identification of and access to respondents was done through a combination of quota sampling and snowball sampling. The quota sampling approach requires that a specific number of people from each of the relevant categories of stakeholders be interviewed (Neuman, 2000:197). However, because the information on informal rules is centred on the fishers and their behaviour, more fishers were interviewed than other stakeholders. A gatekeeper[20] was used to introduce a number of fishers to the research and to familiarise them with the research objectives. After the first interview, more fishers were identified without the use of the gatekeeper, but rather using snowball sampling technique. Snowball sampling, "(or network, chain, referral or reputational sampling) is a method for identifying and sampling (or selecting) the cases in a network" (Neuman, 2000:199). The network in this case refers to the fishers in Hout Bay. The assumption is that most fishers in the community are connected to one another through direct or indirect linkages. This method was found to be very useful because all the fishers knew each other and

[19] Section 3.1.5 provides more detail on the direct observations conducted
[20] A gatekeeper is someone with formal or informal authority to control access to a site. (Neuman, 2000:352)

lived within the vicinity of the fishing village of Hangberg (limitations on this approach are discussed in section 3.4).

All interviews were conducted in the field in the participant's natural local environment after initial contact and introductions were made. All interviews were semi-structured. The semi-structured interview approach made use of open-ended questions, giving room for the interviewee to elaborate answers, and also allowing for discussions around the topic. Interview questions were categorised into themes (see Box 2). The purpose of the interviews was to encourage the stakeholders to communicate the ways in which fisher behaviour and patterns are controlled among themselves, and to examine the behaviours that they are familiar with or have experience of. The interviews focused on more on the control mechanisms that were outside the realm of the national law. If the interviewee identified control mechanisms, then a second interview was carried out to confirm and clarify the mechanisms identified.

Box 0. Interview questions: themes and concepts

1. Respondent's life history: their background and knowledge of community. This was used as an anthropological method to help establish rapport and understand the social context.
2. Interaction/relationship among fishers: types of fisher; individual or group systems.
3. Control of fishers: how are fishers identified; are fishers per fishing spot controlled?
4. Control of boats: types used, and are they owned or to rent?
5. Control of gear: type used in certain spots or areas inshore. What gears do individual fishers and fishers in groups use? Are they to rent or owned?
6. Control of information on fishing areas
7. Control of access points: are they territorial? What exclusion mechanisms do they use?

3.1.4 Focus group interviews

Two focus groups[21] were conducted with the Table Mountain National Park (TMNP) Marine Unit. Both researchers also participated in the focus groups, but Maria Hauck was responsible for coordinating with the participants and also facilitated the focus groups. My role was more of an observer who listened to the participants to try and confirm the presence of informal rules and to elaborate and understand how the rules work. The focus groups were held in TMNP facilities in the Cape of Good Hope Protected Area. The first workshop, held on July 5th 2006, had six participants, including management, administrative staff and the heads of the marine ranger teams. The second workshop, on July 6th 2006, included eight marine rangers, responsible for patrolling the marine protected areas throughout the Cape Peninsula.

Box 1. Approach to focus groups (Adapted from Morgan (2001: 147)

Goal: To answer the research question by (a) clarifying findings of informal rules in community, and (b) understanding participants' thinking of how these informal rules work.

- All participants were of similar interest i.e. the TMNP Marine Unit.
- Specific and general questions set the agenda and guided discussion.
- Moderator facilitated interaction between participants allowing each participant time to contribute into discussion.
- Moderator allowed discussion to explore new areas relevant to research but re-focused off topic remarks.

The focus group interviews were a mixture of structured and less structured approaches so as to understand the participant's thinking as well as to pursue information regarding the research question. The agenda for the discussion was set based on information obtained from the other interviews. However, there was flexibility, allowing participants to talk to each other, and new information or points for discussion were welcomed.[22] The purpose of focus groups was to identify whether the participants were aware of the organisation of the informal fishery and any of the informal rules amongst fishers. Other

[21] "In focus groups the researcher asks questions from a number of respondents at the same time to 'stimulate discussion and thereby understand (through further analysis) the meanings and norms which underlie the group answers' (Bloor. et al., 2001:43)" (Marvasti, 2004:22).

[22] See Morgan, 2002. 'Focus group interviewing' pp 141-160. in Gubrium and Holstien, 2002

related factors, such as the challenges of non-compliance of the fishers and management challenges, were also discussed. The limitations of this approach are discussed in section 3.4.

3.1.5 Participant/Direct observation

Initially, the intent was to create opportunities for participant observation among the illegal fishers. However, during the course of the research, direct observation rather than participant observation was carried out on six different occasions. There were three primary reasons for this action. Firstly, to become a participant would require long-term interaction with the fishers, whereas this was a relatively short-term research. Secondly, if complete participant observation was carried out, the act of participating with the illegal fishers would have been considered as breaking the law. It was therefore pertinent to conduct direct observation among the illegal fishers. Thirdly, the physical constraints of going to sea with the illegal fishers meant that participant observation was an impractical option, leading to the use of direct observation as a viable alternative. Direct observations were carried out with the use of binoculars as an alternative to participant observation. The process of gaining access to illegal fishers and creating opportunities for observations took several lead-in interviews and the development of relationships.

There were six opportunities to directly observe the fishers (Table 2). The first two opportunities to observe the fishers were from the top of Sentinel Mountain, where the locations of where the illegal fishers launch their boats and fish were identified. There were two opportunities to observe the fishers while they were out at sea from the rocky shores behind Sentinel Mountain. The first day of direct observation at sea was conducted at the beginning of the field research, and the second close to the end of the research. There were also two opportunities to observe the fishers on their return from sea.

The aim of the initial observation with the fishers was to map the field, to evaluate whether the conceptual formulation of the research questions and objectives was suitable. This also allowed the fishers to get comfortable with the presence of researchers observing them, with the view to earn their trust. Some informal rules were identified in this early stage, and initial discussions helped to establish an understanding of the

workings of the informal fishery. The second direct observation at sea was carried out after the interview process had begun, and once definite informal control rules were identified. The aim of the second observation was to identify and confirm the informal rules in action in the daily and weekly routines. In addition, the surroundings (what is seen), the conversations (what is heard), the actions, the characteristics, and any arguments amongst stakeholders were also noted during observation. In addition, there were two opportunities where the fishers were observed when returning from sea. Additional opportunities to observe the fishers at sea could not be carried out due to the fact that the fishers were only out at sea depending on the weather and the presence of law enforcement. Furthermore, other relevant stakeholders were also sought to be interviewed within a limited time frame for the research (see section 3.4 for limitations on methodology).

3.1.6 Documentation

In addition to the field research, a variety of documents were reviewed for two purposes. Firstly, documents were reviewed to provide the general history and context of the research. Such documents included historical studies of the community of Hangberg and the establishment of Hout Bay, and documents on the history of fisheries in South Africa. Secondly, documents were reviewed to generate a detailed understanding of the formal laws governing WCRL under the national system. This is important in order to understand the difference between the national laws and the informal rules. These documents included legislation and management policies on WCRL, and articles on South African fisheries and compliance.

Table 3. Summary of direct observations.

Date	Place of meeting	Place of observation	Number of Hours	Number of participants	Comments
27-Jun-06	Illegal fisher's resident	Sentinel Mountain	Three-quarters of an hour	four	Walked through Hangberg and used common path to Sentinel Mountain where we were shown where the fishers launch their boats and where they normally harvest crayfish.
28-Jun-06	Hangberg community member's residence	Sentinel Mountain	half an hour	three	Walked to the top of Sentinel mountain with a Hangberg community member who showed us where the illegal fishers launch their boats from.
28-Jun-06	Illegal fisher's resident	Illegal fisher's resident	one	twelve	Observed fishers as they had just returned from sea preparing their catch for sale.
11-Jul-06	Illegal fisher's resident	Rocky shore behind Karbonkelberg Mountain	six	twelve	Observed fishers as they prepared bait, when they were out at sea and as they returned to shore
06-Sep-06	Illegal fisher's resident	Rocky shore behind Karbonkelberg Mountain	two	ten	Observed fishers as they returned to shore and walked with them to their meeting point
08-Sep-06	Illegal fisher's resident	Rocky shore behind Karbonkelberg Mountain	two and a half	over twenty	Observed fishers when they were out to sea. Also observed hand-line fishers.

3.2 Validity

Validity can be referred to as truth: "interpreted as the extent to which an account accurately represents the social phenomena to which it refers" (Marvasti, 2004:113). Marvasti suggests three ways of validating data, and these were adopted in this research:

1. Respondent validation: useful information gathered from one respondent during an interview was followed up in subsequent interviews with the same respondent and with other respondents. This helped to confirm the information gathered, although at times there were some clear disagreements. For example, while talking to one respondent, they mentioned that no small-scale WCRL quotas were awarded to anyone from Hangberg. However, after probing other respondents, it was learnt that four members from Hangberg received small-scale WCRL quotas and other members from Hangberg have shares in companies that received commercial WCRL quotas.
2. Triangulation: aggregating information from different sources. This was carried out by using the different methods, i.e. interviews, focus groups and direct observation. For example, the *modus operandi* of the informal fishery was first described to us through interviews with two respondents, which was also illustrated during the focus groups with the MPA staff. The information gathered from the interviews and the focus group was validated while directly observing the fishers.
3. Examining deviant cases: Any information gathered that was substantially different from the general pattern of responses was probed further.

3.3 Ethics

In recognition of various complaints about previous research studies that have unethically invaded people's privacy and human rights, this research followed some ethical principles. The following ethical principles have been adopted in this research process:[23]

1. Protection of participants: Participants were openly told about the goals and objectives of the research. They were also informed that although we are were based in the University of Cape Town; the project was initiated by the South African government through MCM. From the outset, we were open and transparent about the kind of information which was required from the research and about the general types of questions which would be asked. This gave the

[23] Neuman, 2000; Denzin and Lincoln, 2000; Gubrium and Holstein, 2001; Marvasti, 2004:133-144

participants an opportunity to decide beforehand whether or not they want to participate. Although the future use of this research can not be predicted, the spirit of the research is to create opportunity for dialogue between the relevant stakeholders, with the hope of understanding the issues surrounding non-compliance in the Karbonkelberg MPA.

2. Voluntary participation: participants in the research were not psychologically or physically forced to participate in the research. Neither was monetary award promised to any participant as a means of coercing them to participate in the research.

3. Confidentiality and anonymity: Names of respondents will not be disclosed for their protection and to respect their privacy. However, results of the research will be made available to the public and to authorities. If a respondent did not want whatever information they contributed to be included as part of the research findings, then their wish was respected and no reference was made to information which they supplied directly.

4. Neutrality and objectivity as a researcher while developing relationships in the community. As an observer, care was taken to avoid blurring the line between professional relationships versus a personal relationship with the people in the field, so as to avoid biased perspectives. This was difficult because required a careful balance between acquiring a rapport with the community in order to gain access, and maintaining distance in order to ensure neutrality. Therefore questions, requests or suggestive remarks that may have created conflicts of interest to either the respondent or to the researcher were avoided as much as possible.

5. Honesty about research: the duration and purpose of the research was made known to all stakeholders upon initial introduction. The objectives, and aim of the

research was not misrepresented, and the findings were not altered to fit the research objectives.

3.4 Limitations

Although precautions were taken in the types of methods that were used to gather information, there were some limitations. These are briefly described below.

1. Language barrier: The community of fishers are primarily Afrikaans speakers, a language which is not known to either of the researchers working on this project. English was the primary mode of communication with those participants who understood it. Translators from within the community were used when required; however, there is always a risk of information being lost or misrepresented through the translation process. In addition, although some participants said they were comfortable speaking in English, the depth of their responses or any metaphors or community sayings may have been diluted, thus the real essence of their comments may not have been captured to their full extent.

2. Interview bias: due to the fact that some of the respondents had low education and others had difficulty in English, some of the questions were posed as yes or no questions rather than open-ended questions. Caution was required, to ensure that the language being used did not lead the respondent to answer in a particular way, or even to hinder the respondent from answering openly.

3. Positionality and access to community: As a researcher, my ethnicity, cultural background and other ascriptive characteristics may have been perceived negatively by the community within which the research was carried out. This may have limited how open people were to agree to interviews with me, and also how much information they were inclined to give out during the interview (Neuman, 2000:358). That is why few fishers were identified and interviewed to begin with, and a working relationship with them was established. The snowball sampling

technique was then used to get acquainted with other fishers through them as they referred us to other fishers.

4. Focus groups: Challenges to focus group interviews (Neuman, 2000; Denzin and Lincoln, 2000; Gubrium and Holstein, 2001; Marvasti, 2004:133-144) as a method of research include:
    (i) one person dominating the discussion,
    (ii) respondents reluctance to discuss sensitive topics in the presence of others,
    (iii) shy participants,
    (iv) the interviewer managing group dynamics while asking questions simultaneously.

    To avoid this, the focus groups were carried out so that each participant was involved by having activities to participate in. For example, some questions asked each participant to write down their responses; each response was randomly mapped on a board and discussed by the whole group.

5. Gatekeeper: A gatekeeper was used to introduce us to other fishers. To avoid the channelling of the research "in line with existing networks of friendship and enmity, and equivalent boundaries" (Hammersley and Atkinson, 1983:73), or the creation of a stigma that "inhibits the cooperation of members" (Neuman, 2000:352), the use of a gatekeeper was limited only to the beginning of the research. Once a relationship with fishers was established, the snowball method was adopted. In addition, other stakeholders such as MPA staff and MCM staff also provided an introduction to some of the fishers they knew. However, it took a long time to be introduced to new fishers through snowballing, due to the amount of time required for the fishers to get to know us and become comfortable with the situation. This in turn limited the total number of fishers who could be approached during the field research.

6. Time: though the research was spaced over 3 months, interviews were not conducted on a daily basis. Participants were busy, or hesitant to give an interview. In addition, due to the sensitive nature of the enquiry, some respondents were reluctant to open up and give information immediately, and it frequently took time until they were comfortable to share information. Thus the given time for the field component was not enough time to build a rapport with a range of participants and to have enough time to conduct multiple interviews with them. Furthermore, the time limitations reduced the number of fishers interviewed to only a total of 12 fishers. However, with these twelve, interviews were conducted more than once, and seven of them were involved in the full day observations.

   The information sought in this research is sensitive because it reveals how the informal fishery in the Karbonkelberg is organized. This informal fishery, however, is considered illegal under South African law. Therefore, this information, if used by the wrong hands, can negatively affect the lives of the illegal fishers who participated in the research and could even lead to arrests. Hence the confidentiality of the fishers who participated in the research was respected.

Before describing the informal system and the informal rules discovered in the field research, the general context of the case study area is described in the next chapter.

4 BACKGROUND TO THE HOUT BAY CASE STUDY

This chapter describes the context for this research. This research is based in the Karbonkelberg Marine Protected Area, located in Hout Bay, which was established to protect the WCRL population. The Karbonkelberg is adjacent to a historical fishing community called Hangberg where fishers have lived off the sea since the early 1900s (Greene, 1991). However, this area was declared a no fishing zone in 2004, which has affected small-scale and subsistence fishers who depend on fishing and who have fished the area for generations.

This chapter is divided into two main sections. Section 4.1 describes the geographical and socio-economic context of Hangberg. Section 4.2 describes the Karbonkelberg Marine Protected Area.

4.1 Background to Hangberg

Hangberg is in the harbour town of Hout Bay, located in the Cape Peninsula region of the Western Cape Province of South Africa (Figure.2 below). Hangberg is tucked between the Karbonkelberg and the Sentinel mountains, and the wooded southern slopes of Table Mountain, about 20 km south of Cape Town's downtown centre (see Photo 1). Hangberg overlooks the harbour, and neighbours a suburb called 'The Heights'. The original inhabitants and descendents of the Hout Bay area are known as the Khoi Khoi (or Khoi San) people. The Hout Bay area also received an array of settlers from the 1600s, including the English, Dutch and French, who pioneered in establishing industries. Forestry, fishing and agriculture became the primary industries (Hout Bay Museum, 2006).

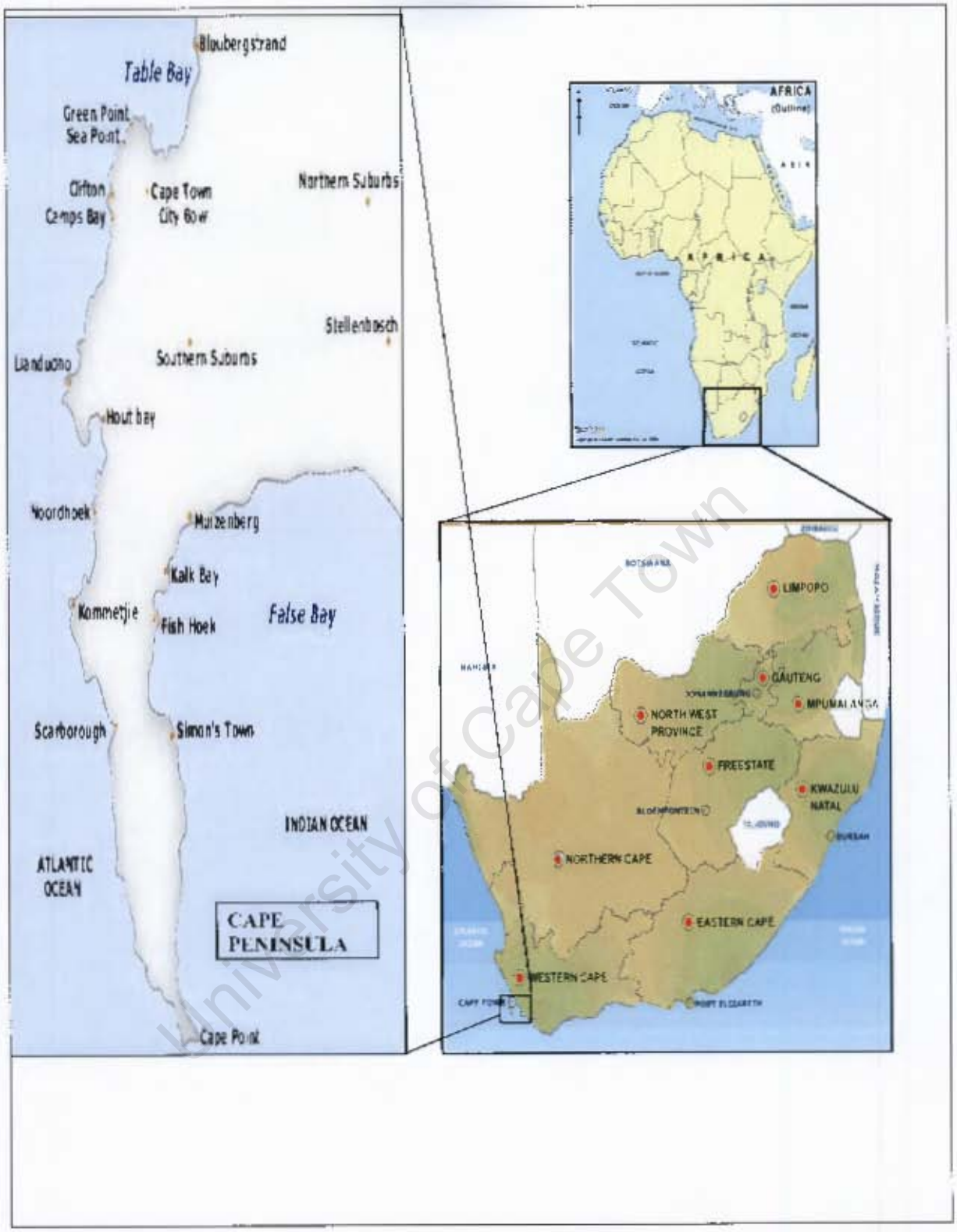

Figure 1. Map showing location of Hout Bay, South Africa
Map sources starting top centre clockwise: www.mapsofworld.com/africa-outline-map.htm; http://www.visitsouthafrica.com/Explore_SA/Explore_Index.asp; http://www.manorfest.co.za

4.1.1 Political and Socio-economic background of Hangberg

The Hout Bay area has a long history of fishing that can be traced back to the Stone Age (100-500AD) when the Khoi San were the first people to fish there (Hout Bay Museum, 2006). Historically, the Khoi San would build a wall, allowing fish to enter a pool with the tide, but trapping them as the tide went out.[24] This made it easier for the fishers to harvest, especially because they did not use boats. When the English settlers came they introduced boats and the traditional system was overshadowed. The arrival of the Trautman began the commercialization of the fishery in the late 1800s, and in the early 1900s a crayfish exporting business was set up by the Hout Bay Canning Company (Greene, 1991). In 1935, the South African government built landing facilities and a breakwater. Until the 1940s, the Hout Bay area had two main industries – farming and fishing. However, the 1950s-1970s saw a decrease in farming activity, as secondary fish processing industries began to emerge in Hout Bay, expanding the fishing industry. The resulting increase in labour demand led to an increased influx of labourers. However, the apartheid government of that time created firm racial divisions among the residents of Hout Bay.

Prior to the development of South Africa's fishing industry in the 1900s, the "Coloured"[25] community were the dominant actors in the fishing sector in the Western Cape (Sowman, 2006:61). During the development of the fishing industry and the introduction of the apartheid regime, those who were formerly classified as "Coloured" and "Black"[26] fishers were systematically excluded from attaining direct access to resources. In 1950, Hout Bay was declared a "White" area under the Group Areas Act of 1950. Under this act, the coloured and black communities were forced to re-settle. As the fishing industry continued to expand, the council flats built for coloured fishermen became overcrowded, and could not accommodate the increasing number of fishers. This resulted in growth in informal settlements in the Princess Street area of the harbour.

[24] Respondent D, *Interview*, 27-Jun-06
[25] Coloured is a former apartheid era term that referred to a diverse group of 'mixed race' people descended from slaves, the indigenous Khoi San peoples, black people and European settlers (Isaacs, 2006:52).
[26] Under the previous apartheid era, people were divided along racial lines. Black referred to the generic term in South Africa for those ethnic groups identified by apartheid policy as "Indian", "African" or "Coloured" (Isaacs, 2006:52).

Hangberg is one of the areas where council flats were initially built for "Coloured" fishermen.

The continued expansion of the harbour and the monopolization by the S.A Sea Products (the former Canning Company) and Irvin and Johnson (I&J) gradually forced small boat owners to sell, impacting the lives of small-scale fishermen. From the late 1970s to late 1980s as the fishing crews in Hout Bay expanded, there were three main groups of fishers.[27] Within each group, each crew member had their own job; profits were divided among everyone, including the children who assisted on the shore. The skipper received the most money. This system worked effectively, but problems arose in the late 1980s when the government 'interfered' and required the three groups to amalgamate.[28] The single fishers group was only entitled to catch an amount equal to one of the original, smaller fishers groups, resulting in a shortage in resource. This inevitably led to conflict.

The apartheid–era racial divisions remain prominent in the Hout Bay community, with different standards of housing and infrastructure existing between white, black and coloured groups. The small-scale fishing community in Hangberg have been left politically marginalized, with large numbers of 'squatters'. Evidence of overcrowding and the presence of an informal settlement is seen in Hangberg today (see Photo 2 and 3). Levels of unemployment and drug and alcohol abuse are high (Isaacs, 2006, Nicolson, 2005). In addition, the prevalence of diseases such as HIV/Aids and tuberculosis is high. Low levels of education, skills shortages and a lack of necessary capital have limited employment opportunities, and reduced people's ability to start up their own business venture. During the research process, it was evident that the majority of Hangberg residents either work on fishing boats as skippers, or in the fishing processing factories in the harbour. It was also apparent that many of the people employed in the fishing industry

[27] These groups seemed to be amongst the Hangberg community and were self organised as a corporation that got fishing rights.
[28] Respondent P, *Interview*, 12-Sept-06. Interview with respondent P was conducted by Maria Hauck and interview notes are used with permission from the interviewer.

were also involved in illegal fishing in order to supplement their income[29]. However, the majority of the illegal fishers had no formal employment. The illegal fishers from Hangberg mainly target WCRL. The WCRL (*Jasus lalandii*) are generally found close to shore from approximately 23°S, just north of Walvis Bay in Namibia to about 28°S near East London in South Africa, with commercial densities from about 25°S in Namibia to slightly east of the Cape of Good Hope in South Africa.

4.1.2 Fisheries Transformation

The Sea Shore Act of 1935 stated its purpose as to provide access to coastal resources to all South Africans. The introduction of apartheid in 1948 resulted in planning and development laws that restricted poor and black citizens access (Hauck and Sowman, 2003:38). During this time, the majority of fishing rights were allocated at little cost and were held by a small number of white owned companies. Under the new democratic government of 1994, equitable participation in the fishing industry was actively sought. Access rights have been redistributed to Historically Disadvantaged Individuals or HDIs, and share transfers, joint ventures and affirmative action have been encouraged.

Between 1992 and 1998 a Quota Board increased allocations to HDIs in small-scale fisheries (Isaacs, 2006:52). However, most of these allocations were to coloureds and political and social allies of the coloured vote, rather than to blacks (Isaacs, 2006:52). When the MLRA was promulgated in 1998, the Quota Board was abolished, appointing responsibility of allocation to the minister. Over 11,000 applications were lodged, hampering the state's administrative capability, delaying the allocations and reducing the time for holders to fulfil their catches. However, in 2006, Branch and Clark (2006:9) report the transformation of the fishing industry as "remarkable", where current figures show that HDIs account for "75% of the workforce, 77% of the salaries and 62% of the TAC". However, section 18(5) of the MLRA only stipulated that allocation of access rights should benefit "historically disadvantaged sectors of society"; bona fide fishers

[29] We observed two fishers who joined few illegal fishers during our observations. In addition, the fishers interviewed consistently affirmed that fishers who work on the boats or factories sometimes participate in illegal fishing of WCRL for income.

were at times left out of the allocation process in favour of other HDIs (Isaacs, 2006 and Sowman, 2006).

Indeed the transformation efforts of the past decade have been progressive. However, the focus on HDIs can potentially leave bona fide fishers on the periphery. With the status of an HDI, anyone can effectively apply for a fishing permit, regardless of their previous involvement or experience in fishing (Isaacs 2006:53). Within Hangberg, there are individuals who are both bona fide fishers and HDIs; however, due to the limitations on quotas, they remain unable to access a permit, in spite of their historical background in and dependence on fishing. With no long-term right, and without any possibility of a subsistence right to support their livelihood, these bona fide fishers may be left with little choice but to exploit WCRL illegally, because of need. This is the case in the Karbonkelberg sanctuary.

Small-scale fisheries

The MLRA also for the first time recognized and gave access to marine resources to subsistence fishers[30], and appointed a Subsistence Fisheries Task Group (SFTG) to advise on the management of subsistence fisheries. In 2000, MCM as a pilot programme invited applications for WCRL subsistence fishing permits. 3431 applications were received but only 1700 permits were issued. For subsistence or 'artisanal' fishers who hope to gain commercial rights, the SFTG recommended a sub category of 'limited commercial', as an intermediary step between levels (Isaacs, 2006:54). The SFTG also recommended that high value resources such as rock lobster and abalone would be more economically profitable if exported rather than consumed in the subsistence sector, giving subsistence fishers opportunity to boost themselves commercially. Thus within the same year, the subsistence pilot programme was converted to limited commercial rights.

[30] Section 19 of the MLRA defines a subsistence fisher as "a natural person who regularly catches fish for personal consumption or for the consumption of his or her dependents, 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".

The illegal fishing by fishers from Hangberg is of significance to the government, as they poach in the Karbonkelberg Marine Protected Area, declared as a West Coast Rock Lobster no-take zone. The next section describes the location of the Karbonkelberg and its purpose.

4.2 Marine Protected Areas and the Karbonkelberg sanctuary

The World Conservation Union (IUCN) defines the term 'Marine Protected Area' or MPA as follows:

> "any area of intertidal or subtidal terrain, together with its overlying waters and associated flora, fauna, historical and cultural features, which has been reserved by legislation to protect part or all of the enclosed environment" (IUCN, 1988:Section 17.38b).

An MPA can be also be loosely defined as follows:

> "an area of sea especially dedicated to the protection and maintenance of biodiversity, and of natural and associated cultural resources, and managed through legal or other effective means" (Commonwealth of Australia, 2003:4).

The second definition of an MPA has been adopted for the purpose of this dissertation.

In 1988, the IUCN General Assembly called upon national governments, international agencies and the non-governmental community "To provide for the protection, restoration, wise use, understanding and enjoyment of the marine heritage of the world in perpetuity through the creation of a global, representative system of marine protected areas...." (IUCN, 1988: Section 17.38). It is with this mandate that South Africa has established MPAs along its coastline. There are 19 MPAs, and their management is shared between South African National Parks (SANParks), Marine Coastal Management (MCM and Ezemvelo KwaZulu-Natal Wildlife (EKZN Wildlife).

4.2.1 The Karbonkelberg sanctuary

The Karbonkelberg MPA area is part of the Table Mountain National Park Marine Protected Area (TMNP MPA), also referred to as the Cape Peninsula Marine Protected Area (CPMPA) (Figure. 3 below). It was established in 2004 with the following purpose:

1. To protect the marine environment and the marine biodiversity
2. To allow over-exploited fish populations to recover, and to protect breeding stocks of economically important species
3. To reduce conflict between competing users of the MPA
4. To encourage economic activities for the previously disadvantaged communities in the vicinity of the MPA. (CPMPA, 2002)

The TMNP MPA is run by Table Mountain National Park (TMNP) in conjunction with MCM. The TMNP MPA surrounds the whole of the Cape Peninsula and is managed and patrolled by SANParks, who are contracted by MCM. SANParks is responsible for the administrative and inshore law enforcement, and for educational activities within the MPA zone. SANParks is also responsible for enforcing the laws applying to national parks. MCM enforces the regulations regarding fishing and is responsible for the issuing permits, quotas and law enforcement.

The Karbonkelberg is one of six 'sanctuary' or 'no-take zones' within the TMNP MPA. 'No-take' zones are "areas of the sea that are permanently closed to all fishing" (Gell and Roberts, 2003). This restricted zone shown in Figure.3 below extends from the Sentinel in Hout Bay to Oudekraal, and 3.3 nautical miles offshore at the widest point (DEAT, 2004a). The purpose of the 'no-take' zones according to Section 6 of the MPA regulations, is to "allow marine species and ecosystems in those zones to exist in a natural state to further fulfil South Africa's commitments to the conservation of biodiversity and to enhance eco-tourism opportunities" (DEAT, 2004b).

The establishment of the Karbonkelberg, although well-intended for conservation purposes, has restricted the harvesting of WCRL, and negatively affected the livelihoods

of the Hangberg fishers. In addition, a large number of fishers in Hangberg are without legal rights to marine resources. This is primarily due to the removal of WCRL subsistence rights, the limited number of small-scale commercial fishing quotas available and failing to adequately complete quota applications because of the difficulty of understanding the forms. As a result, traditional fishing livelihoods have been deemed illegal (Nicolson, 2005). These factors have led to an increase in illegal fishing (poaching) in the area, and an increasing concern over non-compliance.

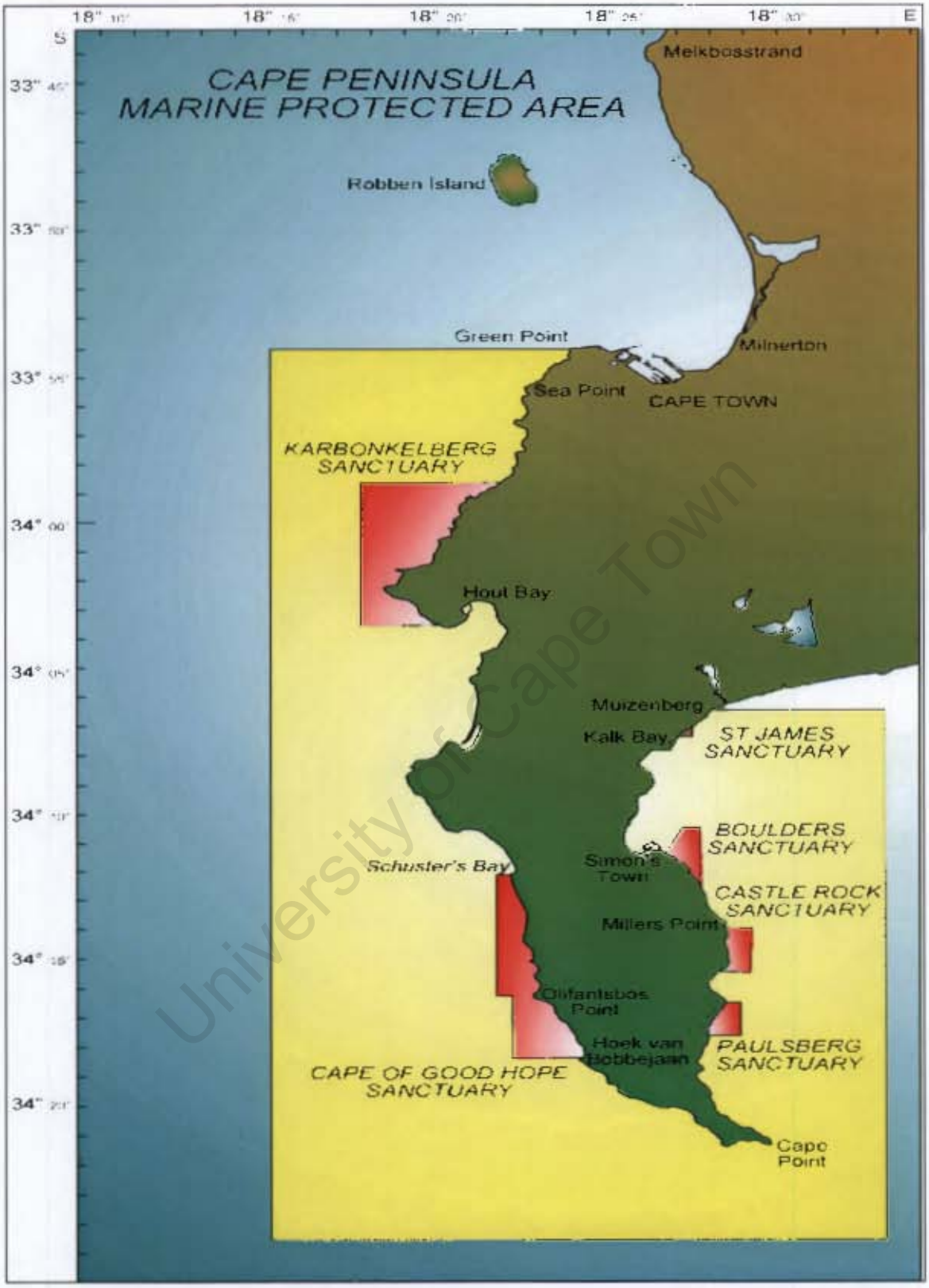

Figure 2.The Cape Peninsula Marine Protected Area with its six sanctuary zones (DEAT, 2004a)

5 LEGAL PLURALITY IN THE KARBONKELBERG: NATIONAL LAW AND INFORMAL RULES

The Karbonkelberg was identified as one of the key areas in the TMNP MPA with a high non-compliance rate. This was due to the identification of illegal fishing practices among focus group participants. As mentioned in section 3.1, this research aims to understand the non-compliance in the Karbonkelberg through a legal pluralism perspective. The approach will identify whether there is a plurality of legal orders present in the area, and will explore the extent to which non-compliance is a direct result of conflicting legal orders.

The formal or national law requires a person wishing to harvest WCRL to obtain either a commercial, limited commercial or a recreational access right under the MLRA. These access rights are long-term, for a period of 15 years, and are allocated through an expensive process with many evaluative criteria. The permit holder is also prohibited from fishing within the Karbonkelberg no-take zone.

The organised illegal fishery in Karbonkelberg sanctuary is referred to as the informal fishery. The term 'poacher' and 'illegal fisher' are at times used interchangeably in reference to the fishers who harvest WCRL without formal access rights in the Karbonkelberg. The term 'poacher' is used by enforcement staff, but the illegal fishers in Hangberg refer to and regard themselves as fishers, not poachers. In the informal fishery, the organized groups of poachers have no formal form of access right. They have developed their own system of harvesting WCRL, and their own informal rules among themselves. This informal fishery causes a particular compliance problem, as the poachers harvest WCRL in the Karbonkelberg no-take zone.

The first part of this chapter describes the formal laws and the challenges in compliance. The second part describes the informal fishery with its informal rules.

5.1 The Formal Legal Order: national legislation and management of WCRL

The laws and management policies governing the harvest of WCRL in South Africa reflect how the ideology of the 'Tragedy of the Commons' affects fisheries policy. In South Africa, the sea and seashore, and the management of fisheries are nationalised. Access or property rights in South African fisheries are allocated in the form of quotas by the national government, following principles such as sustainability, equity, and justice. These principles are set out in statutes such as the Bill of Rights and the Marine Living Resources Act (MLRA).

5.1.1 Legislation and management of WCRL

Prior to 1994, marine resources were governed by various national laws. The Sea Shore Act of 1935 invested ownership of the sea and seashore in the State President, and controlled access through quotas. After the democratic elections of 1994, new policies and legislation were implemented under the new statutory framework of the constitution.

The Constitution and the Marine Living Resources Act

The Bill of Rights, enacted with the final Constitution in 1996, provides the statutory framework for South African law, including fisheries management decisions. Under the new Constitution, a Marine Fisheries White paper was published to "develop a fair system of allocating access rights, particularly to those who were previously denied such access" (Hauck and Sowman, 2003:49). This led to the promulgation of the Marine Living Resources Act (MLRA) passed in September 1998. The purpose of the MLRA is as follows:

> "to provide for the conservation of the marine ecosystem, the long-term sustainable utilisation of marine living resources and the orderly access to exploitation, utilisation and protection of certain marine living resources" (MLRA, 1998).

The MLRA incorporated the democratic and constitutional principles of sustainability, optimum utilization, stability, equity and transformation within South African fisheries. Sustainability, optimal utilization and stability are achieved by restricting access to

marine resources and allocating access rights. In terms of equity and transformation, the MLRA acknowledges the need to restructure the fishery industry to address historical imbalances and to achieve equity within all branches of the industry (section 2(j) of the MLRA, 1998). In keeping with this, the MLRA encourages the Minister of Environment and Tourism to pay particular regard to those from historically disadvantaged sectors of society when allocating rights (MLRA, 1998: section 18).

Management of the WCRL fishery

The management of WCRL falls under the jurisdiction of the Chief Directorate of Marine and Coastal Management, or MCM. MCM is a directorate of the Department of Environmental Affairs and Tourism (DEAT). MCM is responsible for controlling boat launching sites, conducting research on stocks, allocating and managing rights, and regulating recreational fishing for WCRL and other species (MCM, 2006). MCM controls the harvesting of WCRL through six primary control mechanisms implemented through science and research (Branch and Clark, 2006:7). These primary control mechanisms are described below.

1. Total Allowable Catches or TACs. This fixes the annual tonnage of WCRL that can be caught. The TAC is then divided proportionally among rights holders. This is the main control method; it places a limit, and helps to stabilize the catch, allowing statistics of the stock to be generated. In addition, the annual catch tonnage can be adjusted in relation to the stock abundance.
2. Total Allowable Effort or TAE. This limits the number of people, boats or traps that can be used to harvest the WCRL TAC established. Bag limits are also part of the TAE, restricting the amount of fish an individual may catch; for example, in recreational fishing.
3. Closed seasons. This is used to control catch effort, especially during breeding seasons to allow reproduction. Theoretically, closing fishing periods during breeding seasons are favoured to allow individual species to concentrate in one area to breed without being harvested. Closed seasons also allow disturbed species time to recover to increase their success in breeding.

4. Closed areas or 'no-take' MPAs. Closed off fishing grounds help to stabilize stocks, control dumping and control the targeting of by-catch with relatively lower enforcement costs. This method is also highly favoured to protect the entire ecosystem and breeding stocks, while also permitting base-line research to be done.
5. Gear restrictions. Using exclusion or escape devices in fishing gears minimizes the fishing of non-targeted species. In addition, it can control the size of individuals caught using specified mesh or hook sizes.
6. Size restrictions. Minimum sizes are set to prevent the harvesting of juveniles or spawning individuals. (Branch and Clark, 2006:7).

WCRL industry sectors

The domestic WCRL industry is divided into commercial, limited commercial, recreational and subsistence sectors. The commercial sector permits right holders to harvest 1000kg or more of WCRL for sale in specified areas and seasons. The recreational sector permits a right holder to harvest only four WCRL per day for own consumption in specified areas and seasons. The "limited commercial" or "small-scale commercial" sector was recommended by the Subsistence Fisheries Task Group (SFTG) to include those artisanal fishers who fish for sale. The subsistence sector, though the policy has not been enacted, intends to provide access to coastal communities for food security and basic needs (DEAT, 2006:29).

In the Hout Bay area, where the research was conducted, there is no subsistence sector, only commercial, limited commercial and recreational sectors. The illegal fishers interviewed in this research would fall under this limited commercial sector if they had a formal legal permit. With a limited commercial permit, a permit holder is allowed to fish, collect, disturb, keep or control, or be in possession of WCRL from 1 June to 15 November in any year, both dates inclusive (MLRA regulations, 1998: section 9).

The limited commercial WCRL industry is divided into six zones and fourteen areas in which a certain amount of TAC is permitted for allocation of rights. Four of these zones which cover eight of the areas are along the western coast of South Africa, as shown in Figure 4 below. Fishers in Hangberg and the general Hout Bay area fall under Zone D Area 7 but fishers from other areas can also apply for rights in Zone D. In the current 2006 allocations, Zone D had the highest TAC set at 163.15 tonnes for medium-term and 150 tonnes for long-term.[31] In total, 187 medium-term rights granted with an average allocation of 778kg and 207 long-term rights granted with an average of 724kg allocated per right in Zone D.[32]

[31] Respondent K, *Interview*, 21-Jun-06
[32] Respondent K, *Interview*, 21-Jun-06

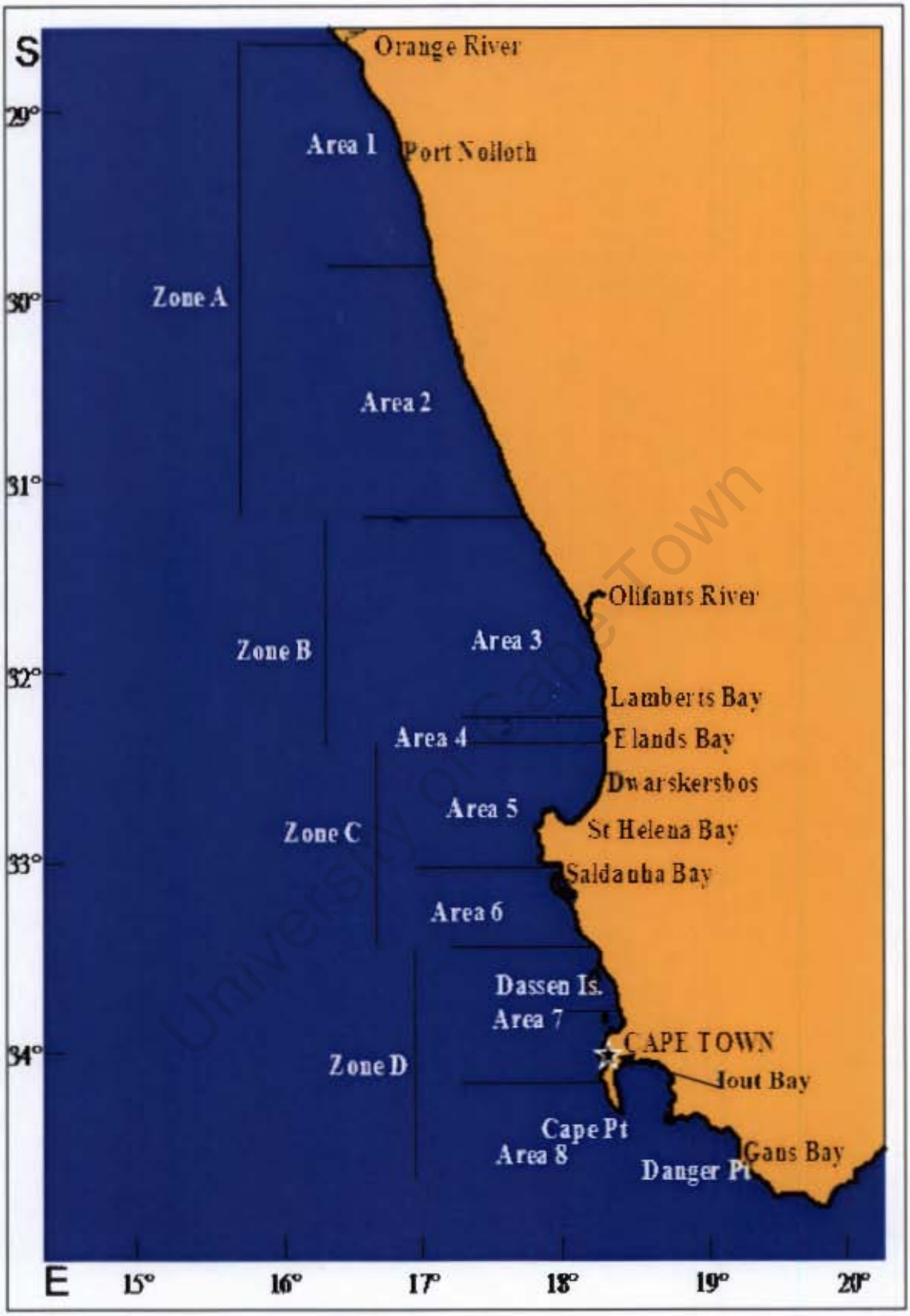

Figure 3. WCRL fishing zones along the western coast of South Africa.
(Source: Respondent K, *Interview*, 21-Jun-06)

(Source: Respondent K, *Interview*, 21-Jun-06)

5.1.2 Formal allocation of property rights under the MLRA

The Marine Fisheries Policy of 1997 adopts a 'Tragedy of the Commons' perspective; it states that an "open or liberative access of the resource, inevitably leads to the overexploitation, depletion or even extinction of stocks, wasteful overcapitalisation of the industry and consequent loss of income and jobs" (Witbooi, 2006:36) . Hence the policy recommended that the MLRA establish a limited entry system, whereby property rights are allocated based on a percentage of the TAC. The Marine Fisheries Policy gives a definition of an access right:

> "the right to catch or to harvest one or more specified of the South Africa's living marine resources through the exercising of some specific effort, subject to and conditional upon certain restrictions, constraints or limitations" (DEAT, 1997: section 4.6.2.1).

These rights stipulate the following:

1. The fishing effort in terms of type and size of vessel; the type of fishing gear or fishing method; the size of individual fish species to be caught; areas or zones where right may be exercised; and the time period within a year which right may be exercised.
2. The quantity of the species and bycatch in terms of a percentage of the TAC. (DEAT, 1997: section 4.6.2.1)

These rights are sold to fishers and companies through a public tender process, and those who get access pay a fee. Applicants can apply for either medium-term or long-term rights. Long-term rights are favoured because according to Branch and Clark (2006:9), long-term rights "promote industrial stability and reduce time costs for managing rights applications".

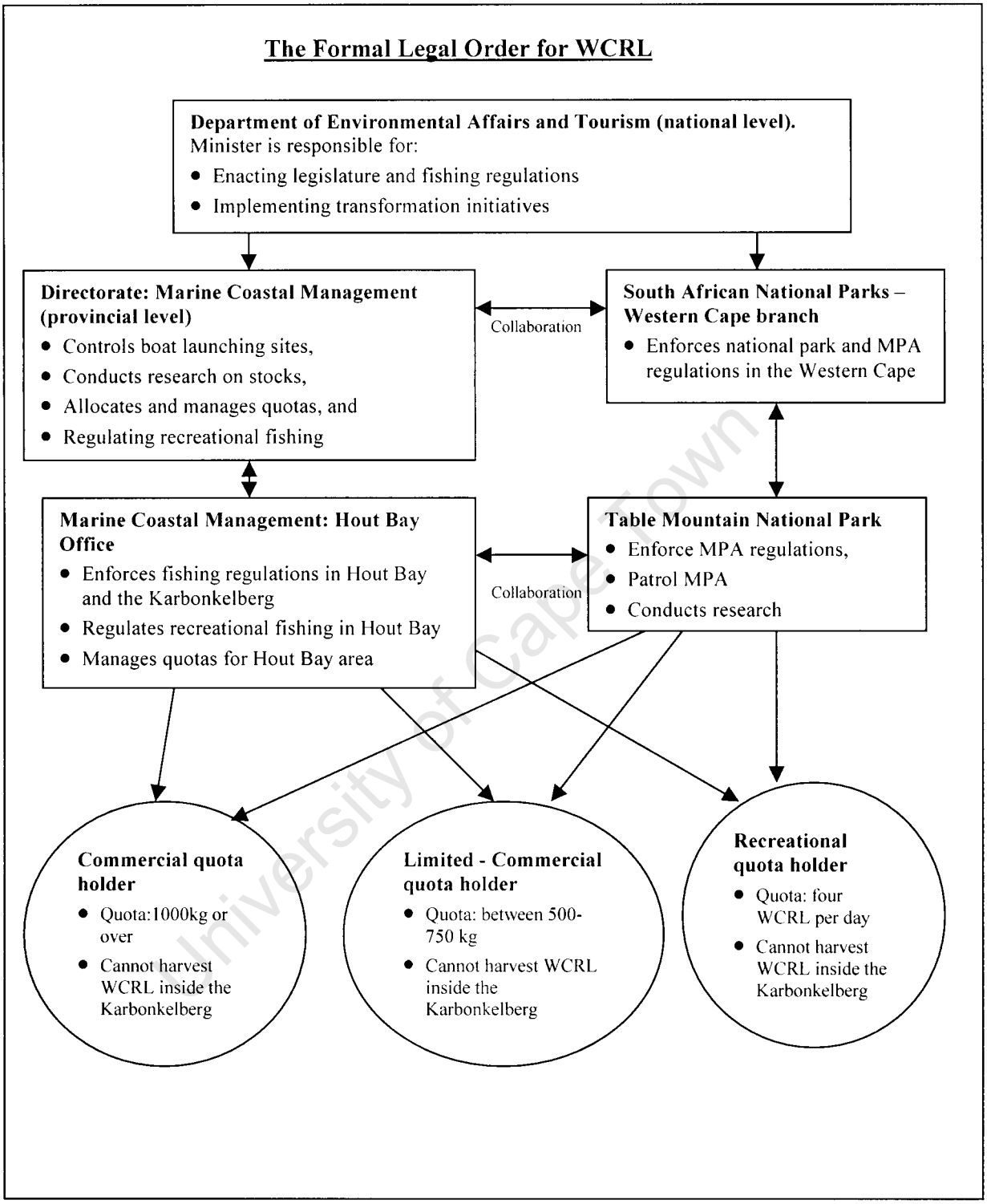

Figure 5. Structure of formal legal order (by Navonaeli Omari)

5.2 Evolution of the Informal Fishery

As the fishing industry expanded in the 1950s-70s, prior to the MLRA, the government focused on access rights for the commercial and recreational industry rather than subsistence fishing (Hauck and Sowman, 2003:42). As a result, Hauck and Sowman (2003:44) describe the management of subsistence and non-commercial fishers as "ad hoc, inconsistent and unfair", leaving them with little legal access to marine resources. Non-commercial small-scale and subsistence fishers obtained access on an informal basis and were classified under regulations designed for recreational fishers (Hauck and Sowman, 2003:43). Non-commercial fishers were often unaware of the regulations; those who were considered it unfair that they were regulated the same as recreational fishers (Hauck et al, 2002). Consequently, they harvested resources informally and were often arrested or fined. Currently, people choose to fish informally even though they know it is illegal. In Hangberg, this practice eventually led to an informal system with social norms that developed into informal rules amongst the illegal fishers. Three main factors led to the evolution of the informal fishery: discontentment of the national law; perception that the national law is illegitimate; and people's livelihoods. These three factors are discussed below.

5.2.1 Discontentment with the formal law

It is estimated that there are 200 fishers in Hangberg alone.[33] Of these, only four long-term limited commercial rights for WCRL were issued to people from Hangberg. This leaves the majority of Hangberg fishers dependent on recreational WCRL permits which restrict the daily harvest to only four crayfish per day. Informal discussions with fishers and other community members highlighted a general discontentment with the rights allocation process. This was primarily due to the expense of the allocation process, difficulties in understanding the legal procedures, and a sense of unfairness in regard to the stipulated criteria for rights applications.

[33] Head MCM officer at Hout Bay, *Interview*, 19-May-06

The MLRA has also increased its fees and verification procedures, in order "to avoid allocating rights to those who lacked the capability to exercise their rights and had applied with the sole intention of selling their paper quotas" (Branch and Clark, 2006:9). Full commercial fishing rights application fees were placed at R6000 instead of R100, and at R500 for "limited commercial" rights (Branch and Clark, 2006:9). Small-scale applicants, with no other means of income apart from fishing, generally consider these fees to be too high.[34] Even the fishers who had been awarded a permit found the application fees too expensive.[35]

The 2006 allocation process for WCRL had specific evaluation criteria summarised in Table 3 below. According to MCM management, this was the most effective way to ensure that actual fishers who had the capacity to fully meet the allocated quota received the long-term right (Cockcroft, 2006, pers. comm).

Table 4. Evaluation Criteria for WCRL long-term permits
(Respondent K, Interview, 21-Jun-06)

Exclusionary Criteria	Scoring Criteria
• Personal Involvement in fishing • Utilisation of medium term right (MTRH only) • Access to a suitable vessel • Natural South African person • Residence in the fishing zone • Serious non-compliance	• Involvement as crew on vessels • Investment (NB for MTRH) • Job creation • Reliance on the resource • Marketing and processing • Transformation (HDP & Gender, CSI, Skills)

The allocation process seeks to increase the participation of Historically Disadvantaged Individuals or HDIs. This is carried out by redistributing allocation rights to HDIs. In addition, HDIs who operate small, medium and micro-enterprises (SMMEs) are encouraged to apply for WCRL rights.[36] This is in accordance with national policy aimed at readdressing the former apartheid laws and planning and development laws by actively facilitating transformation in the fishing industry.

[34] Respondent D, *Interview*, 20-May-06; Respondent E, *Interview*, 28-Jun-06.
[35] Respondent A, *Interview*, 28-Jun-06; Respondent B, *Interview*, 13-Jul-06.
[36] In terms of the fishing industry SMMEs would constitute an entity with less than 100 employees and more that R4 million turnover per year (DEAT 2004c)

Despite the progressive transformation which is taking place in the fisheries industry, this is not immediately apparent in Hangberg. Although a detailed evaluative criterion is in place to ensure equal opportunity for fishers to apply for quota, participants expressed frustration that the small-scale fishers from Hangberg were being excluded from these rights.[37] In particular, fishers with low education levels found the application forms difficult. Some fishers would hire expensive consultants to complete their application forms. However, this still could not guarantee a successful application and some of the applicants still found that they did not meet the required criteria. Specifically, the small-scale fishers find it challenging to prove their HDI status. Additionally they fail to meet the criteria that requires fishers to both own their own vessels, and have sufficient capital for investment. It is often their poverty that creates the need for a quota; however, their lack of resources and capital restricts their access to permits, and limits their opportunity for a secure livelihood. Furthermore, the respondents claimed that some of the consultants conned them for money, or would use the fisher's status as a bona fide fisher to secure a quota for a company that awarded them minimal shares.

The research participants regard themselves as bona fide fishers because they have been reliant on fishing for most of their lives, and depend upon it for their economic stability. The denial of long-term rights has a disadvantageous impact upon their livelihoods. Alternative livelihood options are limited, due to low levels of education, and a narrow skills base among small-scale fishers within Hangberg. Geographical accessibility and minimal necessary capital investment makes WCRL a lucrative resource for the Hangberg fishers. In the absence of access rights or quotas, many fishers choose to fish illegally within the MPA. This has led to the establishment of organised illegal fishing groups, acknowledged by both MCM staff and TMNP MPA staff.

[37]Respondent C, *Interview*, 28-Jun-06; Respondent M, *Interview*, 29-Jun-06; Direct observation, 06-Sept-06; Direct observation, 08-Sept-06.

5.2.2 Livelihoods of fishers

The fishers in Hangberg have low education levels and are a historically disadvantaged community. As a result, they are a deprived community with little development of the area, high unemployment and few livelihood options for fishers.[38] There is a lack of waged employment opportunities within Hangberg, and their limited qualifications and skills base leaves the fishers without legal financial resources to support their dependents. The only skill they have to make a living is fishing. Fishing in Hangberg is a skill, and a trade that is essential for their survival and for the provision of their children. Fishing is how their families have survived for generations.

The government's emphasis on access rights & quotas has had a negative impact on the subsistence fishers. Although the formal system is necessary because of the environmental significance of the MPA, for the Hangberg community it has failed to regard the social and physical realities in Hangberg. As a result, people take things into their own hands, and disregard the rules which have been established for the protection of the environment. In response to the various restrictions placed upon the fishers, they have established an informal fishery with social norms, which has evolved over time.

5.2.3 Legitimacy of the national law

When a formal legal order is considered legitimate, the people subject to this legal order are generally more inclined to comply with its laws. A management system is seen as legitimate firstly when justified according to some moral principles and values (Jentoft, 2000) and secondly depending upon the impression created by the affecting interests' decision and judgment (Weber (1978 cited by Jentoft, 2000:143). These two views on legitimacy are apparent in the informal fishery in the Karbonkelberg. Moral principles and values are neither universal nor static. The morals and values of the illegal fishers in Hangberg have evolved over time and are a result of their culture, beliefs and their interaction with each other. The decisions and judgments of the affected individuals are subjective and are influenced by experience. The overall impression the illegal fishers

[38] See Nicolson, 2005:20-29.

have of the formal law is that it is unfair and unjust, hence illegitimate in the eyes of the illegal fishers. The formal national law is seen as illegitimate for three main reasons:

1. The subsistence and recreational permit systems are perceived as inadequate.

There are no subsistence WCRL rights in Hout Bay. There are only recreational permits available. These permits allow the fishers to harvest very few crayfish and all the areas where fishing is permitted under these permits are far from Hangberg. The illegal fishers do not consider it logical that they should spend more money to travel long distances to fish few WCRL when they have an area within walking distance to their community where they can fish. For the fishers it is not cost effective for them to travel long distances to fish for small quantities of fish that they may not even sell.[39]

2. The limited-commercial quotas are perceived as nearly impossible to acquire.

One respondent produced records of quota applications over a ten year period; in spite of his numerous applications, and having fished WCRL in the Karbonkelberg for over twenty years, he has never been allocated a quota. The majority of the poachers, as well as members of the community, expressed frustration and disappointment in the allocation process; they feel that it is too expensive and complicated for poor uneducated fishers. They also said that there are so many criteria that the government said would help them identify who the 'real fishers' are, yet after the allocation was announced the fishers remarked that some of the people who got allocations were not even fishers.[40]

3. The fishers and the community feel left out of the management decision making.

The government depended upon organized user groups during the allocation process to make decisions on the allocation of rights, but the poachers feel like their decisions are not heard. Furthermore, the participants from the community and the

[39] Respondent D, *Interview*, 20-May-06.
[40] Respondent D, *Interview*, 27-Jun-06; Respondent N, *Interview*, 28-Jun-06; Respondent C, *Interview*, 28-Jun-06.

poachers do not understand how the government can allocate quotas to 'real fishers' if they do not know them. During a discussion with two community members, an analogy was given to demonstrate why it should be important for the government to know who the 'real fishers'. The respondent commented 'how can some one lend to another something like R2000 and not know who that person who they are lending to is, where they live and what they do for a living? Yet the authorities don't check if people who get quota actually need it' (paraphrased).[41] The fishers report that they have not heard or seen anyone from MCM come into Hangberg to check who the fishers in that area are, and who applied for quota.[42]

The majority of respondents from Hangberg feel that the MCM officials who are making management decisions are completely detached from the community who are most affected by the laws. Jentoft (2000:143) warns that this leads to a lack of support for the management system at the grass-root level. This is the case in Hangberg; the government's management system is perceived as one that ignores the small-scale fishers of Hangberg, and is therefore unjust. People feel that "no one looks after the fishers" so they look after themselves and fish to survive.[43] It is an accepted way to make a living in the community; people understand that there are no livelihood alternatives for the fishers and do not look down on those who poach.[44]

5.3 The Informal Legal Order: social norms and informal rules in the small-scale informal fishery

Information on the informal fishery was obtained primarily through informal interviews, direct observation and the two focus groups with the TMNP MPA staff. TMNP MPA staff identified the areas where WCRL is targeted by illegal fishers; this is shown in

[41] Respondent O, *Interview*, 28-Jun-06; Respondent E, *Interview*, 28-Jun-06.
[42] Respondent A, *Interview*, 13-Jun-06; Respondent D, *Interview*, 27-Jun-06; Respondent O, *Interview*, 28-Jun-06; Respondent N, *Interview*, 28-Jun-06.
[43] Respondent D, *Interview*, 27- Jun-06
[44] Respondent M, *Interview*, 29-Jun-06

Figure 5 below.[45] The MPA staff also highlighted three distinct groups of WCRL illegal fishers: permit holders poaching for extra income; recreational fishers poaching for extra money; or subsistence fishers poaching for food. The informal fishers in the Karbonkelberg are the most organised; the fishers are mainly Hangberg residents, who poach in organised groups, either for food or for money.

Within the informal fishery, there are three different types of illegal fishers. The difference between illegal fishers depends on how much they harvest, the techniques they use, and their underlying incentive to poach. The three types are outlined below.

1. Large-scale fisher groups: poachers with big boats who are able to go far out from the coast. These poachers harvest large quantities of WCRL, primarily for money and occasionally for drugs.
2. Small-scale fisher groups: use low capital investment, and either fish for food, or sell for money for other basic needs. Some groups were reported to be involved in drugs. They usually fish in groups, and use rowboats and simple ring-net traps.
3. Small-scale hand-line fishers: individuals who use very minimal equipment, and fish small amounts off the rocks along the coast. This is primarily for food, or sometimes hand-line fishers will sell the few crayfish they catch for money to buy food.

Late in the research process, another category of illegal fishers were identified. These were divers who use wet suits and snorkels to dive between the rocks to harvest WCRL. Due to the time constraints of the research process, it was not possible to conduct detailed observations of these individuals. Further research to assess the significance of the divers in the informal fishery is recommended.

[45] TMNP, *Focus group*, 06-Jul-06

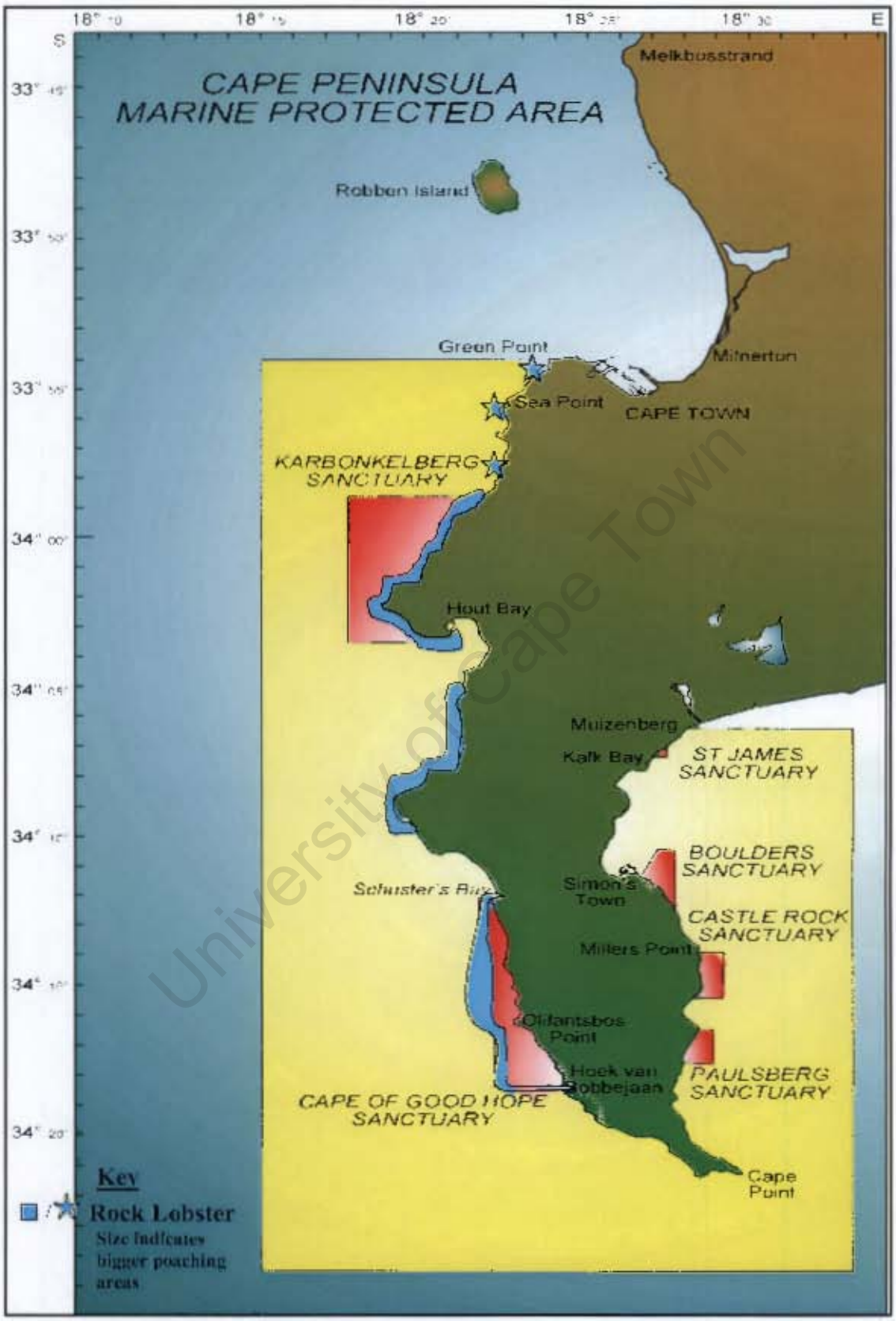

Figure 4. Areas of WCRL poaching within the TMNP MPA
Figure developed during the focus group with the TMNP MPA staff on the 5th and 6th of July 2006.

This research focuses on small-scale illegal fishers, and does not elaborate more on the large scale illegal fishers because of two primary reasons. Firstly, the research process had time constraints. At the beginning of the field research, the Hangberg respondents were hesitant to introduce the researchers to some large-scale illegal fishers, as we were unknown to the community. It was implied that the large-scale illegal fishers were more cautious of strangers, and could be dangerous to approach. It would have taken time to identify these fishers and be able to learn their system. It was easier to build a rapport within the small-scale illegal fishery. Secondly, the NORSA project focuses on non-compliance in small-scale fisheries. Hence this research is focusing on identifying the presence of informal rules in the small-scale informal fishery in the Karbonkelberg. There are two different types of illegal small-scale fishers identified in the Karbonkelberg: small-scale fisher groups and small-scale hand-line fishers. The '*modus operandi*' for both these small-scale fishers is discussed below. Informal rules were identified within the *modus operandi* of the small-scale fishing groups and are outlined in section 5.3.2.

5.3.1 Hand-line fishery

Hand-line fishers go fishing alone or in pairs, but they do not have an organised system, nor do they fish in groups. A fisher will catch small quantities of WCRL for consumption or to sell for food. Hand-line fishers consider it an art and a "skill" to be able to fish using a hand-line.[46] They are proud of their skill, and teach each other from when they are young. When being taught, the student starts out as a carrier for the bait and catch until they can handle the line.

An experienced hand-line fisher explained the commonly used technique for catching WCRL. The WCRL is baited using a simple fishing line, which is wound on a plastic rim, and held with bare hands. A fish net is made into a small pouch to hold the bait (pilchards or fish heads); this is tied to the end of the fish line and weighted with rocks. An example of a hand-line is shown in photo 4. Hand-line fishers do not use nets because the underwater currents near the rocks can wash it away. A fisher explained that the "communication between you and the crayfish is between your two fingers"; in other

[46] Respondent D, *Interview*, 01-Jul-06

words, a skilled fisher will be able to identify the kind of fish they have caught by recognising the tug at the end of the line.[47] Once the fisher feels a tug, they pull up the line quickly onto the rocks, take the crayfish by the hand and place it into a bag.

The weather plays a crucial role when a hand-line fisher is deciding whether or not to go out to the rocks. Spring tides are regarded as good fishing seasons, but in terms of the daily weather patterns, fishers do not go out when it is too windy because of the danger of being blown off the rocks. A good judgement of when the water is calm enough to go fishing is when the water is lowest along the rocks at the pier in Hout Bay harbour.[48] Other factors that determine when the fishers go out to fish include the visibility of law enforcement officials, and how desperately they require food or money.

The informal rules for the hand-line fishery are classified according to Ostrom's typology of the various informal rules in CPRs referred to in section 2.2.2 (also see Ostrom, 1999).

1. ***Boundary rules:*** Hand-line fishers are all residents of Hangberg. Residents from other communities are not allowed to harvest WCRL from the Karbonkelberg. Other recreational or subsistence hand-line fishers fish in the harbour or in other communities along the coast.
2. ***Position rules:*** An experienced hand-line fisher also acts as a teacher who teaches other community members the skill of using the hand-line. The student starts out as a carrier until they have mastered the hand-line.
3. ***Authority rules:*** Hand-line fishers can fish anywhere along the rocks, and the amount they harvest is only limited by the weather and conditions of the sea.
4. ***Scope rules:*** hand-line fishing is for subsistence purposes only. Hand-line fishers may also sell crayfish in order to meet their basic needs for food.

[47] Respondent D, *Interview*, 01-Jul-06
[48] Respondent D, *Interview*, 01-Jul-06; Respondent A, *Interview*, 28-Jun-06.

5.3.2 Small-scale fisher groups

Hand-line fishers differ from the small-scale fisher groups in that the fisher groups are organised and fish in groups, and they use boats so they can harvest larger quantities. The informants identified about 10-12 groups in Hangberg involved in WCRL poaching, who all know each other. These poacher groups have routine methods and rules with respect to fishing, leadership, roles, sales and payment, and relations with other fishers. All the groups of poachers organize themselves in a similar way as to what is described; however some of the rules may vary slightly.

i. Groups and leadership roles

Research showed that the majority of small-scale fisher group members are "rastas" and that they are all male.[49] Many of the members are young, and are often referred to as "lighties".[50] Some of the poachers are as young as twelve or thirteen years of age. There can be up to fifteen fishers working in a group; groups do not take fishers from other groups as each man has his own group. The fishers are not required to fish in the same group for the rest of their lives. They are free to move to another group if they choose. A fisher cannot work for two different groups at the same time. If one decides to fish in another group, then they must leave the original group. Therefore the groups change in numbers and size depending on whether someone has moved to another group, or has broken off to form a group of their own.

Some of the illegal fishers did not have a permanent group of people who fished with them, but they did own boats. The boat owner can be approached by people in the community who need or want to go out to fish, and a request made to borrow the boat. The boat owner then sets a payment in terms of a certain percentage of the catch for the use of the boat.

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[49] **Rasta,** or the **Rastafari movement,** "is a religion and philosophy that accepts Haile Selassie I, the former (and last) emperor of Ethiopia, as Jah (the Rasta name for God incarnate, and part of the Holy Trinity as the messiah promised to return in the Bible. The name *Rastafari* comes from *Ras (Duke or Chief) Tafari Makonnen,* the pre-coronation name of Haile Selassie I".
(source: http://en.wikipedia.org/wiki/Rastafari_movement)

[50] 'Lighties' is colloquial speech members of Hangberg use to refer to young people, particularly those still in high school.

Interviews with MCM and TMNP MPA staff revealed that each member in a group has a specific role to play. From the focus group, a diagram was developed that illustrated the links between the different players in the informal fishery (Figure 5.3 below). When the fishers were interviewed, they were able to elaborate further on what these different roles entail. Within a group there is a group leader, and there are skippers, carriers and watchmen. These roles were also evident during the direct observations.

Group leaders

Each group has a main group leader who controls access to the boat and ring-nets. The group leader has the ultimate authority in a group, has the final word on whether people will go out to sea on that day or not, and how many times they go out to sea. The group leader is also responsible for maintaining the boat, the ring-nets, and the motor (if they have one) and acquiring bait. Anyone can become a leader if they own a boat and ring nets; this will allow them to control access. If someone saves enough to buy a boat, they can call people to fish together. If a fisher wishes to join a group, they must approach the leader and ask permission. If the leader declines, they must seek out another group.

Skippers

The skipper is considered to be the second senior in the command chain. Skippers will go out on the boat, and will often have worked with the group leader for a long time. During direct observations, the group leader explained that he does not organize who goes out; the skippers organize themselves. A skipper may approach the group leader if he wants to go out to sea, and plans which other skipper will go on the boat with him. If the group wishes to do more than one trip in a day, they organize a rotation so that when some skippers get back to shore, another two or three skippers go out to sea next while the others rest.

Carriers

Next in the command chain are the carriers; these are responsible for carrying the bait, oars, motor, and catch to and fro from shore to their meeting or storage place. One of the

carriers explained that he usually works with a particular skipper, although direct observation revealed that the carriers change all the time depending on who is available and ready to go over the mountain.

Watchmen

At the bottom of the chain of command are the watchmen, who are responsible for keeping watch over the group from the top of Sentinel Mountain. Some lookouts also remain near to the harbour, in order to alert the group if a patrol boat is going out. When a person joins a group, they will start off as a lookout or a carrier and are taught until the ring leader feels they can go on the boat as a skipper.

ii. What determines when they fish?

The illegal fishers fish mostly at night, and although it is dangerous, they are willing to take the risk. They may sometimes go out during the day if the sea is calm, depending on whether there are patrols and how desperate they are for money. There are four key factors that influence whether they go out to fishing or not:

1. Access to a boat. Poachers who do not want to use a hand-line can only go fishing if they have access to a boat. Access to a boat is easy if they are part of a group. If they are not part of a group, then their access to a boat will depend if they can find a boat owner without a group and make a request for their boat, as mentioned above.
2. The winds and tide. The rowboats used by small-scale poacher groups are very small, and strong winds increase their risk of being blown over. Poachers will watch the weather patterns, and only go out when the sea is not rough, which is usually when there is no South-East Wind.[51] Poachers also check the extent to which the sea foams at the rocks down at the harbour. If the water is very foamy, then they know the sea is particularly rough, and they will not go out to sea.
3. Visibility of law enforcement. MCM and TMNP MPA law enforcement staff randomly patrol the Karbonkelberg for illegal activity. Despite of the law enforcement patrols, the poachers who participated in this research indicted no

[51] Respondent D, *Interview*, 27-Jun-06; Respondent A, *Interview*, 28-Jun-06

fear of law enforcement. In fact, it emerged that the TMNP MPA staff are often fearful of the poachers; law enforcement staff members have experienced violent confrontations with the poachers from Hangberg in the past. As a result, the TMNP MPA staff patrol with care. The poachers acknowledge that they see the TMNP MPA staff more frequently than MCM, and they report that the patrols do not last for many hours. If the poachers are caught, law enforcement can confiscate their boats and equipment because they are prohibited in the Karbonkelberg. If anyone is caught with WCRL, they can either be fined or arrested. However, this does not deter the poachers from fishing. One poacher admitted that if law enforcement confiscates their boats and equipment, the group is negatively affected because they cannot go out to fish. However, he said they would find another boat and get other equipment and go back to poaching. One poacher admitted that he has been fined and in each occasion he has paid the fine, and has gone straight back to poach. The poachers are willing to take the risk of being caught and fined because fishing is their livelihood, and they have no other way to earn food and money.

4. How desperate fisher is. The poachers prefer fishing at night, but if they are in need of money, they will risk going out in the day. They will even risk going out in rough weather if their need is great enough.

iii. How they fish

On two occasions during the fieldwork, there was opportunity to make direct observation of a poaching group while they were at sea. These observations were also an opportune time to interact with other members from the community.

Preparing the bait and equipment

Prior to going to sea, the fishers prepare their bait. This consists primarily of pilchards or fish heads that the group leader buys from the fish factories at the harbour. Four group members were observed cutting up the bait into pieces; these are placed into small hand-made net bags, which are then placed into a bigger bag (see photo 5). When this is completed, the group prepares to go out to sea.

When a group goes to sea, everyone fishes together; however, group members are not required to participate every time. The group leader does not organize who goes fishing; it is left to the fishers to inform him who wishes to fish, and to organize themselves. By the time the group is preparing to go to sea, they will know between themselves who is going, and the rest of the group will remain in the community. The group leader will always go to the rocks when the group goes to fish, although he will not always go in the boat.

They must then hike over the mountain to the rocky shore where they keep their boat. Between them, they will carry bait, oars, ring-nets, and the motor (if the boat has one). The poachers use narrow, man-made paths, which become very slippery after rain. TMNP MPA staff have the authority to confiscate boats which are found along the shore in the Karbonkelberg; because no form of fishing is permitted in the no-take zone, boats should not be found there, and ought to be kept at the harbour. However, in spite of this risk, many of the Hangberg poaching groups will leave their boats on the rocky shore in the Karbonkelberg. An example of the boats they use is shown in photo 6.

Preparing to go to sea

The poachers go out to sea from an area near Seal Island, behind Sentinel Mountain. Photo 7 shows the view of rocks from which the poachers launch, taken from the top of Sentinel Mountain. On reaching the launch site, some group members put the baits into the ring-nets and tie them to the net (photo 8). The ring-nets are made by the fishers for about R170 each, and are made out of a metal loop and fish net woven into a funnel shape at the bottom where the bait is placed. Empty plastic containers are tied to the end of a rope attached to the ring-net; these float on the surface of the water, acting as markers. Other members of the group bring the boat to the water and prepare to go out to sea (Photo 9). If the water is slightly rough they will use the motor, but if the water is nice and calm, they just use the oars. Two or three people always go out in a boat for safety, reasons while the other members of the groups stay near shore as lookouts. There is no set system for deciding where they go; the fishers know the fishing grounds by experience, so they decide on the day which particular spot they will try.

Fishers at sea

Once the fishers have located a good fishing spot, they will fish until they have finished their bait or until the tide comes in. The nets are sometimes left out at sea for a while as they move to a different fishing spot, coming back to retrieve the nets on their way back to shore. During the direct observations, the group spent between two and three hours waiting for the boat that had gone out at sea. The amount of time the fishers stay out at sea depends on a range of factors:

1. How rough the sea is (the rougher it is the faster they come back),
2. How fast they use up the bait (dependent on how much crayfish there is),
3. How much crayfish they catch (if they catch a lot in short time, or if they've stayed out for many hours without catching anything, they come back);
4. Patrol boats (if they see MCM or SANParks they immediately get back to the nearest shore).

Back from sea

Each group has people waiting on shore to collect the catch when the boats return to shore. When boats are coming back, they help each other to pull them to shore and store their boats near the fishing grounds. Each group is responsible for their own boats; they do not tow away each other's boats. When the boat comes back to the rocks, the ring leader takes all the catch and counts how much was caught. On a good day, a group can catch up to two potato sacks worth of fish, or about 35kg. There are usually two carriers; one takes the catch from shore to the top of the mountain, then the other from the top of the mountain to the central meeting point. The other members of the group, except those who were on the boat, pack the catch and any remaining bait, take the oars, motor (if have one) and the ring-nets back to a specific place where the equipment is stored. Each group re-convenes at a known meeting place. The group under observation re-convened at the leader's place.

iv. Sales and payment

The group leader is also middleman between group and buyers. If the catch was not for a specific buyer but for themselves, the boat owner will split the catch amongst them. If the catch was for a specific buyer, he will keep all of it. The buyers contact the middleman to check if there is crayfish, and they arrange time and place to meet when they come back from sea. If the buyer fails to collect their 'order' of crayfish, the catch is stored until the group leader contacts other potential buyers he knows. Each group has their own frequent merchants/buyers who are mostly local residents of the general Hout Bay area, tourists, restaurants or people from other towns. People from the community of Hangberg know the middlemen and where they sell the catch, so they often pass by the merchant's to check if there is any catch for sale. An exchange with people within the community is very informal and *ad hoc* because it is highly dependent on whether the group leader has an 'order' from another buyer.

The market

It is generally acknowledged that the group leader is the only person in the group who locates buyers, although this may not be a steadfast rule. The group leader acts as the middleman between the poachers and the market. The middleman establishes a market by building a clientele; this is described as a "game of chance".[52] The ring leader starts by sitting and walking at the harbour with a sample of catch, approaching people who walk around to ask them if they want to buy. When someone takes an interest in the lobster for sale, they make a deal and the middleman/ring leader takes the catch to buyer. This is repeated until the leader builds a working relationship with the buyer. If the ring leader builds a large clientele, it implies a big market for crayfish. The ring leader thus plays an important economic role because the clientele he builds determines the market and hence the demand for the crayfish they poach. The higher the demand, the more crayfish the groups will harvest.

[52] Respondent D, *Interview*, 01-Jul-06

Size and prices

Certain buyers want specific sizes of crayfish, and some place orders for specific quantities. If they catch crayfish that is not the size the buyer has requested, they do not throw it out. The small crayfish are either sold to other buyers, or are kept for the members of the group or their families. If they catch crayfish with eggs, they may throw them back to sea, but sometimes they will scrape the eggs and sell them separately. The crayfish is usually sold for R25-R30 per lobster, or at around R80/kg, but if another buyer offers a better price they will take it- they go "for the most money".[53] The group leader will try to sell immediately, because the price of frozen crayfish is not as high as the price for fresh catch.

Payment

In terms of finances, the leader is responsible for handling money and dividing it between the group members. Once the leader has received the money from the sale, he will deduct the expenses for bait and diesel if they own a motor. The money is then divided so that the leader and the skippers get an equal share of money, and the balance is split between the lookouts and carriers. A good catch is considered to be one that covers the bait (about R30), covers the petrol if they use a motor (R60), compensates for the time spent, and has some additional money remaining.

v. Territoriality

The informal fishing groups from Hangberg do not have territoriality between the groups. A territory in this case refers to an area that a group defines as their property that they use and defend from other groups of fishers. The fishers repeatedly said "the sea doesn't belong to anyone" or "the sea is for everyone" in the sense that they felt that no one can restrict others to harvest resources from the Karbonkelberg or restrict them from certain areas.[54] During an interview, one fisher explained that the groups do not control and defend a particular area in the Karbonkelberg. He said when they want to go fishing and they find another group in a boat in a fishing spot, they will either find another spot or

[53] Respondent C, *Interview*, 28-Jun-06.
[54] Respondent D, *Interview*, 27-Jun-06; Respondent E, *Interview*, 28-Jun-06; *Direct observation*, 8-Sept-06; TMNP marine rangers, *Focus group*, 06-Jul-06.

come back another time. If they come back the next day, their group is not prohibited to fish in the same spot where the other group previously was. A group controls access to WCRL in a particular area only if their nets are in the water in that area. Once a group's nets are out of the water, that area is free for another group to go fish there.

Exclusion of non-residents

The only form of territoriality the poachers admit is towards poachers who are not residents of Hangberg. Fishers who are not from Hangberg are restricted from fishing in the Karbonkelberg sanctuary by the local poaching groups in Hangberg. One respondent stated that it is not acceptable; fishers from other communities have their own "backyard" so they "mustn't come to my backyard".[55] Hangberg fishers may use covert actions such as taking the catch or boats to keep fishers from other communities away. A story was told of one incident during which a fisher from another community was thrown into the sea; however, details and the outcome remained unclear.[56] The resource is not open access. As mentioned in section 2.1.1, an open access resource is one that is unregulated and gives free and open access to all. In Hangberg, the local small-scale groups regulate users of the Karbonkelberg, and restrict access to those who are not from Hangberg. There is a kind of ownership even in common property through informal and even illegal means (Durrenberger and Palsson 1987:511). In this particular example, the poachers in Hangberg take 'ownership' of the Karbonkelberg by intimidating fishers from other areas.

[55] Respondent C, *Interview*, 28-Jun-06
[56] Respondent A, *Interview*, 28-Jun-06

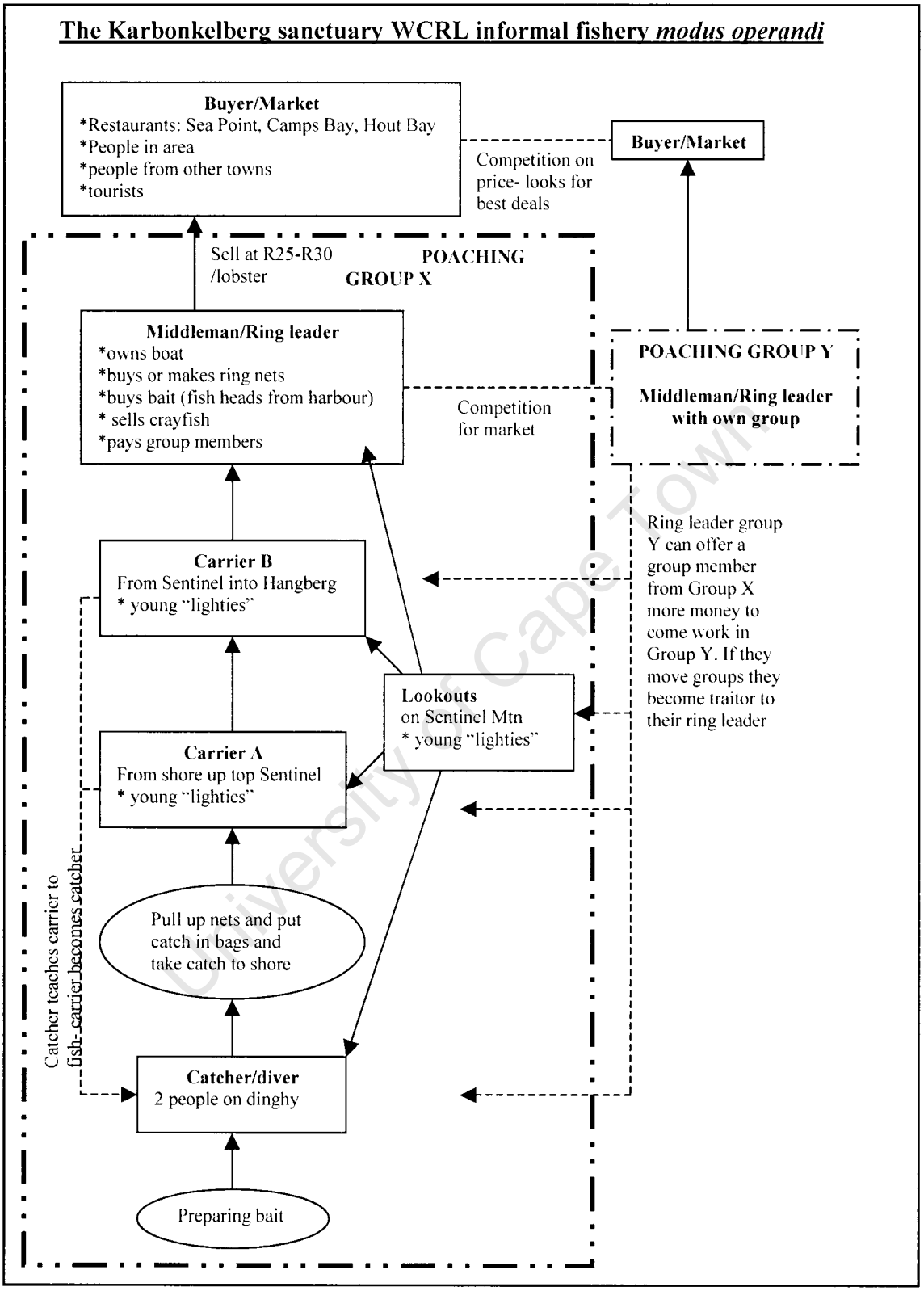

Figure 7. Modus operandi of the WCRL informal fishery in the Karbonkelberg sanctuary (by Navonaeli Omari)

5.3.3 Summary of informal rules within small-scale poaching groups fishers

As previously mentioned, the first research question was to determine if there is legal plurality in the Karbonkelberg sanctuary and to identify the informal rules in the informal fishery. These rules were sometimes stated by informants, but others were observed during interviews and participation observation and are summarized in the next section. The informal rules were also classified according to Ostrom's typology of the various informal rules in CPRs (Ostrom, 1999).

1. ***Boundary rules***.
    a. Fishing is permitted anywhere from behind Sentinel Mountain towards Sandy Bay.
    b. The sea is for everyone. People from Hangberg fish for WCRL in the Karbonkelberg sanctuary at anytime, in any spot they want.
    c. If a group's nets are in a particular area, another group cannot fish there until the nets are removed. Therefore a group controls access to a particular area as long as their nets are there.
    d. People from another town cannot normally fish in the Karbonkelberg sanctuary. Only people from the area of Hangberg can fish there.
    e. A resident from another community can only fish in the Karbonkelberg if they join one of groups from Hangberg. Joining a group from Hangberg removes any conflict. Given that all the poacher groups know each other, it is not hard to notice 'outsiders'.
2. ***Position rules***. Each person in a group has a role each time they go out fishing. When someone joins a group, they start out as a carrier and make their way up the ladder until they become a skipper. The carrier and lookouts have minimum say on the activities.
3. ***Authority rules***. A carrier can not be a skipper unless the ring leader agrees that they are capable of going on the boat. A skipper can however take on the position as carrier.

a. The ring leader maintains the boat, controls finances, has final say on whether they go out or not.
b. No territoriality; they fish where they can find fish on a first come first served
c. Two or three fishers in each boat for safety precautions
d. Nothing is thrown back to sea. If they catch small crayfish they share them amongst themselves. If they catch crayfish with eggs, the ring leader can decide whether to throw back into the sea, or sell the eggs separately if there is a buyer

4. ***Aggregation rules***.
    a. Some groups do not allow drugs to be taken within the group. Other groups allow drugs; others limit it only to marijuana.
    b. No stealing from other groups: if someone disregards the rule and steals crayfish from another group, the stolen catch is located and returned.
5. ***Payoff rules***.
    a. Ring leader controls finances.
    b. Skipper and ring leader get equal cut of money from any sale while carriers and lookouts get half their amount.
    c. Have specific buyers but best price wins catch. Only ring leader can act as middleman between group and buyers.

This section presented the presence of an informal fishery with its informal rules used as normative practices that the poachers developed and adhere to voluntarily. This informal fishery with its informal rules falls within a formal management system with formal legal laws that regulate and manage WCRL. The formal management system represents a legal order which is maintained and enforced by the government. The degree to which the normative practices in the informal fishery constitute a legal order depends on how enduring these rules are, the extent to which they are enforced, and the methods used to ensure compliance to these informal rules. The fishers interviewed were reluctant to volunteer information on how they enforce these rules; more time would be required to

deepen rapport with the fishers to understand the sanctions they employ. In addition, this research was carried out over a short time frame limiting the ability to investigate fully whether these rules are maintained over time.

5.4 Significance of the Informal Fishery

This informal fishery is of significance for three main reasons. Firstly, the informal fishery is an outcome of the fishers feeling marginalised and excluded from management decision-making. Secondly, as a result, this informal fishery is seen as legitimate in the eyes of the fishers. Thirdly, as a consequence, the informal fishery has created conflict, and consequently non-compliance, as a result of the legal plurality in the Karbonkelberg.

5.4.1 Exclusion from management decisions facilitated cooperation

"The people are impoverished, there are no alternative livelihoods and they feel marginalised", so they follow their own informal system and their informal rules for survival.[57] The fishers in Hangberg feel marginalised, left with little employment opportunities, and are dependent on the resources provided in the Karbonkelberg for survival. The close proximity of the Karbonkelberg and the low technology required to harvest WCRL enables the fishers to extract WCRL according to their need. Their exclusion from management decision making on the very resource they depend on has led them to develop their own informal system to survive.

The management policies, under the formal law that has nationalised the WCRL fishery, are based on the 'Tragedy of the Commons' approach. This approach adopts assumptions made in Hardin's model, the Prisoner's Dilemma Game, and the Rational Choice Theory. These theories are not necessarily wrong; however, they are also not always applicable for every situation regarding the management of a CPR. The informal fishery in the Karbonkelberg demonstrates that the assumptions made under these models are not

[57] Respondent K, *Interview*, 21-Jun-06.

always applicable. If one applied the theory of the prisoner's dilemma game and rational choice theory, one would not expect cooperation between the poachers in Hangberg.

i. Prisoner's Dilemma Game and the informal fishery

In the Prisoner's Dilemma Game (PDG) each individual player (small-scale fisher) has two alternative actions: to defect or to cooperate. To defect means that each fisher will act so as to maximise the benefits regardless of other fishers. However, the defect strategy is not the optimal strategy a fisher can choose. According to the PDG, the optimal strategy is for fishers to cooperate to yield maximum benefits. The PDG, when applied to a CPR, assumes that there is no communication and thus no ability to cooperate. As a result, each fisher will opt for the best individual strategy, which is to defect. Therefore, based on these assumptions, applying the PDG to the informal fishery in the Karbonkelberg would infer that each fisher would choose the defect strategy.

The fishers in Hangberg demonstrate communication and cooperation. Although there is communication, some fishers may still choose not to cooperate and fish alone using a hand-line. If a fisher only needs two or three WCRL for food, they are more likely to fish alone using a hand-line. If they want to fish larger quantities, they are more likely to join a group; this will provide access to the gear and resources required to fish larger quantities. Cooperation between the fishers is dependent on the physical and economic constraints they face. If a fisher was not economically restrained, they could choose not to cooperate with others in group. One could buy a wet suit which would allow him to harvest large quantities of WCRL without the need to cooperate with other fishers. Therefore, to defect is the optimal strategy to harvest large quantities of WCRL, if they are without economic constraints. However, for those who cannot afford to buy efficient gears, the optimal strategy to maximise the benefits from the Karbonkelberg is to cooperate and form groups in which they reap these benefits.

ii. Rational Choice Theory and the informal fishery

According to the rational choice theory, individuals will, out of self-interest, make decisions that they believe are the best to achieve a given goal. For a CPR user, this

would be to maximise their benefits from the resource. An individual may voluntarily engage in collective action to maximise their benefits. However, it is argued that if an individual cannot be excluded from receiving the benefits of a collective action, then the individual has no incentive to partake in the collective production of that good.[58] Following this argument, the research would have been expected to show that the fishers in Hangberg are not engaged in collective action. The collective action in this case refers to cooperation amongst fishers to harvest WCRL. Collective action would not be necessary for the fishers because the resource is easily accessible and easily harvested without the need to cooperate with other fishers to produce the good. However, the fishers in Hangberg demonstrate that cooperation and collective action in harvesting WCRL maximises their collective benefits. Their focus is not on harvesting the maximum amount of WCRL per individual, rather, maximising the benefits of the group. It is important to bear in mind that the maximisation of benefits may not be the only factor driving fishers to participate in collective action; traditions and social norms also play a part.

iii. Exclusion facilitated cooperation

The informal fishery in the Karbonkelberg demonstrates communication and CPR users can cooperate in their own interests producing voluntary collective action. When the small-scale fishers in Hangberg were left unrecognized and without access rights by the government, the situation brought the fishers together to favour interactions of trust and reciprocity. As they became more willing to work with each other to overcome their CPR dilemma and increase their benefits, common rules and norms were developed. In their situation, the dilemma was not resource depletion, but access to the resource. Therefore, voluntary collective action and maximising individual interests are not mutually exclusive. Rather, an individual may maximise their benefits by cooperating in a collective.

[58] See section 2.1.3

iv. Cooperation reinforced the informal fishery

The fishers in Hangberg became more organised as they cooperated, and developed normative fishing practices. These norms are ingrained in the procedures and behaviours of the fishers to a greater extent than the national law. Observations of the informal fishery implied that the fishers tend to adhere to these normative practices above the formal legal order. However it is not possible from these observations to make a conclusive statement as to whether or not these normative practices constitute a legal order.

Legal plurality is described as the presence of more than one legal order.[59] There are five different legal orders: state law, religious law, customary law, donor law and local law (Meinzen-Dick and Pradhan (2001:11). Local law is the mixture of customary (or folk) law, new forms of self–regulation, elements of old and new state law, donor laws and social norms that are expressed and used at a local level (Benda-Beckmann and Spiertz (1997 cited by Meinzen-Dick and Pradhan 2001:11). Therefore the concept of legal plurality in the Karbonkelberg would refer to the juxtaposition of formal national laws regarding the harvest of WCRL, and a local law based on the observed normative practices.

5.4.2 Legitimacy of the informal fishery

The government is not always the only important legitimating institution in CPR management.[60] This was seen to be the case in the Karbonkelberg. Although the poachers are clearly breaking the law by fishing in a no-take zone in the Karbonkelberg MPA without legal access rights, the participants from the community and even the managers and law enforcement staff all seemed to be understanding towards the poachers. Some agreed that the poachers were doing wrong, while others acknowledged that illegal fishers have no other means of survival. A number of participants were somewhat indifferent about the poachers; they regarded poaching as fishing, and fishing was their lifestyle, occupation and livelihood. In a sense, the informal fishery could be regarded as being legitimate by the poachers, and to some extent by the Hangberg community.

[59] See section 2.2
[60] See Meinzen-Dick and Pradhan (2001:11)

The poachers have certain beliefs and values that they use to justify poaching. The informal rules in the informal fishery complement these beliefs and values more than the formal law.

1. ***Fishers, not poachers.*** The fishers in Hangberg have been fishing their whole lives and have depended on fishing for their livelihoods. They do not agree that they should be restricted from fishing if they need food/money when the resource is close in proximity and accessible; they feel entitled to use this resource. The informal rules do not restrict them from fishing whereas the formal law does. Thus by following the informal rules, the poachers can fish anytime they want.

2. ***Free for all.*** The poachers believe and repeatedly affirmed that anyone should have access to the sea and its resources. The fishers do not see why the government should restrict them from using a resource that they believe is free for all. When the poachers are seen by patrols and are asked about their permits they remark "God says we don't need a permit to fish."[61] The sea is right at their doorstep and they see it as a resource that is there to use, and the informal fishery supports this belief. On the other hand the formal laws are viewed as taking away the sea that is God's free gift for everyone, so the informal rules are seen as more legitimate to follow.

3. ***Fishing is not a crime.*** The illegal fishers do not regard themselves as poachers. They are fishers, and though they do not have legal permits to harvest WCRL, fishing is not a crime. The fishers do not equate poaching to crime because they believe that fishing is not harmful to anyone. Instead of breaking into houses because they do not have money, they would rather 'rob' the sea.[62] The fishers claim that fishing, although illegal, is not considered as wrong. It is the formal law that perceives the action as a felony. In fact the illegal fishers feel that it is the big quota holders with many boats and lots of money who are damaging the

[61] TMNP marine rangers, *Focus group*, 06-Jul-06
[62] Respondent D, *Interview*, 27-Jun-06

resource, even though they do not fish in the Karbonkelberg. Since there are no alternatives for the fishers to get money for food, other basic needs, or even some luxury items, poaching is seen as the 'better' thing to do. The formal law deems these fishers as criminals, while the informal fishery regards them as fishers, legitimizing their claim that their actions should not be looked down upon as transgressions.

5.4.3 Conflict and non-compliance

The presence of the informal rules and the formal law presents conflict. The conflict can be described according to Bennett et al. (2001) as a mixture of type I and type II (section 2.2.4).

1. Type I conflicts: over who controls the fishery e.g. access issues, exclusion from access. The illegal fishers feel that the government does not have a right to restrict and exclude them from using a resource that they feel is for everyone and is available right next to their community.
2. Type II conflicts: over how fishery is controlled, e.g. quota allocation issues. The illegal fishers feel marginalised because the process of getting a quota is expensive and complicated for poor uneducated small-scale fishers. In addition, the fishers are dissatisfied with the national law because few residents from Hangberg received a quota. Furthermore, some of the successful applicants are not regarded as bona fide fishers who need the quota. On the other hand, taking into consideration the limited supply of crayfish, MCM claim that they have managed to reallocate the TAC, so that more people can participate in the small-scale industry with a quota that is viable to sustain the fisher's livelihoods.

The presence of conflict in the Karbonkelberg sanctuary has resulted in non-compliance by the small-scale poachers. The poachers follow their informal rules in their organised informal fishery and disregard the national laws. However, the underlying root cause as to why the national laws are disregarded is because the legal management system is seen as illegitimate by the poachers. Thus the non-compliance by the poachers is an 'exit'

response that Hirschman (1975 in Jentoft, 2000:141) describes as a result of discontentment with the rules the management system has produced. Therefore non-compliance is a result of the perceived illegitimacy of the management system; the informal rules give the poachers an alternative system which they consider to be legitimate.

6 CONCLUSION AND RECOMMENDATIONS

6.1 Legal plurality in the Karbonkelberg

Non-compliance is an important issue in the sustainable governance of CPRs. The NORSA project aims to develop an analytical framework to understand non-compliance in small-scale fisheries. This case study in the Karbonkelberg MPA was chosen due to high levels of non-compliance by illegal fishers from the community of Hangberg. These illegal fishers appeared to have their own system of informal rules which they use to harvest WCRL from the Karbonkelberg. The research reveals that there is an organised informal fishery in the Karbonkelberg with informal rules. The hand-line fishers in the Karbonkelberg have informal rules regarding:

1. Access to the resource: rules on who has access to fish in the Karbonkelberg and where a hand-line fisher can harvest WCRL.
2. The scope of fishing activities: hand-line fishers are subsistence fishers
3. Teaching the trade: experienced hand-line fishers teach others the skill.

The small-scale fisher groups in the Karbonkelberg have informal rules regarding:

1. Access to the resource: rules of who has access to Karbonkelberg, and on fishing spots.
2. Group roles: rules on the specific roles of each person in the group and how roles change over time.
3. How they fish: rules on procedure and process in fishing, at sea and when they come back to shore.
4. Drugs and stealing: rules on consuming drugs and theft.

It was assumed at the beginning of the research process that non-compliance was due to the presence of legal plurality. A situation of legal plurality refers to the presence of more than one legal order. However, this research shows that presence of informal rules among these fishers constitute a system of normative practices. To be considered a legal order,

the informal fishery would need to demonstrate that these normative practices endure over time, and that these informal rules are enforced among fishers. The observations from this research cannot state conclusively that these normative practices constitute a legal order and that the high level of non-compliance among fishers from Hangberg is a result of legal plurality. However, the presence of this informal fishery is a response to how the fishers from Hangberg perceive the national legal order.

6.2 Legitimacy in environmental management

The informal fishery evolved because the fishers were discontent with the national law that they perceived as illegitimate because it restricted them from their primary livelihood as fishers. In addition to these factors, the fishers felt excluded from management decisions, which created an opportunity for cooperation. This cooperation led to the organisation of the fishers into groups through which they are able to optimise the benefits of the resource available to them as a collective group; WCRL in the Karbonkelberg. As the groups became more organised, norms on their fishing activities were developed.

Policy governing fisheries, or other CPRs in environmental management, that are based on the 'Tragedy of the Commons', Prisoners Dilemma and Rational Choice models are not always applicable to every CPR situation. These policies need to be tailored to the specific situation, in order to be regarded as legitimate by the national government and CPR users alike. The formal law can be regarded as illegitimate if the CPR users perceive it as being unfair and unjust, impeding or restricting their livelihoods. When CPR users find the laws that govern a resource they are dependent on for their livelihoods as illegitimate, they may establish their own informal systems that legitimize and rationalize their claims.

6.3 Recommendations

In order to build upon this research, the following steps are recommended:

- Long-term research should be undertaken to determine whether the normative practices of the fishers in Hangberg constitute a legal order, thus establishing a situation of legal plurality. A legal order requires normative practices to be enforced, and to endure over time. The gathering of such information requires detailed research over a longer period of time, in order to establish sufficient rapport with respondents.
- Government and management structures should improve their links with individuals and groups affected by the policies at a grassroots level. This will give greater insight into the reasons underlying non-compliance, and will enable decision-makers to identify bona fide fishers and HDIs effectively.
- Government policies which are based on the 'Tragedy of the Commons' approach should be reassessed; consideration must be given to environmental, social and economic constraints on CPR users.
- Research should be undertaken to investigate the possibilities of establishing a communal property rights regime with the fishers from Hangberg. The creation of such a regime could increase access to the resource, reduce the need for illegal fishing, and lead to greater compliance within the Karbonkelberg.

The limited access which the Hangberg fishers face has led to frustration and discontentment with the formal system; this in turn has led to illegal fishing, and the creation of normative practices. In order to address this situation, there is a need for government to understand the social, economic and physical realities for Hangberg and other small-scale fishing communities, and to adapt the management policies to the situation. There is a broad spectrum of factors which influence an individual's decision to comply or not comply. It is important for government authorities to consider all of these factors, and to tailor policy to the ecological, social and economic opportunities and constraints of the CPR and its users. This will be a positive step towards increasing the

legitimacy of government policies relating to CPR, and addressing the issue of non-compliance in small-scale fisheries in South Africa.

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7.2 South African legislation

Statutes

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Sea Fisheries Act of 1973
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8 APPENDICES

8.1 List of Photos

Photo 1. View of Hangberg tucked between the Karbonkelberg Mountain (right) and Sentinel Mountain (right) (photo taken by Maria Hauck, EEU, 2006)

Photo 2. View of Hangberg on the slope of Sentinel Mountain. Council flats built for the "Coloured" fishermen in the 1950s can be seen on the foreground as well as higher up the mountain with red roofs. (photo taken by Maria Hauck, EEU, 2006)

Photo 3. View of Hangberg showing informal settlements built in the midst of council flats. (photo taken by Maria Hauck, EEU, 2006)

Photo 4. Hand-line fishing line with fish head bait. (photo taken by Maria Hauck, EEU, 2006)

Photo 5. Fishers preparing bait. (photo taken by Maria Hauck, EEU, 2006)

Photo 6. Examples of boats used in the informal fishery (photo taken by Maria Hauck, EFU, 2006)

Photo 7. Rocky shore where the illegal fishers launch off. (photo taken by Maria Hauck, EEU, 2006)

Photo 8. illegal fisher preparing the ring-nets . The prepared bait is in the grey bag in the fore ground (photo taken by Maria Hauck, EEU., 2006)

Photo 9. Illegal fishers preparing the boat to go out to sea. (photo taken by Maria Hauck, EEU, 2006)

8.2 Reference to field notes

Interviews

Number	Respondent	Date	Affiliation	Interviewer(s)	Place Interview was conducted	Comments
1	**K**	21-Jun-06	MCM: Rock Lobster research	Maria Hauck, Navo Omari	MCM: Cape Town	MCM rock lobster head of research. Introduced through Maria Hauck
2	**A**	13-Jun-06	Fisher	Maria Hauck, Navo Omari	Hout Bay	Son has rock lobster quota. Introduced through an MCM officer
	A	28-Jun-06		Maria Hauck, Navo Omari	Hout Bay	
3	**N**	28-Jun-06	Hangberg community	Maria Hauck, Navo Omari	Hangberg	Fisher family; has company but doesn't have WCRL quota. Introduced through community member.
4	**M**	29-Jun-06	Hangberg community	Maria Hauck, Navo Omari	Hangberg	Fisher family. Helps fishers apply for quota. Introduced through a SANParks staff member.

Number	Respondent	Date	Affiliation	Interviewer(s)	Place Interview was conducted	Comments
5	**J**	19-May-06	MCM-Hout Bay (Harbour Master)	Merle Sowman, Richard Hasler, Stig Gezelius, Navo Omari	Hout Bay	Interview was first initial contact to MCM offices in Hout Bay. Interview was facilitated by Merle Sowman. Richard Hasler (supervisor) and Stig Gezelius (research partner) particpated in interview as part of a introductory field trip to the study area.
6	**D**	20-May-06	Illegal fisher	Navo Omari, Richard Hasler, Stig Gezelius	Hout Bay	Interview was first initial contact to the Hangberg Community. Respondent was introduced through Merle Sowman. Richard Hasler (supervisor) and Stig Gezelius (research partner) particpated in interview as part of a introductory field trip to the study area.

Number	Respondent	Date	Affiliation	Interviewer(s)	Place Interview was conducted	Comments
	D	27-Jun-06		Maria Hauck, Navo Omari	Hangberg	Buyer/middleman for poaching group (Rasta). Walked through Hangberg Community and was introduced to community members. Also walked up towards Sentinel Mountain ans was shown the area along the coast where the illegal fishers launch their boats.
	D	01-Jul-06		Maria Hauck, Navo Omari	Hangberg	Life History of respondent
7	**Q**	03-Jul-06	Wife of rasta poacher	Maria Hauck, Navo Omari	Hangberg	Stay at home mother. Introduced through her husband who is an illegal fisher.
9	**O**	28-Jun-06	Hangberg community	Maria Hauck, Navo Omari	Hangberg	Community activist, Involved in the Hout Bay civic and Hout Bay Solution Seekers. Also participated in the direct observations on July 11th 2006

Number	Respondent	Date	Affiliation	Interviewer(s)	Place Interview was conducted	Comments
11	**E**	28-Jun-06	former illegal fisher	Maria Hauck, Navo Omari	Hangberg	Community activist, Involved in the Hout Bay Solution Seekers. Introduced through a community member
		01-Jul-06		Maria Hauck, Navo Omari	Hangberg	
12	**G**	13-Jun-06	MCM-Hout Bay (Sr Inspector)	Maria Hauck, Navo Omari	Hout Bay	
13	**I**	28-Jun-06	MCM-Hout Bay (Sr Inspector)	Maria Hauck, Navo Omari	Hout Bay	
14	**B**	13-Jul-06	Commercial Long term quota holder	Maria Hauck, Navo Omari	The Heights	Father of two rock lobster quota holders.Introduced through an illegal fisher.
16	**H**	13-Jun-06	MCM-Hout Bay (Sr Inspector)	Maria Hauck, Navo Omari	Hout Bay	

Number	Respondent	Date	Affiliation	Interviewer(s)	Place Interview was conducted	Comments
17	C	28-Jun-06	Illegal fisher	Maria Hauck, Navo Omari	Hangberg	Illegal fisher and middleman. Introduced through a community member. First contact at residence where we observed fishers who had just returned from sea. The fishers were preparing WCRL for sale by weighing and sizing the crayfish and placing them into a bag.
	C	29-Jun-06		Maria Hauck, Navo Omari	Hangberg	
18	F	19-May-06	SANParks (MPA Unit Operations Manager)	Merle Sowman, Richard Hasler, Stig Gezelius, Navo Omari	Hout Bay	Interview was first initial contactwith the SANParks MPA Unit staff. Interview was facilitated by Merle Sowman. Richard Hasler (supervisor) and Stig Gezelius (research partner) particpated in interview as part of a introductory field trip to the study area.

Number	Respondent	Date	Affiliation	Interviewer(s)	Place Interview was conducted	Comments
	F	20-Jun-06		Maria Hauck, Navo Omari	Simonstown	
20	**P**	12-Sep-06	Principal, Hout Bay Secondary School	MH	Hangberg	

Direct observations

Date	Place of meeting	Place of observation	Number of Hours	Number of participants	Comments
28-Jun-06	Illegal fisher's resident	Illegal fisher's resident	one	twelve	Observed fishers as they had just returned from sea preparing their catch for sale.
11-Jul-06	Illegal fisher's resident	Rocky shore behind Karbonkelberg Mountain	six	twelve	Observed fishers as they prepared bait, when they were out at sea and as they returned to shore
06-Sep-06	Illegal fisher's resident	Rocky shore behind Karbonkelberg Mountain	two	ten	Observed fishers as they returned to shore and walked with them to their meeting point
08-Sep-06	Illegal fisher's resident	Rocky shore behind Karbonkelberg Mountain	two and half	over twenty	Observed fishers when they were out to sea. Also observed handline fishers.

Focus groups

Date	Place	Participants	Comments
05-Jul-06	Cape of Good Hope	SANParks MPA Unit, Maria Hauck (facilitator), Richard Hasler, Navo Omari	six SANParks MPA staff: two seargents and two corporals. One administratvice staff and the SANParks MPA manager (western Cape) also participated
06-Jul-06	Cape of Good Hope	SANParks MPA Unit, Maria Hauck (facilitator), Richard Hasler, Navo Omari	eight SANParks MPA staff: all rangers who patrol the MPA