



University of Cape Town
Faculty of Humanities

**Livelihoods of Small-scale Fishers of Struisbaai:
Implications for Marine Protected Area Planning**

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the degree of
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Abstract

South Africa's coastal environment is characterized by an increasing network of Marine Protected Areas (MPA), with the purpose of conserving fisheries resources and marine biodiversity. The coast is also home to over a hundred rural small-scale fisher communities, such as the community at Struisbaai Noord, which are considered to be marginalised communities heavily dependent on marine resources for their food security and income needs. The small-scale fisher community at Struisbaai Noord is one of several fisheries operating in the waters off the coast of Struisbaai. The others are: a migratory commercial line fishery, boat and shore-based recreational fishery, chokka squid commercial fishery, and commercial trawlers. The overall aim of this study is to understand the human (social, economic, cultural and institutional) dimensions of the small-scale fisheries sector in Struisbaai, with a particular focus on the livelihood strategies that fishers in this community employ, in order to inform future marine protected area planning in the Agulhas region.

The research is informed and inspired by new thinking and approaches to fisheries governance, particularly systems thinking and the recognition of fishery systems as complex socio-ecological systems. The study uses a case study and mixed methods approach and the analysis of data is guided by the sustainable livelihoods framework. Both qualitative and quantitative methods were used to collect the data, which included 36 household surveys, 2 focus groups meetings, 14 key informant interviews and 2 participatory mapping exercises.

This study has revealed that the small-scale fishers of Struisbaai Noord have a high dependence on harvesting marine resources for their food security and livelihood needs. Their strong social, cultural, historical and traditional links to the sea, coupled with their limited asset base, and the lack of alternative livelihood opportunities, render them a particularly vulnerable group within the broader Struisbaai fishery system. The study has also shown that small-scale fishers' vulnerability is exacerbated by shocks and trends within their immediate environment (such as competition with other fisheries, limited power in local market structures, limited gear, and lack of access to educational and transport infrastructure), as well as a set of external factors outside the fishery such as environmental and climate variability, the international conservation agendas, and broader governance and institutional processes.

The fishers of Struisbaai have witnessed changes in the distribution and abundance of marine resources in their region, and recognize the need for conservation. Yet, they are sceptical of government and conservation authorities proposals to declare MPAs, and do not want to lose access to their traditional fishing grounds. This study, therefore, provides information about the small-scale fishers of Struisbaai Noord and recommendations that can inform future marine conservation planning in the Agulhas region. It specifically puts forward the idea of marine spatial planning for the region as a means of achieving ecological, economic and social objectives. It highlights that such planning should include consideration of the human dimensions of the small-scale fishers, as well as strategies that address their vulnerability. Recommendations include, the need to recognize the rights of these fishers, incorporation of local and indigenous knowledge, identification and development of supplementary livelihoods, strengthening participation and building local capacity, ensuring local economic development, enhancing local market infrastructure and transparency, and effectively managing a multi-user fishery system.

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List of Acronyms

ANP	Agulhas National Park
CAM	Cape Agulhas Municipality
CBD	Convention on Biological Diversity
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DEAT	Department of Environmental Affairs and Tourism
EAF	Ecosystems Approach to Fisheries
EEU	Environmental Evaluation Unit
EEZ	Exclusive Economic Zone
EPWP	Extended Public Works Programme
FAO	Food and Agricultural Organisation of United Nations
FPDC	Fisheries Policy Development Committee
GDP	Gross Domestic Product
GEAR	Growth, Employment and Redistribution
GEF	Global Environmental Facility
ICSF	International Collective in Support of Fishworkers
IDP	Integrated Development Plan
ITQ	Individual Transferable Quota
IUCN	World Conservation Union
KZN	KwaZulu Natal
LED	Local Economic Development
MLRA	Marine Living Resources Act
MPA	Marine Protected Area
MSP	Marine Spatial Planning

NGO	Non-governmental Organisation
NRF	National Research Foundation
SADC	Southern African Development Community
SAMSA	South African Maritime Safety Authority
SANParks	South African National Parks
SFLP	Sustainable Fisheries Livelihood Programme
SFTG	Sustainable Fisheries Task Group
SIDS	Small Island Developing States
SLA	Sustainable Livelihoods Approach
TAC	Total Allowable Catch
TAE	Total Allowable Effort
TLF	Traditional Linefish
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
VMS	Vehicle Monitoring System
WCRL	West Coast Rock Lobster
WSSD	World Summit on Sustainable Development
WWF	World Wildlife Fund

Chapter 1 – Introduction

1.1 Introduction

Coastal ecosystems are regarded as distinctive, complex and interconnected natural systems where land meets the sea – and biophysical, social, economic and institutional factors interact (Government of SA 2000). Coastal ecosystems support a wealth of human activities (such as fisheries), and their diversity, health and productivity is central to realising sustainable socio-economic and ecological benefits (Government of SA 2000). Approximately 1 billion people throughout the world depend on fish as their primary source of animal protein (FAO 2000: 32 in Mascia et al 2010), thus sustainable use and management of this productive and valuable coastal zone is essential. Furthermore, over 250 million people worldwide are involved in small-scale fishing activities (directly or indirectly), and these activities provide an important local economy for many additional people, especially in developing countries where fishing provides an essential source of food and economic security (FAO 2005). Many see this number as an underestimate, as some research states that 200 million people in Africa alone, depend on marine and inland resources for their food security needs (Béné and Heck 2005).

In addition, small-scale fisheries also play an important role in the social and cultural activities in many developing countries (Berkes et al. 2001, FAO 2005, Béné and Heck 2005, Béné et al. 2007, Andrew et al. 2007, Sharma 2011, Sowman et al. in press). Yet, presently coastal and marine ecosystems are experiencing accelerating loss of biodiversity and degradation (Morato et al. 2006). The consequences of this deterioration are yet unknown, but scientists predict that it is increasingly harming the ability of such ecosystems to provide food, and recover from its weakening state (Worm et al. 2006).

Countries are faced with the situation whereby marine and fishery resources, essential to the health of marine ecosystems and the provision of food security to vulnerable communities, are under threat. In order to protect fishery resources various tools have been developed and are being used to promote conservation and fisheries management. Yet there is little consideration in planning and management of the human dimensions, the diversity of fishing communities, and the importance of access to the sea and its resources for their livelihoods (Pomeroy et al. 2006). The recognition of the important socio-economic and socio-cultural role that fishing plays in the lives of vulnerable small-scale fisher communities throughout the world has led to calls for new perspectives and approaches to small-scale fisheries governance and management. Criticisms of conventional management approaches include that it is non-participatory, top down, science driven, and fails to incorporate different knowledge systems (Berkes et al. 2001, Garcia and Charles 2007, Sowman 2011).

A new wave of research is now recognizing that fisheries systems are in fact complex human-ecological systems that require innovative approaches to management. Instead of the science driven, regulatory, top-down approach still evident in most countries, authors are increasingly recognizing fisheries systems as linked socio-ecological systems that require holistic management of ecological, biological, socio-economic and institutional processes for fishery systems to be sustainable (Cincin-Sain and Knecht 1998, Berkes et al. 2001, Charles 2001, Garcia and Charles 2007, Garcia and Charles 2008). These principles and approaches have also been adopted, at least in theory, by scientists and practitioners working in the coastal and fisheries management arena.

The idea of linked socio-ecological systems is fundamental to the Ecosystems Approach to Fisheries (EAF), an approach which is promoted by a number of international conservation and fisheries management agencies, such as the IUCN (World Conservation Union) and United Nations Food and Agricultural Organisation (FAO). It is also required by various international multi-lateral agreements, such as the 1993 Convention on Biological Diversity (CBD) and its associated Programme for Work. Its focus is on adopting a more holistic, participatory and systems-orientated approach to fisheries management and therefore promotes the integration of human dimensions¹ in ecological assessments. This approach recognizes that social, cultural, traditional, historical, political and institutional aspects are all functioning within a fishery system and, therefore, linkages need to be made between society and ecology (Garcia et al. 2003). It recognizes that fisheries, and other human activities (for example the harvesting of marine resources, coastal development, aquaculture) have a direct impact on the ecosystem and should be managed as such, as part of a holistic fisheries and ecosystem management approach (Garcia et al. 2003).

As a result of resource deterioration, conservation initiatives aimed at the marine environment have increasingly become a priority for governments, conservation bodies and fisheries scientists. Marine protected areas (MPAs) are increasingly being used as a tool to achieve both conservation and fisheries management goals (Agardy 1994b, Christie et al. 2003, Pomeroy et al. 2006, Charles and Wilson 2009, Mascia et al. 2010, Sowman et al. 2011). It is argued that MPAs are expected to facilitate an increase in the ocean's fish stocks and prevent overexploitation (Agardy 1994b, Hockey and Branch 1997 In: Tunley et al. 2009), but many MPAs are proclaimed with inadequate consideration of the human dimensions, and without incorporation of these dimensions into planning and management. Historically, MPAs have not been holistic and people-centred in their approach, but have adopted a strong ecological and fisheries focus. This has resulted in a number of negative impacts on adjacent communities (Agardy 1994a, Pollnac et al. 2001, Christie et al. 2003, Pomeroy et al. 2006, Sunde and Isaacs 2008, Charles and Wilson 2009, Sowman et al. 2011). The establishment of MPAs may lead to restrictions on coastal fishing communities, may create short term losses for fishers, may lead to loss of customary fishing areas, may

¹ The human dimensions may refer to socio-economic, cultural and institutional aspects of the fishery system.

exacerbate access problems due to shifting fishing grounds and may lead to internal conflicts among fishers as a result of harvesting restrictions (Christie et al. 2003, Pomeroy et al 2006).

There has been a diversity of views (and criticisms) on the role that MPAs play in fisheries management and marine conservation, with different stakeholders giving different priorities to the outcomes of MPAs. For example, those with social interests may remain sceptical regarding the threat to fishers' livelihoods posed by MPAs, while those with biodiversity interests propose spatial and temporal closures of areas for biodiversity conservation (Rice et al. 2012). Yet all parties agree that MPAs do have a role to play in fisheries management and marine conservation, depending on how they are designed and managed. MPAs can indeed be an important tool for attaining biological and socio-economic objectives, and in fact may reduce spatial conflict (Rice et al. 2012). There are a number of factors in a good governance model that could contribute to MPAs achieving their objectives, which include: considering long term perspectives, encouraging good working relationships between all stakeholders (especially those with historically poor working relationships), 'bottom-up' community involvement, a transparent process of knowledge and information sharing, adequate research, information and monitoring, and appropriate size and spatial demarcation (Attwood et al. 1997, Rice et al. 2012).

In South Africa, coastal areas are dotted with hundreds of small, isolated, rural communities that have a rich history of social, cultural and economic dependence on the sea (Cardoso et al. 2006, Sunde and Isaacs 2008). Many coastal fishing communities in South Africa are characterised as having harvested marine resources for many generations, have low levels of education, high levels of unemployment, poor infrastructure and basic services, high food insecurity and a degree of poverty within the communities (Cardoso et al. 2006). Thus many coastal dwellers rely on coastal resources for food and a contribution to their livelihood. Given concerns over dwindling resources and high levels of poverty in coastal areas, efforts have been made by the Department of Environmental Affairs (DEAT), in partnership with local municipalities of the coastal provinces, to create sustainable livelihoods opportunities for poor and marginalised coastal communities (Glavovic and Boonzaier 2007), but only some of these address the socio-economic needs of small-scale fisheries.

A factor that complicates the management of MPAs and fisheries in South Africa is the fact that the democratically elected government that came into power in 1994 inherited a legacy of unjust rule, racial prejudice, and the unequal distribution of wealth, land and resources that were the features of the previous Apartheid government (Masifundise 2010). This history also formed the foundation of the strong conservation drive of proclaiming MPAs in South Africa, without the adequate understanding and integration of the human dimensions. In 1994, when South Africa became a new democratic nation, the new government engaged in a lengthy fisheries review process. The culmination of this process was a new fisheries policy (DEAT, 1997) and the Marine Living Resources Act (DEAT, 1998)

that aimed to transform the inequitable and unjust system of access to marine resources prevalent in the past. Yet despite these changes in legislation, policies and programmes that aimed to address the needs of coastal communities, many communities still did not benefit and remained marginalised, with little or no legal access to marine resources. As former president Nelson Mandela aptly stated:

“Africa’s long and beautiful coasts and the abundance of marine resources can contribute to providing economic, food and environmental security for the continent. These coastal and marine resources, like the rest of Africa’s environmental resources, cannot continue to be exploited in a manner that does not benefit Africa and her people. This is a paradox of a people dying from hunger, starvation and poverty when they are potentially so rich and well endowed.”²

The necessity for sustaining small-scale fisheries in developing countries is being increasingly recognized within fisheries management and development policies, because of fishers’ dependence on an already degrading resource (Allison 2003). Yet there is limited evidence, even with this increased recognition, of such plans and management policies being effectively implemented at ground level. Government solutions to poverty and resource degradation have centred on making small-scale fisheries more economically efficient, while at the same time conserving fish stocks through management measures that limit community access and seek incentives for current and future resource users to leave the fishing sector. The sustainable livelihoods approach (SLA) is an analytical tool to understand and address poverty and vulnerabilities within poor communities, including marginalised small-scale fisher communities. The SLA within the small-scale fisheries sector recognizes the seasonal complexities of livelihood strategies in fisher communities and proposes that communities should not be preoccupied with a particular component of livelihoods, but should consider a range of possibilities, as a means of diversifying livelihood options (Allison and Ellis 2001, Allison and Horemans 2006). It is considered a tool that assists in understanding people’s livelihoods, and equips decision makers to address issues that are impacting on or creating barriers to improving people’s livelihoods.

This research seeks to understand the human dimensions (socio-economic, cultural and institutional) of a small-scale fisheries community in Struisbaai, Western Cape. The study will use the sustainable livelihoods framework to analyse the livelihood strategies of the Struisbaai small-scale fishers. It proposes that a livelihoods analysis could provide a means by which to better understand the nature of the small-scale fisheries system in Struisbaai and identify appropriate entry points for marine conservation strategies in the Agulhas region. The study is informed by new thinking and approaches to fisheries and conservation

² Former President Mandela, Excerpt from a message to an international conference on “Cooperation for the development and protection of the coastal and marine environment in SubSaharan Africa”, Cape Town, December 1998.

management, with a particular focus on how these new approaches are being embraced in the South African context.

This next section presents the rationale for the study, the specific aims and objectives of the research, as well as a description of the case study site.

1.2 Rationale for the study

This dissertation forms part of a larger research project funded by the National Research Foundation (NRF) of South Africa and the Green Trust. This wider initiative aims to clarify and understand the human dimensions of fisheries systems in the context of MPAs and how to integrate this information with ecological objectives, in order to develop a more holistic and integrated approach to MPA governance. The project aims to identify and understand the social, economic, cultural and institutional issues (also referred to as human dimensions) of the small-scale fishery systems that are influencing, or are influenced by, MPAs in selected case study sites. The outputs of the project include developing a conceptual framework and a set of guidelines for understanding and integrating human dimensions into the planning, assessment and management of MPAs in South Africa. This case study seeks to contribute understanding of human dimensions with a particular focus on livelihoods, to this research process.

The case study site, Struisbaai, is unique in that, whereas the other four case studies addressed by this project are situated in coastal communities adjacent to existing MPAs, a marine protected area for the Agulhas region has been proposed, but has not yet been implemented. In 2009 the Agulhas National Park through its Park Development Plan 2009-2013 (SANParks 2009), proposed the expansion of its existing terrestrial Park in the Cape Agulhas region to establish an MPA bordering the terrestrial park on the seaward side, with the purpose of protecting declining marine resources. While proposals and plans for any sort of marine conservation area have not yet been finalised, a scenario may exist in which small-scale fishers' access to resources within such an area is limited or non-existent. This research therefore seeks to inform the broader marine planning processes currently underway in the Agulhas region.

A further key motivation for this dissertation is that rural coastal communities in South Africa, such as Struisbaai, are vulnerable to, and dependent on, marine resources for food and income needs, yet while literature and policies are increasingly calling for holistic, integrated and people-centred approaches to conservation and fisheries management, the realities on the ground do not reflect this. For the purposes of this study the socio-economic, cultural and institutional dimensions of the Struisbaai small-scale fisheries sector will be regarded as the 'human dimensions'.

1.3 Aims and objectives of the study

Aim

The overall aim of this study is to understand the human dimensions of the small-scale fisheries sector in Struisbaai, and in particular the livelihood strategies of fishers in this community, in order to inform future marine protected area planning in the Agulhas region.

Objectives

The specific objectives of the study are:

- *To understand and describe the small-scale fishery sector in Struisbaai, Western Cape, with a particular focus on the human dimensions;*
- *To use the sustainable livelihoods framework to analyse the livelihood strategies of the small-scale fishers in Struisbaai and determine levels of dependence on fishing;*
- *To explore and discuss how understanding of the livelihood strategies and dependencies of the Struisbaai small-scale fishers can inform marine protected area planning in the Agulhas region;*
- *To provide recommendations on the human dimensions that need to be considered in fisheries management and marine protected area planning in the Agulhas region.*

1.4 Case study site

The case study site is located in the traditional fishing town of Struisbaai, along the Cape south coast. The town is a popular coastal holiday destination, peaceful retirement location and a historical traditional fishing community. Struisbaai forms part of the Cape Agulhas local municipality, and the Overberg district municipality within the Western Cape region. According to municipal Integrated Development Plan (IDP) data for 2010-2011, Struisbaai has a population of over 6000 people and 1388 households. The focus of this study is on the local, traditional, small-scale fishers (predominantly line-fishers) who reside in Struisbaai Noord.

The criteria for selecting this specific case study centred around the existence of a small-scale fishery operating from Struisbaai harbour and the presence of a small-scale fisher community with a traditional and historical dependence on harvesting marine resources. This fisher community, residing in Struisbaai Noord, is also representative of a typical marginalised South African rural coastal community, which is vulnerable to poverty. In

addition, marine conservation planning has been proposed for the Agulhas region, incorporating the waters in which this community currently harvests resources along the Struisbaai and Cape Agulhas coastline.

The map below illustrates the position of Struisbaai within the Overberg region of the Western Cape, South Africa.



Figure 1: Map illustrating the position of Struisbaai within the Overberg region of the Western Cape, South Africa³

1.5 Study limitations

Certain limitations were encountered in the research process. The main limitation was the unpredictable nature of fishing and thus the availability of respondents. Since the days on which fishers go out to sea are based on the weather conditions on any given day, it was difficult to schedule field visits and hold focus group meetings at scheduled times. Many field visits had to be called off at the last minute and rescheduled, because fishers were likely to be going to sea and, therefore, would not be available for surveys or focus groups. Due to dissertation timelines, certain planned focus group meetings and key informant interviews could not take place.

³ Map sourced from <http://www.cape-town.info/maps>

Another limitation was research fatigue. It was evident that, although respondents were willing to partake in the research, they expressed some scepticism and negativity about what the research will actually achieve or how it will assist their plight in tangible ways. The response to these concerns was to highlight the value of improved understanding of the fishers' links with the sea and resources for future planning and decision-making.

1.6 Structure of dissertation

This dissertation comprises six chapters. The first chapter serves as an overview of the dissertation by providing a brief introduction and background to the study, introduces the case study site, and presents the research rationale, aims and objectives. Chapter two contains a detailed description of the methodology adopted for data collection and analysis. Chapter three presents the literature review and the theoretical and conceptual basis for the study. Chapter four presents the research findings, while chapter five discusses the key themes that emerged from the research in relation to the broader literature and provides recommendations for consideration in the planning, implementation and management of fisheries and marine conservation in the Agulhas region. Chapter six serves as the concluding chapter.

Chapter 2 – Literature Review

2.1 Introduction

This chapter provides an overview of new thinking and approaches to the management and research of small-scale fisheries, and highlights the move towards sustainable fisheries management practices. It will draw on the ideas of Charles (2001), Berkes et al. (2001), Berkes (2003), as well as several other authors who increasingly view small-scale fisheries as complex socio-ecological systems, which require a systems approach to fisheries management that links ecological and human dimensions. This chapter begins by exploring the definitions of small-scale fisheries and discusses the increasing importance of this sector to livelihoods and food security among poor coastal communities. Next, it explores new ideas and approaches that are informing small-scale fisheries management worldwide. It also describes and reviews the sustainable livelihoods approach as a tool for understanding the nature and diversity of livelihoods and the governance structures and processes, as well as external factors that influence livelihoods outcomes. Such understanding is critical to informing management decisions relevant to coastal fisheries. The chapter ends with a brief review of the small-scale fisheries sector in South Africa, and the linefish sector in particular, as this sector is the focus of the case study discussed in this dissertation.

2.2 Fisheries and the state of fisheries resources

Oceans and seas cover 71% of the Earth's surface. These marine ecosystems are highly dynamic, interconnected, and host an amazing wealth of life (Pauly and Alder 2005). They are ecologically and climatologically important at a global scale, and valuable to humankind (Pauly and Alder 2005). It is a system upon which approximately 1 billion people throughout the world depend, for harvesting their primary source of animal protein (FAO 2000). Yet, the oceans of today are empty compared to the oceans of the past (Roberts 2007). Today, fisheries resources are perceived to be in crisis with many fish stocks and marine resources in many parts of the world facing collapse, while others show signs of overexploitation and degradation (Pauly et al. 1998, Bavinck et al. 2005, Kooiman et al. 2005, Mahon et al. 2008, Worm et al. 2009). A combination of various factors may be responsible for this deterioration, including population growth along the coastal areas, overfishing by industrial fleets, pollution and destructive fishing practices, illegal fishing, and an increasing demand for fish and marine resources. In addition, technological advancements have enabled exploration and made previously inaccessible areas accessible, and the marine environment is now seen by many as the 'next frontier for economic development' for bioprospecting, mining, energy and aquaculture (Pauly and Alder 2005).

Various studies have illustrated the declining fish stocks. The depletion of the ocean fish stocks started as early as the 1950s due to unregulated fishing activities and the rapid expansion of fishing fleets (Alder 1996, Huppert 2005 in Raemaekers 2009). Recent scientific studies have shown that global fisheries landings peaked in the 1980s, and have been steadily declining since (Pauly and Alder 2005, Worm et al. 2006).

In 1982, the United Nations Convention on the Law of the Sea (UNCLOS) urged States to take responsibility for the conservation and exploitation of their coastal waters up to 200 nautical miles offshore (exclusive economic zone, EEZ) (Raemaekers 2009). With this came highly centralised management and a biological science based approach to research, stock assessments and analysis, as well as a mathematical basis to resource modelling (Raemaekers 2009). Although access was open to all citizens in these territorial waters, fisher behaviour was controlled and regulated based on scientific information. Therefore, open and closed seasons, restricted species and areas and catch quantity and size, were all based on scientific research. It relied on scientific methods to assess fish mortality, spawning seasons and landings to quantify and predict fish stocks, with the overall aim to provide information to decision makers for appropriate management strategies. This conventional approach to fishery systems and management treats fisheries as controllable and predictable (Mahon et al. 2008). These technical controls were aimed at conserving marine resources, yet resources were still steadily declining. This model soon became characteristic of 'traditional' or 'conventional' fisheries management practices. With capture fisheries still in crisis, it would seem that the conventional fisheries management approaches have failed to address or improve resource depletion (Berkes et al. 2001, Charles 2001, Raemaekers 2009).

As a result, the fundamentals of fishery management theory and practice have been questioned (Kooiman et al. 2005). The recognition that previous fisheries management models have failed to address resource depletion, coupled with the recognition of the socio-economic and cultural dependence of millions of the world's poor small-scale fishers on these resources, have led to calls for the adoption and implementation of a new approach to fisheries management (Berkes et al. 2001, Garcia and Charles 2008, McConney and Charles 2009, Sowman 2011).

2.3 Small-scale fisheries – definitions and importance

It has been recognized that, since ancient times, fisheries have provided an essential source of food security, employment, economic security and recreation for people throughout the world (Campbell 1999). Yet there seems to be a lack of conformity in the definition of what constitutes small-scale fisheries activities as research yields unconfirmed numbers of fishers. This is due to the number of people who are indirectly involved in the industry through post-harvest activities or seasonal and occasional fishing and who are not recorded as

official fishers (Béné et al. 2007, Sharma 2011, Sowman et al. in press). Thus, small-scale fishing is an important local economic activity for many (especially developing) countries, but also on a global scale as the international demand for fish and fish products increases (Béné et al. 2007).

For the purposes of this dissertation, the particular focus will be placed on small-scale fisheries. It is claimed that worldwide the small-scale fisheries sector is regarded as a low key player in a global industry, often overlooked, underestimated and ignored (Berkes et al. 2001, FAO 2005, Isaacs 2012). At the macro-economic level, small-scale fisheries may yield a relatively low contribution to a country's GDP if compared to other sectors such as agriculture. Small Island Developing States (SIDS) and countries such as Senegal and Bangladesh form the exception, with small-scale fisheries making a significant contribution to GDP in these countries. Yet at the micro level, within local and provincial economies, at the household and community level, the potential contribution is much more tangible in terms of livelihood support, food security and income generation (Béné 2006).

It can be argued, therefore, that small-scale fisheries play an important role in the social and economic activities of many developing countries (Andrew and Evans 2009). In fact, the value of small-scale fisheries to address issues of food security and contribute to the livelihoods of millions of people, has only been recognized within the past two decades (Berkes et al. 2001, McGoodwin 2001, FAO 2005, Béné and Heck 2005, Andrew et al. 2007).

Very little research, evaluation or documentation has been done on the role of small-scale fisheries in the socio-economic development of developing countries. This lack of information makes it difficult for decision makers to understand the mechanisms through which small-scale fisheries may be able to contribute to local economic growth (Béné 2006). Despite the large numbers of people dependent on small-scale fisheries, the extent of research on large scale fisheries far exceeds the effort spent on the small-scale sector. The small-scale sector, however, is vastly different from large scale fisheries in terms of size, employment contribution, gear, operations, needs and functions (Isaacs 2012).

It has also been pointed out that small-scale fisheries may be more sustainable, as they generate minimal bycatch and employ a variety of gears. But it is important to avoid reducing the sector to merely an economic activity. To small-scale fishers the world over, fishing is linked to culture, identity, way of life and tradition – tradition that has attached to it rituals, value systems, customs and social organisations that are closely tied to the resources they harvest (Sharma 2011).

In 2003 the FAO Working Party on Small-scale Fisheries proposed a descriptive definition of small-scale fisheries that would assist in better characterising the sector. It proposed that:

“Small-scale fisheries can be broadly characterized as a dynamic and evolving sector employing labour intensive harvesting, processing and distribution technologies to exploit

marine and inland water fishery resources. The activities of this sub-sector, conducted full-time or part-time, or just seasonally, are often targeted on supplying fish and fishery products to local and domestic markets, and for subsistence consumption. Export oriented production, however, has increased in many small-scale fisheries during the last one to two decades because of greater market integration and globalization. While typically men are engaged in fishing and women in fish processing and marketing, women are also known to engage in near shore harvesting activities and men are known to engage in fish marketing and distribution. Other ancillary activities such as net-making, boat-building, engine repair and maintenance, etc. can provide additional fishery-related employment and income opportunities in marine and inland fishing communities. Small-scale fisheries operate at widely differing organizational levels ranging from self-employed single operators through informal microenterprises to formal sector businesses. This sub-sector, therefore, is not homogenous within and across countries and regions and attention to this fact is warranted when formulating strategies and policies for enhancing its contribution to food security and poverty alleviation.” (FAO, 2004)

In recent decades, however, academics and researchers have been exploring the use of different terms such as subsistence, traditional, artisanal and small-scale, many of which are used interchangeably in the literature (Sowman 2011). Whereas scholars agree that ‘subsistence’ refers to fishers who are poor, fish mainly for food, and exchange or sell their excess harvest to meet their basic needs (Berkes et al. 2001, Branch et al. 2002), the term ‘small-scale’ is mostly used to define low technology, labour intensive fishing activities carried out to provide food, income and employment. In the context of this dissertation, the term small-scale fisheries will be used, as it covers activities ranging from the lower end of the economic spectrum such as subsistence and traditional operations, to the upper end of the spectrum with more formal enterprises, and is the more encompassing (Sowman 2011). It may be argued, however, that with the diversity of fishers and fisher communities, and the context specific nature of fisheries in different parts of the world, the term small-scale needs to be defined within the particular socio-cultural, economic and institutional contexts (Sowman 2011). Defining the term ‘small-scale’ in the South African fisheries context, will be discussed further in section 2.7 below.

2.4 New perspectives in small-scale fisheries management – approaches and concepts

For many decades, it has been recognized that fishery systems are diverse, complex and systemic in nature (Berkes et al. 2001, Garcia and Charles 2007). Furthermore, such complex systems are difficult to define as they are characterized as open systems, involve non-linear interactions and are unpredictable (Mahon et al. 2008, McConney and Charles 2009). Fishery scientists have long been concerned with uncertainty and risk; therefore, fishery system complexity and unpredictability are not new to conventional fishery managers. Their approach to addressing these uncertainties, however, has been more focused on

attempting to quantify, model and control the environment through top down regulation, rather than adapting to them (Mahon et al. 2008).

In addition, the science and management of fisheries has had a strong Western and Northern bias with a focus on countries of the developed world. These same ideas do not work well in developing countries where fisher communities have different socio-economic characteristics, resource needs and livelihoods issues. Criticisms of the conventional management approach also focused on the failure to recognize and integrate other relevant disciplines and knowledge systems to ensure a more holistic and integrated approach. The call for a more holistic and integrated approach has been described as the systems approach and recognizes that the fishery systems and issues are not merely ecological, biological and scientific, but also include social, cultural, economic, institutional and political dimensions (Garcia and Charles 2007). Whereas fisheries science and related approaches view people as being on the periphery of the system, new approaches and concepts recognize that without the inclusion of the social sciences, conventional approaches will not have the ability to address socio-economic and cultural needs of fisher communities. Such alternative approaches would include fishers' knowledge to enrich information, increase user participation and incorporate livelihoods issues (Berkes et al. 2001).

The following section briefly examines some of the key approaches, concepts and thinking currently dominating the literature on new approaches to small-scale fisheries management.

2.4.1 The Systems Approach and Ecosystems Approach to Fisheries Management

Societal demands have begun to shape the evolution of fisheries science (Garcia and Charles 2008). A mathematical representation of the fishery system emerged in the late 1940s, and was based on the work of early ecologists. Separate from this, systems analysis emerged in the 1950s and was rapidly applied to complex systems in the engineering, social and biological sciences (Garcia and Charles 2008). At the same time social research on fisheries was developing that included sociological and ethnographic studies of fishing communities. Applications of the systems approach to ecological systems started in the 1960s and proposals to adopt it in the fisheries sector followed during the 1970s (Garcia and Charles 2008).

A systems focus does not employ a simplistic view of fisheries that regards fish as separate from fishers, but rather envisages fisheries as interrelated webs (between biophysical, economic, social and cultural components). While fisheries may be complex and diverse, a systems approach looks at the big picture for a better understanding of the fundamental themes and unique nature of fisheries (Charles 2001). It is also an interdisciplinary approach between natural and social components. Fundamental to understanding this complex

system is the realization that the interactions between components cannot be understood in isolation, but need to be analyzed in terms of the system as a whole. It requires integration across sectors, geographic areas and states (Berkes et al. 2001).

In his book *'Sustainable Fishery Systems'*, Charles (2001) illustrates that sustainable fisheries management can only be achieved if the fishery is seen as an interacting and interrelated system of ecological, biophysical, economic, social and cultural components. He describes the fishery system as comprising: the natural system, the human system and the fishery management system, as illustrated in Figure 2.

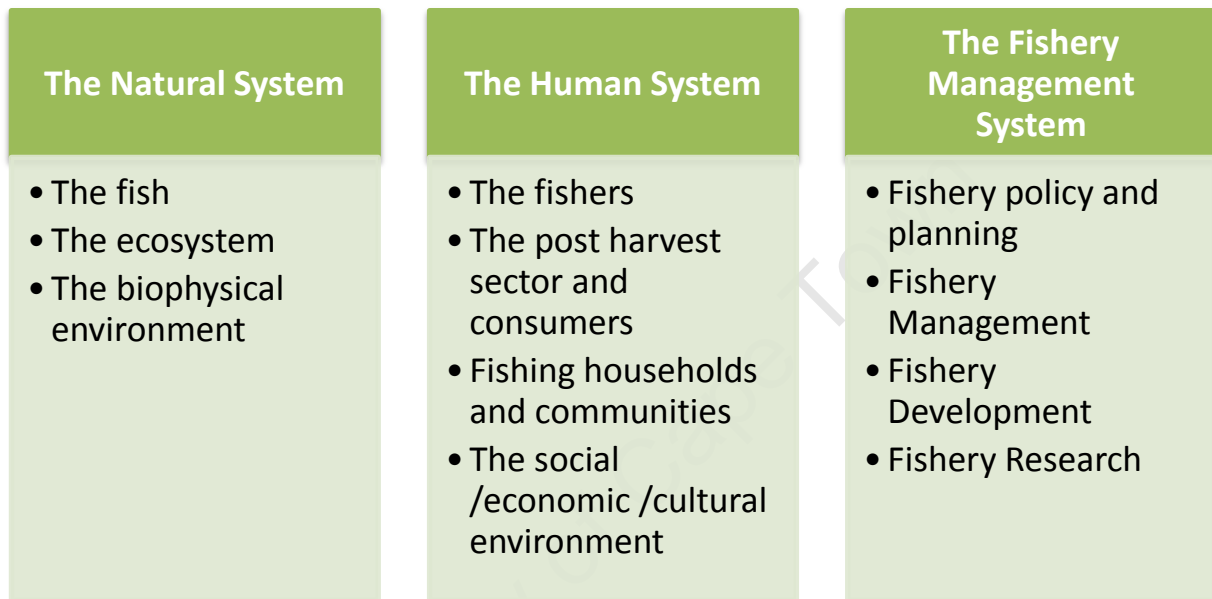


Figure 2: Key components of the fishery system (Charles 2001)

The systems approach also describes the fishery system as a plexus of subsystems (Garcia and Charles 2007). It exists within a broader natural and human system and is, therefore, affected by global environment, economy and society (Garcia and Charles 2007). The human dimension is seen as a key element responsible for linking the biological, technological, economic and social aspects of the system. The components of the system can be illustrated through a series of concentric rings. The core would include the marine resources targeted for harvesting, various types of fisheries, fishers, post-harvest activities and management authorities. The second layer contains aspects that influence the core ecological aspects such as the broader ecosystem, habitats and climate, as well as human aspects such as the research community, fisher communities, government, and economic sectors. The outer ring would contain the academic world in which paradigms are developed, the public at large, NGOs and other active organisations (Garcia and Charles 2007). There are various linkages, interactions, impacts and relationships between the different parts of this system, and these are what make it so complex. Management of this system, therefore, needs to be

interdisciplinary and integrated between natural and social scientists, but also between scientists, policy makers and managers, in order to better address the fisheries crisis.

The diagram in Figure 3 below illustrates the human components of the fisheries system as described by Garcia and Charles (2007).

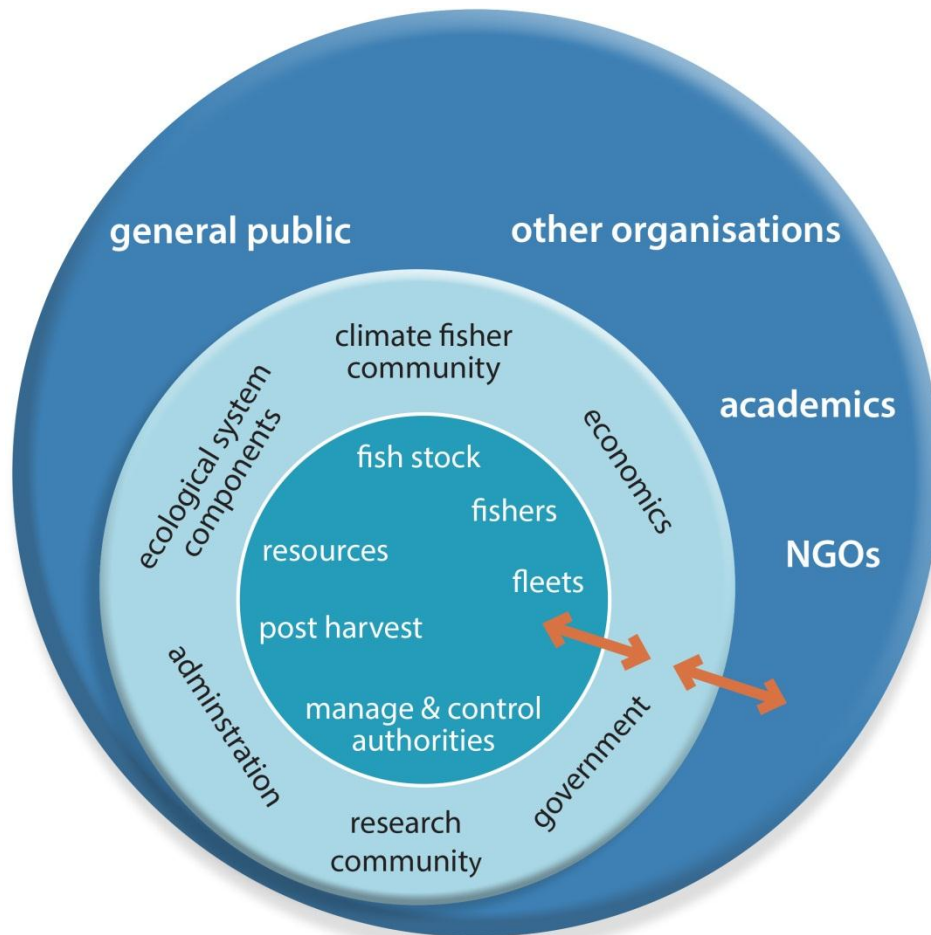


Figure 3: Human components of the fisheries system

Garcia and Charles (2007, 2008) state that, although much has been written in the past three decades on the systemic nature of fisheries, the history of fisheries science indicates that attempts to include the systems approach in ground level management have made slow progress. It has taken some time for the approach to be generally recognized by the scientific community and debated at international conferences, although adopting a systems approach is increasingly referred to in various international policy instruments, such as the Convention on Biological Diversity (1992) and Code of Conduct for Responsible Fisheries (FAO 1995). Further experience with implementation of a systematic and integrated approach is necessary in order to understand the implications on the ground and the effect it will have on fisheries science and management.

In line with adopting a systems orientated approach is the Ecosystems Approach to Fisheries Management (EAF) adopted by the Convention on Biological Diversity (CBD) in 2000 and the Food and Agriculture Organisation (FAO) of the United Nations in 2002. Other global agreements such as the Plan of Implementation adopted at the World Summit on Sustainable Development (WSSD) held in Johannesburg in 2002, encouraged the implementation of this system to fisheries management by 2010 (Garcia et al. 2003, Mahon et al. 2008, Garcia and Charles 2007, Garcia and Charles 2008, de Young et al. 2008, Paterson and Petersen 2009, Paterson et al. 2010).

Its focus is on adopting a more holistic approach to fisheries management and, therefore, promotes the integration of human dimensions, as well as ecological dimensions in conservation and management of resources. It recognises that fisheries, and other human activities that involve the harvesting of marine resources, have a direct impact on the ecosystem and should be managed as such as part of a holistic fisheries and ecosystem management approach (Garcia et al. 2003). De Young et al. (2008) states that EAF must take place within the specific societal or community context in order to reflect human aspirations, must consider interactions between fisheries and ecosystems, and must recognize that EAF is a human pursuit and, therefore, comes with a range of institutional, social and economic implications. Although technical guidance is provided by the FAO, the practical application of EAF principles on the ground has been more difficult to achieve (Paterson and Petersen 2009). The FAO in particular has emphasized the need to explicitly recognize the human dimensions. Because even though concepts of EAF embrace human well-being, as well as ecological and governance considerations, governments of countries around the world still maintain a focus on ecological aspects (de Young et al. 2008).

In a study conducted in South Africa within 10 different fisheries, it was identified that certain challenges to adopting EAF exist (Paterson and Petersen 2009). One of the challenges was that transdisciplinarity is difficult to achieve when natural scientists and social scientists are grounded in different world views. The nature of transdisciplinary research is that it requires one to relook at held theories and beliefs. The approach, therefore, needs to be non-hierarchical so that no one discipline dominates, and that there is respect and equal participation by all stakeholders. The paper concludes that EAF has to be inclusive and cannot be addressed through one perspective or single methodological approach (Paterson and Petersen 2009). However, despite the fact that EAF is a relatively new approach, it has achieved considerable policy status, being enshrined in both international and national policy and legal instruments (Andrew and Evans 2011).

2.4.2 Rights Based Approaches

In the fisheries management and conservation arena there is a growing recognition of the need to consider social justice issues and to include human rights in planning and decision-making. International conservation organisations such as the World Wildlife Fund, Conservation International and Wildlife Conservation Society have also been developing

strategies that seek to address the tensions that exist between conservation and social justice objectives (IIED 2010). It is within this context that the IUCN has developed a human rights based approach to conservation (Campese et al. 2009).

A human rights approach has generally been defined as, 'a framework for the pursuit of human development that is normatively based on, and operationally directed to, the development of capacities to realize human rights' (Thomas 2003). Recognized rights include the right to work in just and good conditions, to social protection, to a satisfactory standard of living, to the highest achievable standards of physical and mental health, to education, to food security, to the benefits of cultural freedom and scientific progress (Sharma 2011).

Although there is a growing consensus around the recognition of human rights in resource management, the characteristics of human rights are still emerging and being debated all over the world (Campese et al. 2007). Essentially what the human rights based approach translates into is a mutually beneficial approach – for conservation that takes into account human rights can go far in enhancing the lives of local communities, which in turn can create an enabling environment for the success of conservation projects. While many conservation organisations (such as the IUCN) are seeking to incorporate human rights and social justice issues into conservation planning and decision-making, and to develop strategies and guidelines in this regard, their overriding interest remains conservation. Therefore, practical implementation of these more people-centred strategies remains problematic (Brockington et al. 2008).

On the other hand international NGOs (such as the International Collective in Support of Fishworkers) have implemented a human rights based approach as a campaigning tool in order to promote social justice (Isaacs 2012). The rights based approach to fisheries aims to provide greater equity in resource access. Indigenous fishing communities in countries such as the Philippines and Canada have used human rights arguments to secure their fishing rights (Allison et al. 2012). Even in South Africa, an Equality Court order in 1997 granted interim permits to small-scale fishers who had previously been overlooked in the new rights allocation system, while a new policy was being formulated that would address these needs (Sowman et al. in press). In the case against the Minister of Environmental Affairs⁴, fishers claimed that fishing quota allocations undertaken by government were done in a way that violated their human rights (Sowman et al. in press).

Rights-based management also includes rights to fishery access and quantitative levels of fishing effort, and participation in fishery decision making (Charles 2011). Therefore, adopting a human rights approach for improving the livelihoods of marginalised fisher communities may well be the answer to securing freedom, well being and dignity for fisher communities. It is important to note that fishers' awareness of their rights is essential to

⁴ George K and others vs the Minister of Environmental Affairs and Tourism 2004

fishers' ability to demand action and accountability from their governments to protect their basic rights to life and livelihood (Sharma 2011).

2.4.3 Incorporation of different knowledge systems

Historical fisheries management has depended on technical tools and scientific research to inform decision making. However, the shift towards recognising fisheries as multifaceted and complex systems requires a broader interdisciplinary perspective – one that incorporates a range of information sources gathered from such disciplines as the social sciences, humanities, law and economics (De Young et al. 2008, Sowman 2011). The limitations of a single disciplinary approach to fisheries management have been recognized, as well as the value of qualitative information from the social sciences. Further, broadening of this disciplinary approach to include integration of indigenous or traditional ecological knowledge is increasingly being recognized (Berkes et al. 2003, McConney and Charles 2009). This consideration goes back to the 1980s with the documentation of the knowledge held by the fishers of Palau, Micronesia. In Oceania there is an increasing consensus that, given the lack of scientific knowledge in the region, alternative fisheries management models may be proposed in which local knowledge may serve as the main source of data and information (Berkes et al. 2001).

Traditional ecological knowledge (also referred to as indigenous knowledge) can be defined as, 'a cumulative body of knowledge, practice and belief, evolving by adaptive processes and handed down through generations by cultural transmission, concerning the relationship of living organisms with one another and with their environment' (Berkes 1993). Another term that is used is local knowledge, which is more recent and practical, but does not have the historical and multigenerational facet. Indigenous knowledge is held by indigenous people of an area and is regarded as the local knowledge unique to a specific culture or society (Berkes et al. 2001). The traditional ecological knowledge of fishers may encompass knowledge about ecological, biological, behavioural, nutritional and medicinal aspects of marine resources, as well as oceanographic aspects of the habitat, geographic aspects of the coastline and climatic aspects (ICSF 2009). This is knowledge not readily available to scientists, because it is difficult to research, as in many cases it is passed down verbally through generations, acquired through first hand experiences and not documented.

Although this type of information is not necessarily available in the formats required by fisheries scientists, its value in supplementing scientific data may enhance understanding and management. In addition, decisions and management policies are more likely to be accepted by local users if those policies are consistent with their views, values and practices (Sowman 2011).

2.4.4 Governance

Kooiman et al. (2005), state that one of the reasons for the current global fisheries crisis is that the foundations of fishery management and practice have not kept pace with the rapid changes in fisheries. As a result, fisheries management theory has been called into question. Governance became a catchword within the social sciences, with the term being first used in the 1990s, when the World Bank introduced the term 'good governance' into the international development arena (Kooiman et al. 2005). Governance is concerned with more than government and management, and embraces a broad inclusive and interactive communication between state and non-state actors. Kooiman et al. (2005), describe governance as:

'Governance is the whole of public as well as private interactions taken to solve societal problems and create societal opportunities. It includes the formulation and application of principles guiding those interactions and care for institutions that enable them' (page17)

The key word in the above definition is said to be the term 'interactions', which stands at the centre of the proposed interactive governance approach. Interactive refers to the notion that governance is not the task of government alone, but a joint interactive responsibility of various parties such as the state, market and civil society. It is a mutually influencing relationship as interaction is not only an essential part of the system to be governed, but also of the governing system (Kooiman et al. 2005). Conventional governance assumes that governance is the task of governments. However, governments are not the only actors capable of addressing societal problems. Public and private enterprises, actors, institutions and associations all interact to play their part in governance (Bavinck et al. 2005).

Jentoft (2007) describes that interactive fisheries and coastal governance can also be seen as a relationship between two systems, the 'governing system' and the 'system to be governed'. The governing system refers to institutions and steering mechanisms, while the system to be governed consists of ecosystems and resources, as well as users and stakeholders. There is also a set of governing interactions that is concerned with the relations and interactions between the governing system and system to be governed (Jentoft 2007, Jentoft and Chuenpagdee 2009). It is argued that, in order to understand why some governance systems fail and some deliver, an assessment of the contributions and limitations to governability is needed (Chuenpagdee and Jentoft 2009). Governability depends on the interactions between the governing system and the system to be governed, and an assessment is based on the assumption that there are barriers or limitations that prevent a system from achieving its preferred state. Such an assessment would require the identification of key variables, as well as social and ecological research to identify system limitations (Chuenpagdee and Jentoft 2009, Jentoft and Chuenpagdee 2009).

Over the past 2 decades there has been increasing acknowledgement that development and implementation of appropriate governance systems and arrangements are critical for

achieving sustainable small-scale fisheries. The challenge for fisheries governance is to resolve conflicts as effectively and equitably as possible. A fisheries governance perspective is also seen as a prerequisite for addressing issues such as globalisation, ecosystem health, social justice, livelihoods and food security (Kooiman et al. 2005). The governance perspective relating to the South African small-scale fisheries context will be reflected in sections 2.7 and 2.8.

Governance approaches are constantly evolving to face the challenges, concerns and choices that these systems inevitably generate. Several innovative examples of fisheries governance exist and are employed in different situations around the world. For example, co-management, which is the mutually beneficial joint management of fisheries by government and user groups, is being promoted as having a substantial contribution to make towards improving fisheries management. Thus, the governance or co-management model in fisheries has been considered as an apt alternative to the top-down, government-based, centralised approach to management (Bavinck et al. 2005).

2.4.5 Adaptive Co-Management

The term co-management refers to the approach to resource management that supports the participation of resource users in management and decision making processes (Jentoft et al. 1998). It covers a range of possible partnerships between government, resource users and other stakeholders in which decision making is shared in order to effectively manage resources (Hauck and Sowman 2003). Adaptive management refers to the ongoing evaluation and modification of management practices as new information becomes available. This approach is now being incorporated into the fisheries arena and becomes a particularly useful approach to small-scale fisheries, as it is complex and uncertain (Sowman 2011). Adaptive co-management recognises that if fisheries are to be managed sustainably within uncertain environments, it is essential to employ methods that are designed to function successfully in the face of unexpected change, and it is particularly important due to its links with resilience (McConney and Charles 2009).

In addition, Berkes et al. 2001 identifies further functions that co-management could enhance. These include the gathering of data, making decisions on who can harvest what and when, resource protection against environmental damage, enforcement of regulations, enhancement of long term planning and more inclusive decision making. Adopting co-management could enhance the role of fishers, fisher communities and fisher organisations, allowing concerned interests to be heard. The information from users could result in the improvement of decisions and could ensure the legitimacy of the management system, as well as reduce conflict between fishers and managers (Hara 2003, McConney and Charles 2009).

Although the co-management approach has been in existence and implemented in many parts of the world, no single model for this approach has emerged. This is a result of the diversity within fisher communities around the world which have differing needs, demands and circumstances. There is the need to view each community within the distinctive political, biological, socio-economic, cultural and technological contexts in which they exist (Pomeroy et al. 2011). Yet in a study of co-management in fisheries in selected countries of Southern and West Africa it was found that, in most cases, co-management arrangements arose in response to resource depletion (Sverdrup-Jensen and Nielsen 1998). Studies conducted in Asia, Africa, the Pacific and the Caribbean have also identified some key conditions that could add to the success and sustainability of co-management (Pomeroy et al. 2011). In the study, a few key conditions were found to be more common across all regions. These included adequate participation by those affected by co-management arrangements, the existence of community organisations for representing resource users, and individual incentive structures to encourage users to participate in processes (this may entail some sort of personal gain or sense of ownership). Further, empowerment and capacity building were also highlighted, as objectives would fall short if local communities were to be shouldered with responsibilities that they are not capable of carrying due to lack of knowledge, resources or information (Sverdrup-Jensen and Nielsen 1998, Pomeroy et al. 2011).

In the South African context, political reforms that occurred with the post-Apartheid government provided the ideal opportunity to explore new approaches to fisheries management. Over the past 2 decades small-scale fisheries research in Southern Africa has attempted to focus on co-management through decentralising management responsibilities from national departments to local institutions. These local fisher institutions promoted user rights and participation in decision making processes (Isaacs 2012). It was found, however, that although the principles of co-management were largely accepted by government and management authorities, practical implementation was more complex (Hauck and Sowman 2003). One of the challenges was that fisheries departments are hesitant to share power and therefore there was a lack of commitment and support from government. Another factor that complicates co-management in South Africa is the lack of access rights to resources by fisher communities. Scientists warn that 'co-management' should not be used as a panacea for the many problems facing fisher communities (Hauck and Sowman 2003, Isaacs 2011), and that its application to the coastal and fisheries arena is complex due to the specific characteristics of fisheries and coasts (Hara 2003).

A mussel co-management project initiated in 1995 in Sukhulu in the Kwa-Zulu Natal province highlighted not only the challenges of establishing a co-management initiative in post-Apartheid South Africa, but also the benefits which accrued, due to the fact that the resources are now managed sustainably (Harris et al. 2003). The aim of the project was to investigate the impact and levels of dependence of subsistence harvesters on the resource, as well as to provide resource users with legal rights and to facilitate a co-management

arrangement between users and the management authority. Among the main obstacles faced was the mistrust of authorities by users, and the view by authorities that communities are criminals (Harris et al. 2003). This is a historical problem encountered in many small-scale communities, as local communities have faced many hardships at the hands of authorities under the previous regime. Another obstacle common in many fisheries communities was the lack of skills and educational capacity amongst the local community. The project's success was, however, attributed to the increased engagement of the local community in research and monitoring, the incorporation of indigenous knowledge, the granting of harvesting rights, the identification of alternative livelihoods, the development of skills and the establishing of a more sustainable harvest (Harris et al. 2003). These examples serve to illustrate that although co-management is advocated in various policy documents, it has been difficult to achieve in practice.

2.4.6 Resilience

Resilience is described as another means by which we may understand the dynamics of socio-ecological systems and approach fisheries management. The concept of resilience is relatively new, and has only in the last decade risen to prominence in academic literature on natural resource management (Folke 2006, Andrew and Evans 2011). Resilience in small-scale fisheries may be defined as 'the capacity of a system to absorb stress and recognize itself following disturbances, while still delivering benefits for poverty reduction' (Andrew and Evans 2011). Essentially, it refers to the ability of fisher communities to bounce back and recover from stresses, disturbances and vulnerabilities in their immediate environment.

The term stems from the recognition that small-scale fisheries are complex, dynamic and unpredictable. Marginalised fishers within the system become vulnerable to stresses, as well as ecological and social forces that are outside their control. Therefore, building the adaptive capacity of people and ecosystems is essential in enabling them to endure, renew and reorganise themselves in the face of change (Andrew and Evans 2011). It is also stated that resilience is not only about being strong and determined in the face of disturbances, but also about adapting to other opportunities that disturbances may reveal. Therefore, it is the ability of a system to remain the same in the face of stresses, but also the degree to which the system is capable of adapting and reorganising itself (Folke 2006). Disturbances may come in the form natural disturbances such as climate change and changing resource abundance, as well as human activities such as resource use and restrictions (Berkes et al. 2003).

Resilience is a key indicator in the sustainable livelihoods approach to achieving sustainable fisher livelihoods, as it is argued that diversifying livelihood options of communities provides a broader range of economic opportunities, allowing the community to respond better to threats and opportunities (Campbell 1999, Charles 2005). It is likely that diversifying

livelihoods approaches within fisher communities, rather than having each individual reliant on harvesting marine resources, will reduce the pressure fishers may face in the cases of change in management or governance structures (Charles 2005). However, it is also true that small-scale fisheries are resilient by their very nature, as is proved by the sectors' survival in the face of predictions of their demise due to their perceived social and technological backwardness (Sharma 2011).

2.5 Small-scale fisheries, food security and livelihoods

Despite the large proportion of people worldwide who depend on small-scale fisheries, small-scale fishers are regarded as one of the world's poorest groups (Allison 2001, Campbell 1999). They are often socially and politically marginalised, and lack access to basic infrastructure and services such as transportation, health and education. Even though small-scale fisheries are regarded as centres of economic activity in developing countries, fishers' income very seldom exceeds national poverty lines (Garcia et al. 2008). Research has shown that fishers who own their own gear and boats have the ability to earn higher incomes. However, this does not necessarily translate to better security and living conditions, as fishing is a highly variable lifestyle and fishers and their families often live in a volatile institutional and biophysical environment (Garcia et al. 2008).

Small-scale fisheries are especially vulnerable, as not only are they already poor and marginalised, but fishing by its nature is an unpredictable activity. Fishers catch is not fixed according to the amount of time spent at sea or the type of gear used. It is dependent on exogenous factors that may fluctuate on a daily, monthly and seasonal basis, such as availability of the resource, seasonality of the resource, weather and climate. Other factors that make fishers vulnerable is the lack of effective fisher organisations, high occupational risks of being at sea and the gender nature of fishing activities. Vulnerability is also experienced as a result of macro-economic factors, such as changes in markets and fuel prices, changes in national government structures and policies, conflict with other fishing sectors (commercial, recreational) and social, economic and political marginalisation (Béné et al. 2007).

Due to this vulnerability, the importance of sustaining small-scale fisheries has been increasingly recognized (Allison 2001). Conventional solutions have sought to conserve fish stocks while limiting access and creating incentives for fishers to leave the industry (Allison 2001). However, attempts in developing countries aim not only to emphasize the management of resources, but also focus on community, social and economic development (Garcia et al. 2008). The sustainable livelihoods approach has in recent times become prominent as an analytical tool for understanding the assets that poor people have and the strategies they employ in order to sustain their livelihoods. Understanding the livelihoods context and processes will enable informed decisions, which could reduce poverty and

vulnerabilities within marginalised small-scale fisher communities. The sustainable livelihoods approach within the small-scale fisheries sector recognises the seasonal complexities of livelihood strategies in fisher communities and proposes that the communities should not be preoccupied with a particular component of livelihoods at the expense of other components, which would contribute to diversifying livelihoods options (Allison 2001).

2.6 The Sustainable Livelihoods Approach

The concept of the sustainable livelihoods approach in the context of poverty alleviation has been in existence for more than 20 years and has been evolving since the 1980s (Campbell 1999). It was introduced by the Brundtland Commission on Environment and Development (1987). In 1992 the United Nations conference on Environment and Development expanded on the approach, advocating that the goal of poverty eradication can be achieved through sustainable livelihoods (Krantz 2001). But the concept of sustainable livelihoods is said to be widely attributed to Robert Chambers and Gordon Conway (Solesbury 2003, Glavovic and Boonzaier 2007). Various users and organisations (such as the UNDP, CARE, DFID, IDS) have modified the approach and use various strategies and methodologies to implement it. The common definition of the sustainable livelihood approach (SLA) to poverty is: *'A livelihood comprises the capabilities, assets (including material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain and enhance its capabilities and assets, while not undermining the natural resource base'* (Krantz 2001).

Although there is no unifying approach to applying the concept, the principles that underpin the sustainable livelihoods approach are common. It proposes a people-centred rather than resource centred process and regards communities themselves as key players in the development process. It also uses a multi-level approach with linkages and communication between all levels (from national to local) and recognises the vulnerable and unpredictable nature of communities and is holistic in its response to peoples' needs (Campbell 1999). At the core of this approach is the concept of sustainability. The SLA recognises the four elements of sustainability as environmental, economic, social and institutional. On these terms a livelihood is sustainable when: it is resilient in the face of external stresses, is not dependent on external support, maintains the long term productivity of natural resources and does not compromise the livelihood options of others (Campbell 1999).

The approach also recognises that livelihoods are informed and influenced by governance structures and processes. Therefore, it is essential to analyse institutional and organisational structures that link complex systems together (Scoones 1998). Scoones (1998) defines institutions as structures governed by rules or norms that have widespread use and power. These institutions may be formal or informal, and may directly or indirectly facilitate access

to livelihoods resources, which affect the livelihood strategies and outcomes of a community or individuals. An understanding of institutions and their relationships and power dynamics is therefore essential in achieving the goals of sustainable livelihoods (Scoones 1998).

At the macro level SLA may focus on cross-sectoral dimensions to provide a broader focus and understanding in designing poverty reduction strategies. At the local level SLA aims to understand individual and household livelihoods in the context of factors that make them vulnerable, such as lack of access to financial capital, lack of access to rights and problems caused by resource fluctuations (Andrew and Evans 2011).

One of the main points of departure of the approach is to avoid preoccupation and reliance on a particular component of individual or household livelihood strategy, with accompanying disregard for other strategies available to the individual or household. The approach seeks to identify what people have available to them, as opposed to what they do not have, in order to strengthen incentives rather than undermine them (Allison 2001). Alternative livelihoods exist outside of traditional established livelihoods and can be utilized to combine and supplement income with current strategies that will have a sustaining impact on their income and food security, and also on the natural resource base (Ireland 2004).

2.6.1 Sustainable Livelihood Approach (SLA) and Framework Application to Fisheries

For the purposes of this dissertation the application of the sustainable livelihoods approach to small-scale fisheries will be discussed. Fisheries policies in developed countries view fishing as a full time occupation within a well defined economic setting. The reality, however, is that this view provides little understanding of how fishing communities may be engaged in cross-sectoral livelihood strategies (Allison and Ellis 2001). The sustainable livelihoods approach has been widely proposed or applied within fisheries communities in Africa, Asia, South America and even Europe (Allison 2003, Allison and Horemans 2006, Brugere et al. 2008, Westlund et al. (eds.) 2008, Béné and Friend 2011, Hanazaki et al. 2012).

According to Campbell (1999), the framework consists of five components which can be described in terms of small-scale fisheries:

1. The vulnerability context in which fishers operate

The sustainable livelihood framework illustrates that communities live in a context of vulnerability over which they have little or no control. Their vulnerability is largely determined by a set of factors in the external environment, not necessarily directly related

to their fishing activities yet nevertheless impacting on fisher households and communities. Fisher communities are exposed to various trends (resource trends, market trends, population trends), shocks (conflict, natural disasters, economic and political changes) and seasonal shifts (food and fuel prices, climate) that may impact on their livelihoods. Understanding how individuals and communities livelihoods are influenced by trends, shocks and seasonal shifts can inform the design of policies and may assist fisher communities with coping and adaptive strategies. Such intervention may include improved access to education, health and transport infrastructure, financial credit systems for access to better gear, and diversifying livelihoods by increasing job opportunities and seasonal work in other sectors. The table below is drawn from Campbell 1999, Allison and Horemans 2006, Glavovic and Boonzaier 2007, and illustrates some of the possible trends, shocks and seasonal shifts faced by small-scale fisher communities.

Trends	Shocks	Seasonality
<ul style="list-style-type: none"> • declining stocks • increasing economic difficulty • increasing environmental and resource degradation (biodiversity loss, habitat destruction) • changing markets • overexploitation 	<ul style="list-style-type: none"> • conflict between resource users (commercial, recreational and small-scale) • national level economic influences • changes in availability of fish • death and diseases • policy changes • political instability 	<ul style="list-style-type: none"> • seasonal availability of fish • seasonal migration of fishers • seasonal health issues • seasonal job opportunities • seasonal demand for fish • seasonal prices of food and fuel • climate variability and change

Figure 4: Vulnerabilities experienced by fisher communities

2. The livelihood assets of fishers

Within the sustainable livelihood framework, resources are the basic material, social, economic and institutional assets that individuals and communities have access to and utilise. These are described as capital assets and are the resources that are available to individuals and communities to construct their livelihoods. A minimum number of assets are needed for survival, but the better people's overall assets, the better they will be able to respond to vulnerabilities, changes and hardships (Kleih, et al. 2003). An understanding of the capital assets that individuals and communities currently have, what is actually available to them and how they can increasingly access these assets, is essential in strengthening the ability of communities to improve and diversify livelihoods. The framework identifies five types of capital assets:

Human Capital – this is the skills capability and knowledge base, good health and physical capability that a person would need to be able to undertake their livelihoods. It is considered as one of the most important factors in the pursuit of successful livelihoods (Campbell 1999, Krantz 2001). For example, a fisher’s skills would need to include the know-how on when, where and how to catch fish, how to handle fish, how to maintain quality, how to access markets etc.

Natural Capital – this is the quality and quantity of natural and biodiversity resources available to fisher communities. It includes fish stocks and other marine resources that are harvested, crops cultivated, wood gathered, etc. Natural capital can be converted into financial capital through the selling of resources, physical capital through the building of boats and houses, and human capital through the food security that resources bring. The responsibility for the sustainability of these resources falls in part on the communities which utilise them.

Social Capital – this is regarded as the personal networks, relationships, associations and affiliations which exist within the fisher communities. They are the social structure upon which people draw in acquiring and pursuing livelihoods and livelihood options. Social relations can support or hinder the ability of communities to better their livelihoods through issues of trust and reciprocity. These types of relations between fishers and buyers, or fishers and outside migratory fishers, are particularly important for the market of small-scale fisheries.

Financial Capital – this refers to the finances (cash, credit, savings, debt), and other economic assets such as infrastructure, equipment and technology that are essential for the pursuit of successful livelihoods.

Physical Capital – this refers to the basic infrastructure such as transport, shelter, water, energy, roads, schools, clinics and harbours. It also refers to individual and household level infrastructure such as houses, boats, cars, gear, storage facilities, and processing equipment.

3. Governance structures and processes

Governance structures and processes (also referred to as transforming structures), refer to institutions, organisations, policies, and legislation that influence and shape the livelihoods of small-scale fisher communities (Campbell 1999). National policies and legislation may control the amount or type of natural resources fishers may have access to. They may also place restrictions on the geographical area available for harvesting resources. Institutions, organisations or individuals may influence trading and market processes. Structures also refer to the mechanisms by which fishers and communities may organise and mobilise themselves to become involved in decision making processes. They may also refer to more

regional or international policies and practices that influence how national policies are implemented. Governance structures and processes can affect many factors in the rest of the sustainable livelihoods framework such as fishers' vulnerability context and their ability to access capital assets. It has a direct effect on how fisheries are managed.

4. The livelihood strategies that fishers adopt

Many small-scale fisher households strive to adopt more than one livelihood strategy (Campbell 1999). In addition to harvesting and selling marine resources, they may engage in fish processing, harvesting crops and other produce, or take on seasonal jobs in other sectors. Different household members are involved in other local sectors such as industrial factories, tourism, teaching or local wage labour. This provides a means by which to supplement household income and relieve dependence on one type of activity. In adopting alternative livelihoods people learn to identify what they have available to them as opposed to what they do not have, in order to strengthen incentives rather than undermine them (Allison and Ellis 2001). It is based in the premise that alternative livelihoods exist outside of the traditional established livelihood of a community and these alternatives can be utilised to supplement current strategies and have a sustaining impact on income and food security, and also on the natural resource base (Ireland 2004).

5. Livelihood outcomes

Livelihood outcomes are regarded as the accomplishments that individuals and communities aspire to achieving in their lives. These include increased well being, more income, improved food security, better health, reduced vulnerability and increased protection and sustainability of the natural resource base.

2.6.2 Critique of the application of the SLA and its approach to small-scale fisheries

In recent years there has been a focus on the sustainable livelihoods approach and its application to development interventions aimed at reducing poverty in developing countries (Allison and Ellis 2001). Although much has been written about the potential application of the framework to guide policy and management in the coastal and small-scale fisheries arena (Allison and Ellis 2001, Ireland 2004, Béné 2006, Glavovic and Boonzaier 2007, Westlund et al. (eds.) 2008), there has been little practical evidence of its application on the ground. It has been recognized that even though the concept of SLA is not new, it may be complex in practice (Allison and Horemans 2006).

One initiative that has integrated the SLA is the sustainable fisheries livelihoods programme (SFLP) operational in West Africa. The programme involves 25 countries in West and Central Africa where seven million people are said to be involved in fishing related activities. It has used an approach that combined the SLA with the principles and guidelines of the FAO Code of Conduct for Responsible Fisheries with the aim of promoting responsible fishing and

contributing to poverty alleviation in coastal and inland communities. In this way it aimed to influence and inform national and regional policies and institutions in promoting more sustainable livelihoods and responsible resource utilisation (Westlund et al. (eds.) 2008).

It is reported that with the use of the SLA, the SFLP assisted in making significant strides in improving the understanding of the difficulties fishers in the region are confronted with, identified ways of addressing them, was a useful checklist of issues to be considered when developing interventions, contributed to capacity building of organisations and connecting fisher issues with wider development processes (Allison and Horemans 2006). The programme also provided insight into the challenges of application of the SLA to small-scale fisheries initiatives.

Some of the shortcomings of the SLA are that its household focus does not consider larger scales of social organisation or take into account intra household differences, such as gender and age differences (Krantz 2001). As a result, the informal structures of social dominance and power within communities, as well as the inequality aspect between men and women are not completely addressed. It has a limited ability to understand how people's livelihoods shape and are shaped by local institutional practices and relationships. Also, the importance of markets and the role of SLA in development are underemphasised (Krantz 2001, Allison and Horemans 2006).

In South Africa, many coastal areas are characterized by the vulnerability left behind by the Apartheid regime, such as high disease and HIV/AIDS rates, corruption and illegal activities associated with harvesting marine resources, the depleted state of coastal resources, and the short, medium and long term impacts of climate change. Due to this, a number of governance challenges would be experienced in the application of sustainable coastal livelihoods (Glavovic and Boonzaier 2007). Government policies, laws and implementation procedures are changing and may conflict or overlap, resulting in uncertainty about which governmental and management agencies are responsible for which tasks. It may also result in lack of capacity and cause conflict in regions where local authorities clash with traditional leadership structures. Although provincial and local governments have stepped up their local economic development initiatives, there may still be inadequate knowledge and understanding of community sustainable livelihood issues. Issues of land reform and restitution still exist and may negatively affect livelihood options of coastal communities.

2.7 Small-scale fisheries in South Africa – an overview

Indigenous coastal communities have harvested marine living resources for centuries along South Africa's 3 000 km coastline for consumptive or medicinal purposes and as part of cultural or traditional practices (Deacon and Deacon 1999). One need only look to the archaeological remains scattered along the coast, from shell middens to fish traps, as evidence of this (Kemp et al. 2009). Currently SA has around 147 fishing communities, 28 338 fisher households and about 29 233 people are considered true subsistence fishers

(DAFF sector GDP draft 2010 in WWF 2011) although this is considered to be an underestimate (Sowman et al. in press). In the South African context, the main factor that complicates the management of fisheries is that the democratically elected government that came into power in 1994 inherited a legacy of unjust rule, racial prejudice, and the unequal distribution of wealth, land and resources, that were the features of the previous Apartheid government (Masifundise 2010).

The industrialisation of the country's fisheries sector began in the early 1900s. Unjust policies from the 1930s and during Apartheid were aimed at boosting this growing commercial sector and increasing the export market. In 1988 South Africa promulgated the Sea Fisheries Act No.12 of 1988. This Act introduced the Individual Transferable Quota (ITQ) system within the 200 nautical miles Exclusive Economic Zone. The purpose of the ITQ system was to enclose the fisheries 'commons'. In doing so, however, ITQs accentuated the role of the market and resulted in concentrating available quotas into fewer hands. In doing so many people were excluded from the fishery leading to poverty among those not privileged (Isaacs 2011a).

In South Africa, the Quota Board was responsible for the granting of rights to harvest and exploit fisheries resources (van Sittert 2002). The ratio of allocation was skewed, with most rights going to established companies and a small percentage to new entrants. These companies were owned mainly by wealthy white groups (van Sittert et al. 2006). Under the Apartheid government from the 1940's the sector gained increased support in the establishment of an export driven commercial sector. During this period, the small-scale and subsistence fishers were almost completely neglected. Many traditional fishing communities were dispossessed of their lands adjacent to the coast or restricted through prohibitions and regulations. Many of these fishers had no other option than to work for white owned fishing companies. These policies did not recognise small-scale fishers, who were therefore not a legal entity. In this way, only a few communities had the chance to retain their access to the coast and retain their traditional and customary fishing practices (DAFF 2010).

In 1994, when South Africa became a new democratic nation, the new government engaged in a lengthy fisheries law reform process. The culmination of this process was a new set of legislation aimed at transforming the inequitable and unjust system of the past (Masifundise 2010). It promised a system that would address equitable redistribution of access rights, while at the same time maintaining an internationally competitive fishing industry, and it was prescribed that this would be achieved through the Government's Reconstruction and Development Programme (RDP)⁵ and the newly formed Fisheries Policy Development Committee (FPDC) (Isaacs 2011a). In 1996, however, the progressive objectives put forth by the RDP were set aside in favour of the neo-liberal Growth, Employment and Redistribution

⁵ The RDP is an integrated, coherent socio-economic policy framework. It seeks to mobilise all the people and the country's resources toward the final eradication of Apartheid and the building of a democratic, non-racial and non-sexist future.

(GEAR) programme – South Africa’s new macro-economic policy. The GEAR initiative was based on a strategy which aimed to stimulate economic growth, enhance foreign investment, and reduce inflation and budget deficits (Sowman 2011).

In 1998, the fisheries policy was formalised through promulgation of the Marine Living Resources Act (MLRA) Act No.18 of 1998. The MLRA regulates ‘all fishing sectors’ in South Africa (Masifundise 2010). These fishing sectors are: commercial, recreational and subsistence, and the Act states that one of the intentions is to protect the needs of poor people who rely on marine resources as a source of food or for a modest income. It therefore aimed to increase access rights to historically disadvantaged individuals and historically disadvantaged companies. Rights allocation under the MLRA of 1998 was based on the ITQ system, where groups that formed co-operatives, enterprises or companies in order to apply for fishing rights, were given preference (Isaacs 2003). Other key principles that underpin the MLRA are that marine living resources must be managed in a way that ensures sustainability, achieves equity within all branches of the fishing industry and promotes economic stability of the fishing industry (Cardoso et al. 2006, Witbooi 2006).

Although subsistence fishers were recognised in the MLRA (section 19), the term was narrowly defined and few traditional fishers gained formal access to resources. In 2000, the Subsistence Fisheries Task Group (SFTG) was formed and argued for a revised definition of the term subsistence fishers. The SFTG recognised that the subsistence category was too limited and recommended that Government identify them as a category of fishers termed small-scale commercial (Isaacs 2006). The MLRA and subsequent allocation and management procedures, failed to cater for small-scale fishers who depend on fishing not only for subsistence but also as income generation. Many of these fishers have strong historic links to harvesting marine resources (Isaacs 2006, Sowman 2006). The term ‘limited commercial’ was also introduced and characterised small-scale fishers who wanted to sell their catch (Isaacs 2011a).

Subsistence fishers who wanted to continue fishing were encouraged to apply as individuals or commercial entities. In 2002, Government allocated medium term fishing rights to those who formed small companies. In this way many community organisations were encouraged to form closed corporations in order to apply for rights. Due to the intricate application process many *bona fide* fishers were left out of the system and their only access to harvesting resources was to work for existing rights holders. In 2005/2006 long term rights (10-15 years) were allocated and again many *bona fide* fishers were excluded. As a result of language difficulties and a complicated application process fishers who have limited levels of literacy were unable to comply with formal requirements (Isaacs 2011).

The changing laws and policies post-independence, which sought to assist small-scale fishers, are perceived to have done little to improve fishers’ access to marine resources (Cardoso et al. 2006). Fishers argue that their lives have been negatively affected by changes in fishing laws and legislation, and that the changing laws meant an end to their traditions.

Thus, despite a revised fisheries rights allocation process that seeks to address past injustices, the socio-economic conditions of poor fishers have not improved – and in fact for many fishers and fishing households their livelihood circumstances have deteriorated (Cardoso et al. 2006).

The failure to recognize and cater for this group of traditional small-scale fishers led to a class action suit against the Minister of Environmental Affairs. In 2004, a historically disadvantaged group of fishers, with the assistance of NGOs, academics and lawyers used the Constitution and the Equality Act of 2004 to litigate on the socio-economic impacts of the reform process (Isaacs 2011, Sowman 2011). In 2007, the Equality Court ruled in favour of the fishers, stating that a 'new policy and legislative process needed to be developed by all parties concerned that would include all traditional fishers in South Africa and accommodate the socio-economic rights of these fishers' (High Court of South Africa 2007). In addition, the Minister should provide access to marine resources through interim relief measures to traditional small-scale fishers until the Government finalised its new small-scale fishing policy (Isaacs 2011, Sowman 2011).

Although measures such as interim relief permits have assisted fishers in some way, they are not a long term solution and small-scale fishers in South Africa continue to struggle to access fishing rights in order to harvest resources. It is evident that the small-scale fisheries sector in South Africa has a diverse set of cultural, socio-economic, bio-physical and governance arrangements (Sowman et al. in press). The new policy (DAFF 2012), that would address this diversity, is discussed in section 2.8 below.

2.8 Towards a new Policy – policy for the small-scale fisheries sector in South Africa

In June 2012 South Africa through the Department of Agriculture, Forestry and Fisheries, promulgated a new small-scale fisheries policy after a lengthy development and review process that started in November 2007. The Policy is guided by international best practice such as the FAO's Code of Conduct for Responsible Fisheries and the SADC Protocol on Fisheries (Isaacs 2011, Sowman et al. in press). Thus, the new policy illustrates a fundamental paradigm shift, away from previous management approaches, which were characterised by science based and top-down decision processes, to an integrated, participatory and human rights based approach that recognises the rights and needs of small-scale fisheries. Food security, gender equity and poverty reduction are key principles to be addressed (DAFF 2012, Sowman et al. in press).

Another key aspect of the new Policy is that it expands on the MLRA's (1998) narrow definition of small-scale fishers. The new definition of small-scale fishers describes them as *'persons that fish to meet basic livelihood needs or are directly involved in harvesting/processing or marketing of fish, traditionally operate on near-shore fishing*

grounds, predominantly employ traditional low technology or passive fishing gear, usually undertake single day fishing trips and are engaged in sale or barter or are involved in commercial activity' (DAFF 2012).

Another way in which the policy has shifted from past management practices and approaches, is its support of co-management, and emphasis on community orientation and the establishment of structures for a community based approach to harvesting and managing marine resources (Isaacs 2011). The policy abandons the present individual rights based approach. Instead, rights will be allocated to a community based legal entity, which consists of individual fishers from a specific fishing community. It gives preference to communities and fishers who have an historical involvement in fishing and the use of traditional fishing practices (Isaacs 2011, Sowman et al. in press).

The allocation of rights also indicates a shift away from the mainstream ITQ system. The allocation of collective rights allows community based entities access to multi-species allocation. It recognises that, traditionally, small-scale fisher communities have harvested a variety of species and that particular consideration will be given to this by allowing fishers to harvest a variety of species within an area or a prioritised area (DAFF 2012).

The policy aims to enhance local market systems. It recognises that relationships between fishers and buyers have in the past worked to the detriment of the fishers, and therefore aims to put mechanisms in place that would enhance the involvement and benefit of local fisher communities in the local market structure. These mechanisms include subsidy schemes for storage facilities and ice machines, skills training in areas of processing, storing, packaging, marketing, transporting, exporting of fish and basic business skills (DAFF 2012).

It is envisaged that the policy will result in the increase in the number of fishers who will gain legal access to marine resources, as well as increased access to infrastructure and capacity development. This in turn has the ability to positively impact on local socio-economic conditions of fisher communities (Sowman et al. in press). Small-scale fisher communities along the South African coastline are complex and diverse, which means that a generic approach will not result in a good working situation for all communities. Besides, a policy that constitutes a paradigm shift from all previous approaches is bound to have some implementation challenges. (Sowman et al. in press).

2.9 Tools for fisheries management and conservation

As part of conventional and traditional fisheries governance and management approaches, the control of fisheries resources has been highly centralised, and based on biological and scientific advice (Raemaekers 2009). Resource modelling of fish species and population dynamics was based on mathematical modelling. This biological science based approach formed the basis of the calculations of many of the control tools and mechanisms employed

today (Raemaekers 2009). These controls were aimed at conserving resources. Based on scientific information fisher behaviour was controlled through input regulations such as closed seasons, closed areas and gear restrictions, and output controls that restricted aspects of the catch. Output controls included aspects such as size limits, protected species, restrictions on maturity stage of species, Total Allowable Catch (TAC), Total Allowable Effort (TAE), quota restrictions and bag limits (Raemaekers 2009).

Total Allowable Effort (TAE), is a regulatory mechanism placed on the traditional linefish sector as a means of reducing the harvesting effort of a marine species. It also informs the reasons for limiting the number of allowed fishing vessels, fishermen or fishing hours applied to a fishery (Griffith 2000, WWF 2011). Total Allowable Catch (TAC) is the total amount in kilograms or tonnes permitted to be caught by a permit holder. Further restrictions are placed on the species that can be caught as a result of being classified as endangered, prohibited, overexploited or collapsed (WWF 2011). In addition, restrictions are placed on the type and size of gear (vessels), and even zones of operations. In South Africa, as part of the Traditional Linefish Permit Conditions fishing vessels may operate only within designated geographic zones. Zone A is designated as Port Nolloth to Cape Infanta, Zone B is Cape Infanta to Port St Johns and Zone C is Port St Johns to the Sikombe River forming the international border with Mozambique⁶ (DAFF 2010).

While science and biological based tools have dominated past practices, the new recognition and emphasis on new perspectives, concepts and approaches in fisheries management, calls for fisheries management tools to also embrace new thinking and ensure human dimensions are integrated into planning and management. The following section describes marine protected areas (MPAs), as well as the relatively new concept of marine spatial planning (MSP), which are having an increasingly important role as fisheries and conservation management tools for achieving ecological and fisheries management objectives.

2.9.1 Marine protected areas (MPAs) and marine spatial planning (MSP) as fisheries management tools

Stemming from the conceptual objectives and principles of the Ecological Approach to Fisheries Management, MPAs have been recognized as an increasingly important tool for conserving and managing marine resources (Garcia et al. 2003). MPAs are spatially defined management areas in which human activities, such as fishing, are restricted or prohibited (McCay and Jones 2011). Many argue that MPAs are expected to facilitate an increase in the ocean's fish stocks and prevent overexploitation (Agardy 1994b, Clark 1996, Hockey and Branch 1997 In: Tunley 2009). While the proclamation of MPAs has largely been driven by the ecological and biological concerns of fisheries science, now the importance of the

⁶ See map in Figure 17

human dimensions of MPA management is increasingly being recognised and the need to adopt an integrated, human centred approach is advocated (Pomeroy et al. 2006, Charles and Wilson 2009, Mascia et al. 2010, Sowman et al. 2011). Although the importance of considering the human dimensions of MPAs has been recognized, it is only recently that these issues have been increasingly featured in the literature and debates on MPAs and fishery governance (Christie et al. 2003, Christie and White 2007, Pomeroy et al. 2006, Sunde and Isaacs 2008, Charles and Wilson 2009). Despite this clear need for a more human centred approach that considers social, economic, cultural, traditional, historical, political and institutional issues, the scientifically driven management and declaration of MPAs still continues (Sowman et al. 2011).

Inadequate consideration of the human dimensions, and incorporation of these dimensions into MPA planning and management, has resulted in a number of negative impacts on adjacent communities (Sowman et al. 2011). The establishment of MPAs may lead to restrictions on coastal fishing communities, may create short term losses for fishers, may lead to loss of customary fishing areas, may exacerbate access problems due to shifting fishing grounds and may lead to internal conflicts among fishers as a result of harvesting restrictions (Pomeroy et al. 2006). Thus, research is increasingly showing that MPAs will fail if they do not consider the human dimensions (Charles and Wilson 2009).

The incorporation of the human dimensions into MPA planning and management is considered important, because MPAs are not situated in isolation, but they are located spatially in a place that inevitably has people, a history and a set of norms that govern it (Charles and Wilson 2009). In addition, coastal communities in many parts of the world have a long history of fishing traditions; they have a high dependence on natural resources and they face growing food insecurity as a result of resource depletion (Pomeroy et al. 2006).

More recently, the Rio+20 Conference held in Rio de Janeiro in June 2012 reaffirmed the importance of area based conservation measures, including marine protected areas that provide effective frameworks to consider social, cultural, institutional, environmental and economic variables (Secretariat of the Convention on Biological Diversity and the Scientific and Technical Advisory Panel – GEF 2012). In this regard, the concept of Marine Spatial Planning (MSP) is an area based management framework that addresses these multiple management objectives. Principles of the Ecosystem Approach underlie MSP as a process that includes the consideration of multiple components and scales, envisages a long term perspective and recognizes that humans are an integral part of ecosystems (Secretariat of the Convention on Biological Diversity and the Scientific and Technical Advisory Panel – GEF 2012). MSP is regarded as an essential tool for delivering an Ecosystem Approach and for adding value to already existing management measures targeted at the marine environment (Gilliland and Lafoley 2008).

There is currently a growing body of research looking at developing tools and methodologies for use in MSP, which is increasingly being used as a management

framework in many countries (GHK Consulting Ltd 2004, Gilliland and Lafoley 2008, Ehler and Douvère 2009, Taljaard et al. 2012). It has been used as a management approach for nature conservation in the Great Barrier Reef Marine Park for over 30 years, as well as more recently in European countries as an effective method for attaining multiple objectives. Countries in Asia, such as China and Vietnam, are also using MSP to attain economic and environmental objectives (Ehler and Douvère 2009). The tools utilised within the MSP approach may constitute remote sensing, GIS application, use zones, and environmental and economic standards (Secretariat of the Convention on Biological Diversity and the Scientific and Technical Advisory Panel – GEF 2012).

MPAs have played an important role in contributing to the development of MSP as a framework, by testing levels of use and what sorts of uses are appropriate and by providing demonstration sites for participatory planning processes. MSP is not a substitute for MPAs, however, but rather a broader framework that can extend protected area management to go beyond the local achievements of a MPA (Secretariat of the Convention on Biological Diversity and the Scientific and Technical Advisory Panel – GEF 2012). Similarly, MSP is not a substitute for Integrated Coastal Area Management, but rather builds on these approaches.

2.9.2 Marine Protected Areas in South Africa

South Africa has a long history of protected areas in the coastal and marine environment. The country's first formally designated MPA was established in Tsitsikamma in 1964. Since the World Parks congress in 2003, (when SA committed to establishing 21% of the coastal environment as MPAs), MPAs have been increasingly used as a tool to achieve fisheries objectives (such as stock rebuilding and rehabilitation of important habitats). South Africa presently has 21 MPAs constituting 21.5 % of the country's coastline (Tunley 2009). Other research has indicated that 23% of the coastline is under the protection of MPAs (Lombard et al. 2004). Eight of these 21 MPAs are completely no take zones (Tunley 2009). In the context of South Africa, MPAs are established in terms of the MLRA of 1998 and almost half are no take zones (39%-43%), which means that limited or no harvesting activities at all by any user are permitted in such an area. Because of the nature of coastal resources, MPAs are spread unevenly around the country's coastline with no MPAs in the Northern Cape Region, but at least 7 MPAs in the Western Cape Region (Lombard et al 2004). Further, only 0.4% of South Africa's Exclusive Economic Zone⁷ (EEZ) falls within any MPA with 0.2% of this being a no take zone. A map illustrating South Africa's network of MPAs is illustrated in Figure 5 below.

⁷ EEZ is prescribed by the United Nations Convention on the Law of the Sea. It stretches 200 nautical miles out to sea and is the sea zone within which a state has special rights over exploration and use of marine resources (UNCLOS 1982).

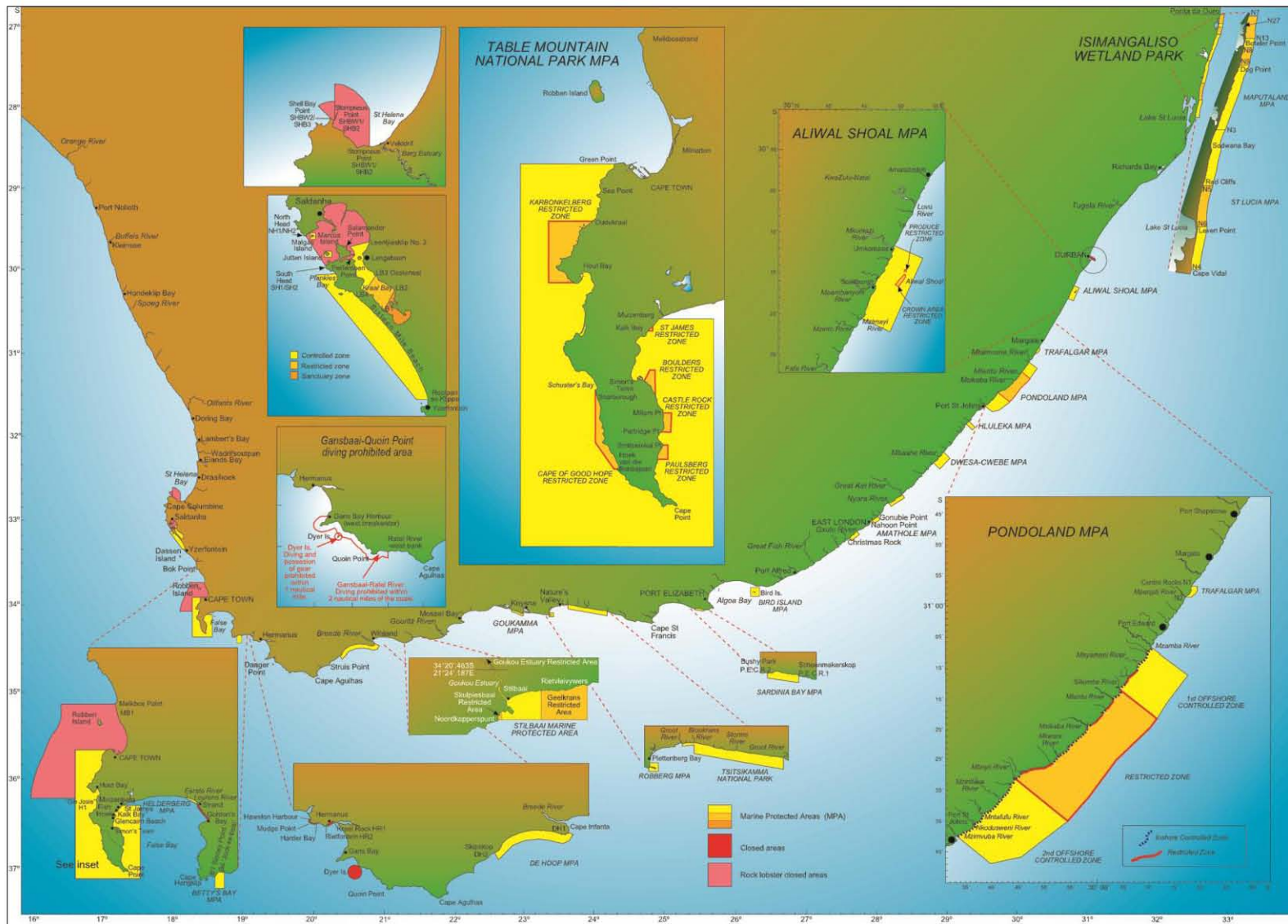


Figure 5: Map illustrating South Africa's network of MPAs (DAFF 2012)

The management of MPAs in South Africa has also been influenced by the policies and laws that were implemented during the Apartheid regime. The laws governing MPAs in South Africa are set out in the MLRA of 1998. Section 23 of the Act states that a MPA may be declared to protect fauna and flora, to protect and sustain fish stocks and to facilitate research.

The declaration of many MPAs has affected small-scale fishing communities living adjacent to the sea (Sowman et al. 2011, Sunde and Isaacs 2008). South African case studies emphasize the importance of fishing to indigenous coastal communities and illustrate how the proclamation of MPAs has had various effects on these adjacent communities. MPA initiatives in South Africa are largely driven by scientists with a strong conservation and fisheries management agenda, with little input from the fishers or recognition of their needs (Sowman et al. 2011). This leads to negative impacts on local communities, which put them in a particularly vulnerable state and in danger of losing their access to food and livelihoods, and also their traditional practices (Sunde and Isaacs, 2008). Studies undertaken within traditional fishing communities living in or adjacent to an MPA show that communities are particularly disheartened at the lack of community involvement in the management and decision making processes of the MPA (Sunde and Isaacs 2008, Sowman et al. 2011).

There is a rich history of fishing in many coastal communities, which can be traced back hundreds of years (Sunde and Isaacs 2008). Fishers tell of how, in the past, entire households would be involved in the fishing process, from catching, through preparing, drying and selling. They now feel that the declaration of the MPA was the negative turning point in their way of life – for the lack of local participation in the decision making processes of the management and establishment of MPAs has left communities disempowered. The dispossession of land, lack of access to resources and the need to apply for restricted fishing permits has seriously curtailed their ability to maintain their livelihoods (Sunde and Isaacs 2008, Sowman et al. 2011).

2.10 Conclusion

This literature review illustrates the emergence of new thinking and approaches to fisheries management which calls for a more holistic, integrated and participatory approach to managing fisheries. Societal demands have begun to shape the evolution of fisheries science and it has become recognized as a complex system that requires the holistic management of ecological, biological, socio-economic and institutional processes for fishery systems to be sustainable. Increasing emphasis is placed on the importance of the human dimension and the recognition of the role of fisheries in developing livelihoods and food security for millions of impoverished people involved in small-scale fisheries activities along the coast.

This chapter has reviewed these new perspectives with a particular focus on small-scale fisheries management and, in particular, discusses the sustainable livelihoods approach which has, in recent times, become prominent as a tool to understand and address poverty and vulnerability within marginalised small-scale fisher communities. It describes the South African context and the new policy and legal development process that is underway in order to support a new approach to fisheries management. In particular, it calls for an Ecosystem Approach to Fisheries Management, and a mode of governance that involves resource users in planning, decision making and co-management processes. However, before identifying and planning appropriate management measures (such as MPAs) for small-scale fisheries, there is the need to understand the fishery context, the nature of fishers' livelihoods, the resources available, the strategies employed and outcomes currently achieved.

The town of Struisbaai in the Agulhas region of the Western Cape is one such community, where the small-scale fisheries sector forms the traditional livelihood of a marginalised community. Proposals are currently underway to introduce some form of marine protected area planning in order to achieve marine conservation in the region. Central to this is the review of the small-scale fisheries sector, the historical and present governance context, and the particular understanding of the human dimensions present within the system, with a particular focus on the sustainable livelihoods of fishers.

Chapter 3– Research Methodology

3.1 Introduction

This chapter describes the methods used in this study. It discusses the general research approach, data collection and sampling methods, data analysis, and ethical issues encountered during the fieldwork process. For this study, both qualitative and quantitative methods were employed in the case study research and included household surveys, focus group meetings and key informant interviews. The research was undertaken through a multi-phased approach, in order to gain an in-depth understanding of the research topic and related issues. The research included scoping studies, intensive fieldwork and feedback meetings, which are described in this chapter.

3.2 Context of the research

This Masters dissertation forms a component of a wider ‘Human Dimensions of MPAs’ project, which aims to understand the human dimensions of fishery systems in South Africa, with a particular focus of small-scale fishery systems in the context of existing or expanding MPA networks in the country. The project’s output is to develop a set of guidelines for understanding and integrating the human dimensions into planning and management of MPAs. As part of the study, small-scale fisher communities in the Western Cape (Langebaan Lagoon, Cape Peninsula National Park, Struisbaai), Eastern Cape (Hululeka, Dwesa-Cwebe) and KwaZulu Natal (Kosi Bay), were identified as case study sites. Each of these sites had a unique situation and focused on a specific human dimension of the fishery system, yet had the common feature of local small-scale fisher communities, which interact with MPAs or an impending MPA.

Data collection for this research was, therefore, dovetailed with that of the wider MPA project. The project called for a standardisation of research methodologies across all of its case study areas in the Western and Eastern Cape. Thus, the methods employed for this study including case studies, household surveys, focus group meetings, interviews and mapping were dictated by the broader project. Due to the fact that comparisons and general recommendations needed to be made across all case studies, several specific questions and themes were common across project case study areas, yet specific questions unique to a particular case study area were included in each case study. The project team developed a general household survey, which was piloted in one of the project’s case study regions. This survey was then further developed by each researcher to suit their own case study. Similarly, each researcher was responsible for formulating their specific key stakeholder interview questions (with several common questions), as well as methods for

their focus groups and mapping exercises. The researchers also developed their own approach to the research process by choosing how and when to undertake each method of data collection and analysis. The household survey results were all input into a common database, but results and analyses were also done independently by researchers. Sampling methods that were used were also done independently.

For this particular research, field research assistants from the community were employed and trained in order to assist with the data collection process, particularly the household surveys, focus group meetings and mapping exercises. They were selected based on a number of criteria including the ability to speak English and Afrikaans, having good knowledge of the community, ability to grasp the aims and objectives of the research, and being competent in assisting in undertaking the various data collection tasks. The two local research assistants that were employed in the project offered a fascinating and rich insight into the community, as their fathers were both involved in the small-scale fishing sector. Employing local research assistants also offered a means of benefiting the community and allowed openness and transparency in the research being undertaken. Given that the principal researcher is fluent in Afrikaans (the local language), the need for translation was eliminated. The research assistants, however, assisted with clarifying local terms or technical phrases.

Fieldwork was undertaken in various stages within the period April 2011 – January 2012, through surveys, interviews, focus groups and a feedback meeting. Prior to fieldwork, a scoping study was undertaken to gain an understanding of the dynamics within the fishing community, to create awareness of the project, and to gain acceptance and approval (especially from community leaders) in order to undertake the research which followed. In general, the community was receptive to the research and informants were willing to share their time and information with the researcher, which made interviews pleasant to undertake. In total, 36 household surveys, 14 interviews, 2 focus groups and 1 feedback meeting were conducted. These are detailed in section 3.5 below. The sampling strategy employed as part of this research is representative of the broader fisher community of Struisbaai Noord.

3.3 The research approach

This study is informed by systems thinking and the recognition of small-scale fisheries as complex socio-ecological systems. As such, two main approaches to research were employed: the systems approach and the case study approach. This section details these two approaches.

3.3.1 A systems approach

The systems approach describes the fishery system as an interrelated range of subsystems (Garcia and Charles 2007), that forms linkages between the key elements such as the biological, institutional, economic and social aspects of the fishery system. A systems approach looks at the broader picture for a better understanding of the fundamental themes and unique nature of fisheries (Charles 2001) and cannot be understood in isolation, but needs to be analysed in terms of the system as a whole (Berkes et al. 2001)⁸. This study relies on the systems approach as it illustrates the different fishery sectors and components within the Struisbaai fishery system. While it focuses on the human dimensions of the small-scale fishery sector, it recognizes that the small-scale sector is but one fishery system presently operating in the Agulhas region and that it needs to be understood in relation to the broader socio-ecological system for effective planning and management.

3.3.2 A case study approach

Case studies are widely used across social science disciplines (Hartley 2000). Case study research is intended to focus on a particular issue and probe this in depth in order to understand complex real-life situations present within single settings (Noor 2008, Eisenhardt 1989). It employs a method that includes multiple levels of analysis. In this way it combines observations from previous literature with personally undertaken (fieldwork) qualitative and quantitative research in order to compare theoretical issues and data collected (Eisenhardt 1989). As with this study, the case study approach generally includes multiple methods and multi-phased research (Hartley 2000) that allows one to refine information gathered and needed. In this way data analysis was iterative with recurring visits to the field that allowed for refining emerging themes in the research.

In the fisheries arena researchers favour the case study approach, as it is well suited for theory development and the discovery of hypotheses (Jentoft 1999). Case study research investigates a contemporary phenomenon in a real life setting. In the case of this research, the contemporary phenomenon may be regarded as livelihoods and livelihood strategies that are being investigated in the setting of the small-scale fisher community of Struisbaai Noord. The approach focuses on social interactions and also depicts institutional mechanisms (Jentoft 1999) that are vital to the aims and objectives of this study, as it strives to describe the human dimensions within the fishery system. The case study method also provides an opportunity for components to be studied in depth, as it relies on the observations and experiences of individuals for understanding how things operate (Bell 2005). However, on the negative side there is widespread criticism of the case study approach that claims it is an unscientific method because it is mainly qualitative. Critics

⁸ The systems approach to fisheries management is discussed in more detail in section 2.4.1

claim that it may be classified merely as ‘advanced journalism’. Yet as Jentoft (1999) explains, society cannot be turned into a laboratory.

3.4 Case study structure

The case study area of Struisbaai Noord is situated within the traditional fishing town of Struisbaai, which (according to 1996 census data⁹) has a population of over 6000 people and 1388 households. According to census data (1996), the population of Struisbaai Noord is just over 1100 people, while the research has estimated the fisher population of Struisbaai Noord to be approximately 300 people and 150 households. Struisbaai harbour is the launching and landing site for the local traditional fishers, and for commercial line-fishers coming from outside the community, as well as for recreational boat-based fishers. Shore-based recreational fishing also takes place along the Agulhas coast, and several large scale commercial activities occur offshore.

Local small-scale fishing activities are largely boat-based line-fishing. The local line-fishers operate using approximately 20 fishing boats that they launch from Struisbaai harbour. Approximately 11 of them are “chukkies”, the traditional fishing boats used for generations by the line-fishers of the region. Other boats are the more modern ski-boats, similar to the ones used by the commercial fishers from outside the community (1 fisher from Struisbaai Noord owns a ski boat).

As will be discussed in chapters 4 and 5, a Marine Protected Area (MPA) is being proposed for the Agulhas Region. While no official plans are yet in place, it has been suggested that the MPA will border the terrestrial Agulhas National Park (falling within SANParks jurisdiction), and incorporate additional areas. If proclaimed, this MPA will form part of a network of MPAs in the Western Cape region, including the Langebaan MPA, Cape Peninsula MPA, Betty’s Bay MPA and the neighbouring De Hoop MPA. The De Hoop MPA holds particular significance for this study, as it is situated some 40 km from Struisbaai, next to its sister fishing town of Arniston (and has impacted on some of the town’s fishing practices)¹⁰. SANParks, through the Agulhas National Park, has already carried out some preliminary research on the local status of marine resources and on resource usage, and held preliminary meetings with the local fisher community. The research reported here, however, will provide a more in-depth analysis of the socio-economic, cultural and institutional dimensions of the fisher community of Struisbaai Noord, their livelihood options and vulnerabilities, and will better inform any marine conservation process to be proclaimed in the region.

⁹ South African censuses have been conducted in 1996, 2001, 2006 and 2011. Census 1996 data are utilised as it is the only census which presents data by enumeration area. At the time of writing census 2011 data had not yet been released and census 2001 and 2006 present data only to ward level.

¹⁰ Refer to Figure 5 in section 2.9 for a map of current MPAs in South Africa

Figures 6 and 7¹¹ illustrate the distinction between chukkie and ski boats. Chukkie boats are moored in the harbour and accessed by the fishers with row boats, while ski boats are trailer based. Figure 6 shows chukkie boats moored in Struisbaai harbour on a windy day, while Figure 7 shows a ski boat exiting the water on a trailer.



Figure 6: Chukkie boats moored in the Struisbaai harbour **Figure 7: Ski boat in Struisbaai harbour**

3.5 Data collection and sampling

The methods used for gathering information were both quantitative (household surveys) and qualitative (key stakeholder interviews, focus groups, participatory mapping). Quantitative research is typically considered to be a more scientific approach to undertaking social research, as it focuses on measuring attributes and responses (Tewksbury 2009), while qualitative data offers a richer understanding of social aspects and provides foundations for theoretical understanding (Tewksbury 2009). For this study triangulation was used in order to maximise the reliability and validity of data collected and in order to gauge the strengths of different tools in capturing appropriate data on human dimensions. According to Bryman (2004), *'Triangulation refers to the use of more than one approach to the investigation of a research question in order to enhance confidence in the ensuing findings'*. It is thought that the use of more than one type of data can assist in validating points and casting light on a more diverse range of viewpoints (Olsen 2004).

3.5.1 Scoping visit

An essential part of social research is to inform all stakeholders who will be involved in the research process, of the project's purpose and objectives. The scoping visit took place over a period of 5 days, with the purpose of becoming familiar with the fieldwork area, getting a sense of geographical proximities, initiating relationships with key people,

¹¹ Photographs taken by P.Krogt

introducing and explaining the purpose of the research to groups and individuals who are likely to be involved or affected by the research, and gaining acceptance from community leaders in undertaking the research. During this phase the researcher established relationships with key fishers, officials and conservation managers, who would become key informants. The researcher also gathered a broad understanding of the small-scale fishing environment and relationships between stakeholders.

3.5.2 Household survey sampling

As mentioned, a household survey was drawn up by senior members of the MPA project team. This survey was collectively refined by project researchers during a pilot run of the survey with the Langebaan fishers. This survey was then further developed to suit the Struisbaai case study. After an initial pilot study of 5 interviews, the survey was further refined and irrelevant questions were removed and others were added. The refined household questionnaire was then given to small-scale fishers who live in Struisbaai. These fishers predominantly live in the area referred to as Struisbaai Noord. The survey was conducted by the researcher with assistance from research assistants. The survey covered various key issues, such as basic socio-economic household characteristics to determine poverty indicators, marine resource use and activities to determine current use and dependence on resources, food security and well-being to ascertain the state of livelihood activities and the importance of fish for household consumption, the presence and role of local institutions and fishers' understanding and awareness of marine conservation planning in the region¹². These themes were developed in order to elicit data and gain an understanding of the socio-economic aspects of small-scale fisher households. By accessing information on these issues, research is able to address sustainable livelihoods more adequately. The survey questions also aimed to guide the questions developed for the in-depth interviews, as well as inform issues for discussion in the focus groups.

In total, 36 household surveys were conducted. Stratified random sampling was used to produce an unbiased and appropriate¹³ sample representative of the community that was being surveyed. Stratified sampling produces subgroups within a population, where each member of the subgroup is alike in one major characteristic (Kumar 2002). In the case of this study, the population consisted of small-scale fishers in Struisbaai Noord and the subgroups were chukkie crew, ski boat crew, chukkie skippers and ski boat skippers (in Struisbaai the skipper is usually also the boat owner). In this way, each group is adequately represented. This method requires that some information is already known about the population to be studied (Kumar 2002). Meetings with community members and research assistants using Google maps assisted in the identification of the Struisbaai Noord community, which

¹² Refer to appendix 1 for household survey questionnaire

¹³ Ensuring all groups are appropriately and adequately represented

comprised a total of 300 households. Approximately 150 of these households were fisher households. The survey would then sample a representative group of fishers (chukkie fishers, ski boat fishers, crew and skippers). In total, 28% of fisher households were surveyed, which represents almost a third of the fisher population in Struisbaai Noord. Identification of respondents was random according to household geographical and spatial setting. Respondents were given the choice to remain anonymous.

3.5.3 Key informant interviews

Key informant interviews were conducted with key stakeholders to provide further insights and analytical depth on particular issues and themes. Individual semi-structured interviews were conducted with questions that were open ended and exploratory and that allowed informants to elaborate on issues. Interviews were conducted on a one-on-one basis. Key informant interviews are particularly useful as they reflect how individuals perceive and understand local issues within their community and region. A key informant is any individual who can provide detailed information and opinions on a particular issue or topic, based on their own knowledge (Omni undated).

Key stakeholders for the key informant interviews were identified through a stakeholder analysis process. A stakeholder is an individual or organisation with varied or vested interest in a process or issue, or an individual or community that will be impacted by a process. For this study, stakeholders were classified as individuals, communities or organisations of various sectors that have an involvement in the broader small-scale fishing sector in Struisbaai. Thus, key informant interviews were conducted with various government departments, conservation bodies, fisher representative bodies, researchers, fish marketers and fisher leaders. Triangulation was used to verify the data collected from the different key informants, in order to provide a thorough interpretation of the data.

In total, 14 key informant interviews were conducted with respondents from different sectors, such as fishers, DAFF officials, local fisher organisation representatives, buyers, conservation bodies (SANParks), local tourism initiatives, independent researchers and fishers from neighbouring fishing villages¹⁴. Certain interview questions were common with the broader project, but most questions were semi-structured. Interviews were conducted personally by the researcher (in some instances with the assistance of the research assistant) and lasted approximately one hour.

¹⁴ A full list of respondents interviewed is presented in appendix 3 along with a template of interview questions

3.5.4 Focus group discussions

Focus group discussions are a key method for qualitative enquiry. A focus group discussion is a rapid assessment, semi-structured method, in which a purposively selected set of participants gathers to discuss issues and concerns based on a list of key themes that are drawn up by the researcher. It is a valuable way of gaining insight into a group's shared understandings and beliefs, while allowing individual opinions to be voiced. It is also useful as it allows participants to reflect on the responses of their peers and in turn reflect and compare their own experiences (Cassell and Symon 2000).

Because of these benefits, focus groups were vital for the purposes of this research as they provided more in-depth understanding of issues that were highlighted in the household surveys and interviews. Two focus groups were conducted with fishers that use different types of gear, namely ski boats and chukkies¹⁵. Participants were identified through purposive sampling. Purposive sampling signifies a series of strategic choices that the researcher makes as to whom, what, where and how to do the research (Palys 2008). This sampling is tied to the research objectives and signifies the best sample for extracting the type of information required. The researcher identified participants who have particular knowledge about key aspects of the research and invited them to the focus group meetings. Focus group discussions centred around 3 main themes that emerged during initial stages of the research. One of these themes was sustainable livelihoods and the aim in addressing this in the focus group was to identify livelihood activities that fishers and fisher households are involved in, could be involved in, or would like to become involved in. The workings and setup of the local market structure, as well as conservation and threats to resources were other issues discussed during focus group meetings. Questions were open ended and semi-structured allowing for flexibility in questioning, and focus groups consisted of 4-5 participants. Focus groups were conducted by the researcher with assistance from the research assistants.

3.5.5 Participatory mapping

As part of the focus groups a simple mapping exercise was conducted with participants, in which laminated nautical maps of the region were utilised. Participants then mapped out their fishing grounds (the banks in the Agulhas region on which they fish), as well as travelling times, fish caught on specific banks and periods of the year during which they fish on these banks. These data were used to show spatially the areas in which they fish and were input into GIS software to create specific maps. The image in Figure 8 below illustrates the nautical maps with raw data from the focus groups.

¹⁵ Refer to appendix 2 for the list of focus group schedules and templates

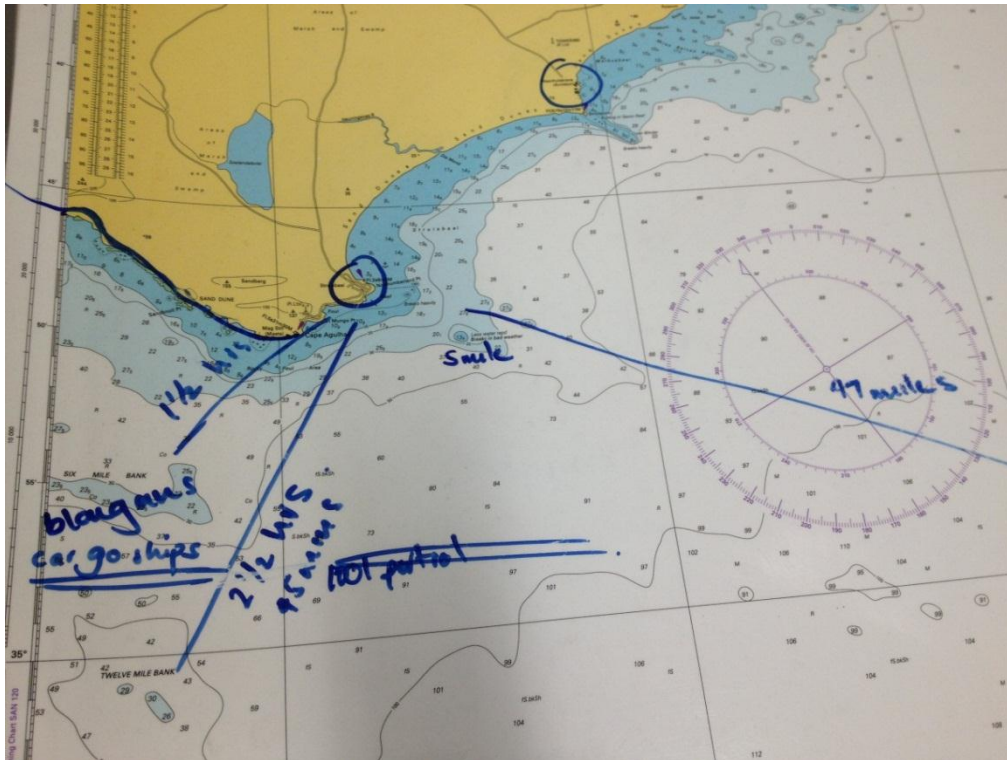


Figure 8: Image of nautical map utilised in a participatory mapping exercise (focus group 2)

3.5.6 Community feedback meeting

A feedback meeting was held with the broader community of Struisbaai Noord. All community members were invited and were not limited to fishers or respondents. The purpose of the meeting was to inform the community about the research process, the activities undertaken and further activities planned. It also presented preliminary survey results. Comments from the community were given on the survey results and further activities. This meeting was important for achieving openness and transparency in the research process.

The table below summarises the data collection tools utilised as part of this research project.

Table 1: Table summarising data collection tools utilised

Data Collection	
Tools	Number
Scoping visit	1
Household surveys	36
Key informant interviews	14
Focus group discussion	2
Participatory mapping	2
Community feedback meeting	1

3.6 Data analysis

3.6.1 Analysis of quantitative data

The data obtained from the household surveys were analysed using Microsoft Access and Microsoft Excel software. This method of data capture and analysis was used throughout the MPA Project study areas. A Microsoft Access database was developed for each case study site. Household survey data were captured onto the Access database. Thereafter Microsoft Excel was used in order to analyse the data and present descriptive statistics, graphs and tables. Graphs and tables illustrated trends that emerged about the socio-economic status of fisher households, livelihood options, resource harvesting, perceived threats to resources, awareness of local processes, historical links to fishing and other key themes. After an initial preliminary analysis further queries were run using Microsoft Access and Excel. These queries explored the relationship between variables in the database.

The survey results were also developed into a Microsoft PowerPoint presentation and presented to the wider community of Struisbaai Noord in an open feedback meeting held at the local library. In addition to creating openness and transparency in the research process and building rapport with the community, the feedback meeting also aimed to inform community members and leaders that the information generated from the household surveys would be freely available to them to view and utilise. The quantitative data were useful in identifying key issues for discussion in the focus groups and identified issues for clarification and validation in the key informant interviews.

3.6.2 Analysis of qualitative data

Qualitative data gathered from focus groups and key informant interviews was entered in Microsoft Word. Focus groups and most of the formal key informant interviews were recorded using a digital voice recorder. These interviews were then transcribed into Word.

Although all fieldwork was conducted in Afrikaans, transcriptions were translated into English. Interviews and focus groups delved deeper into certain topics and issues, and provided richer information to some of the survey questions, enabling the researcher to identify key patterns, themes and trends that emerged. These are presented in the chapter on findings, and discussed further in the discussion chapter. As Stake (1995) describes, analysing qualitative data is an iterative process that starts not after data are collected, but rather during the data collection process. Data are constantly being interpreted through the processes of note taking, listening to recordings and transcribing.

3.7 Research ethics

As part of any research that involves human subjects, it is vitally important to take account of ethical considerations, especially when engaged with particularly poor, vulnerable or marginalised individuals, households or communities, who may assume that there will be benefits associated with research or their involvement in research.

Local communities are often willing to assist and cooperate in any way they can, but may become sceptical if they do not understand the research, the researchers' position, or if there is no transparency in the research process. Social research probes personal and sensitive aspects of people's lives and thus respondent's views and understanding were respected. Care was taken to avoid research fatigue. Therefore, this project was careful to avoid undertaking research similar to that which had already been carried out in the area by other organisations. Consent was requested and given at the outset of each phase of fieldwork (surveys, focus groups, interviews, mapping). Respondents were given the choice to remain anonymous and it was explained that all information would be treated confidentially. Every effort was made through all phases of the fieldwork to reiterate to respondents that the research being undertaken was in fulfillment of a Masters degree and part of a broader independent research project. By emphasising the nature and level of research the researcher avoided raising expectations of fishers in terms of delivering other socio-economic goals. The objective of the research was explained at the outset and also reiterated throughout the research process.

There were various tensions surrounding the proposed plans for marine conservation in the Agulhas region, and there was mistrust amongst many of the stakeholders towards the conservation authorities. It was essential for the researcher to maintain a neutral approach and position throughout all interviews, focus groups and surveys, in order to ensure that respondents felt assured that the research was not advocating any particular process. Local community assistants were employed to assist with the household surveys, logistics, catering, and various other tasks. In addition to creating openness and transparency in the research process and building rapport with the community, a feedback meeting was held with the aim of also informing community members and leaders that the information generated from the household surveys would be freely available to them to view and utilise.

Chapter 4 – Results

4.1 Introduction

One of the main objectives of this study is to understand the human dimensions of the small-scale fishery system in Struisbaai and, in particular, to gain an understanding of the livelihoods dimensions of the system. This would include clarifying the assets available to fishers for livelihoods, identifying the suite of livelihood strategies employed by fishers, and noting their levels of dependence on resources, as well as recording the obstacles, constraints, and vulnerabilities involved in moving towards sustainable livelihoods. In order to gain a better understanding of these livelihood dimensions, the research employed a range of qualitative and quantitative methods including a scoping study, household surveys, key informant interviews and focus group meetings with fishers of Struisbaai Noord. This chapter presents the findings of the study based on information gathered from the interviews, surveys and focus groups.

4.2 Understanding the fishery system

4.2.1 *Situational analyses*

This section begins with the case study area of Struisbaai Noord, which is situated within the traditional fishing town of Struisbaai, located within the Cape Agulhas local municipal region and the Overberg district municipal region in the Western Cape. Bredasdorp, situated inland approximately 32 km north of Struisbaai, is the main town in the Cape Agulhas Local Municipality and contains the region's main business core, local government offices, and important essential health and educational services. Struisbaai falls within ward 5 of the Cape Agulhas Municipality along with its sister fishing town of Arniston, as well as the tourist and residential town of Agulhas.

According to the municipal Integrated Development Plan (IDP) 2010/2011, ward 5 is profiled to have an economically active population (EAP) of 66%, yet 61.5% of the population is unemployed. Those who are employed are mainly involved in seasonal work such as fishing (20%), farming (17.8%) and domestic work (26.6%). A large percentage of the population is also dependent on some form of government grant such as pension (30.3%), child support (19.1%) or disability grants (16.9%). The high percentage of semi-skilled or unskilled occupations has increased the poverty risk within the ward with 85.5% of the population living on the poverty level of less than R3200 per month.

4.2.2 Social and human assets

4.2.2.1. Household characteristics

Results of the research undertaken within the fisher community of Struisbaai Noord illustrate that all respondents interviewed during the research process were coloured males¹⁶. While fishing in Struisbaai is predominantly a male dominated activity, women also play an important role within the fisher households (indirectly influencing the fishing activity of the men). Males were identified as the heads of their households. Census data (1996) has shown that the highest number of households in Struisbaai Noord is headed by the age category of 35-39 years, this is closely followed by the age category of 65-69 years.

Households surveyed¹⁷ had an average of 4 people per household (which is in line with the Cape Agulhas Municipality Integrated Development Plan 2011-2012), with 14 households having more than 5 people per household. Households also had an average of one school going child, which places additional costs on the household. Fifty four percent (54%) of households consisted of two people who contributed to household income, while 26% had only one person contributing to household income. In households which have more than one person contributing, the fisher is the primary earner with wives or children being the secondary earners. Some fishers' wives have part time jobs as domestic workers or seasonal jobs. In these instances women become the main income earner during winter months and non-fishing seasons.

Although residents live in permanent housing structures, there is a growing informal area with a mainly black population¹⁸. The area is serviced by adequate delivery of electricity and piped water supply. Electricity is the main source of energy for household use, but LP gas is also used by some for cooking purposes. Although basic service delivery is adequate, residents of Struisbaai Noord feel that it is still extremely slow. Tables of selected demographics and basic services are presented in table 2 and 3 below.

Table 2: Selected demographics according to household survey data

Gender breakdown (%)	100% male
Race breakdown	100% coloured
male headed households	100%
Average no. of people per household	4 (max 9)

¹⁶ Small-scale fishers of Struisbaai Noord are predominantly male

¹⁷ Sample size of household survey is thirty six

¹⁸ While the research did not reveal from where this population came, a respondent alluded to local building companies employing Zimbabwean labour. This population does not seem to be involved in fishing activities

Table 3: Selected basic services according to household survey data

Main material for dwelling construction	97% permanent house or structure (3% temporary shack)
Main household energy source	100% electricity
Main drinking water source	97% piped water

Results from the surveys undertaken indicate that the community of Struisbaai Noord is heavily dependent on fishing activities for their income needs. In addition, fish and other marine resources are important in terms of food security and their protein intake. All respondents (100%) in this survey indicated that the harvesting of marine resources is the primary and most important activity that contributes to the household’s food and income needs. The graph in figure 9 below illustrates that 31% of household derive all their income from fishing, 64% of households derive most of it from fishing, and only 6% derive only some of their income from fishing.

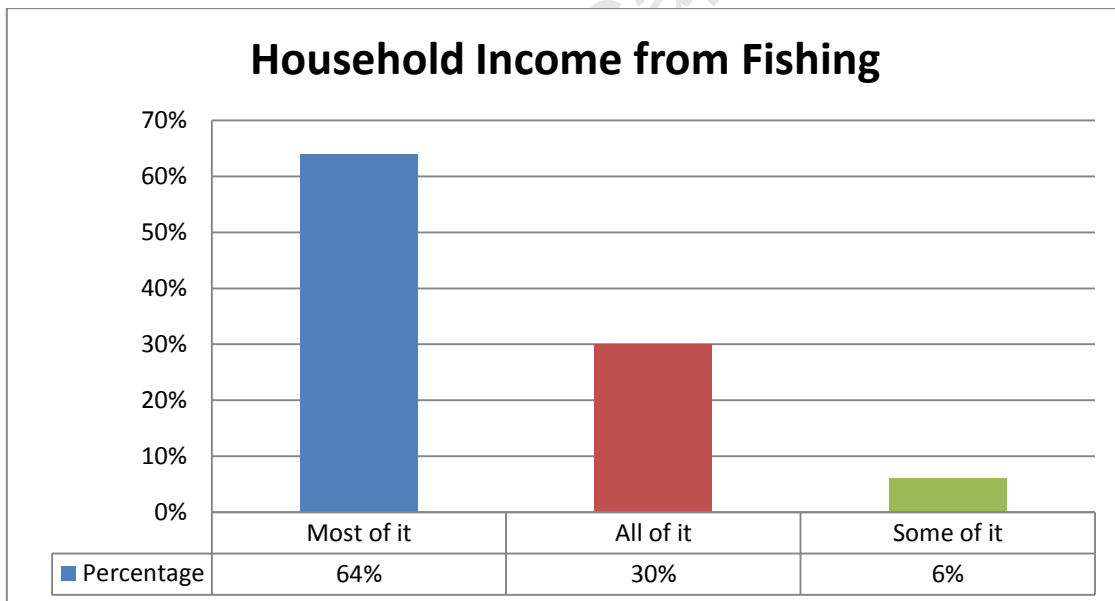


Figure 9: Total household income derived from fishing (based on household survey data)

Results of the survey also showed that the majority of households of respondents (64%) consume marine resources 3 days per week, 25% consume marine resources one day per week, while 8% depend on them every day and 3% eat them twice a day.

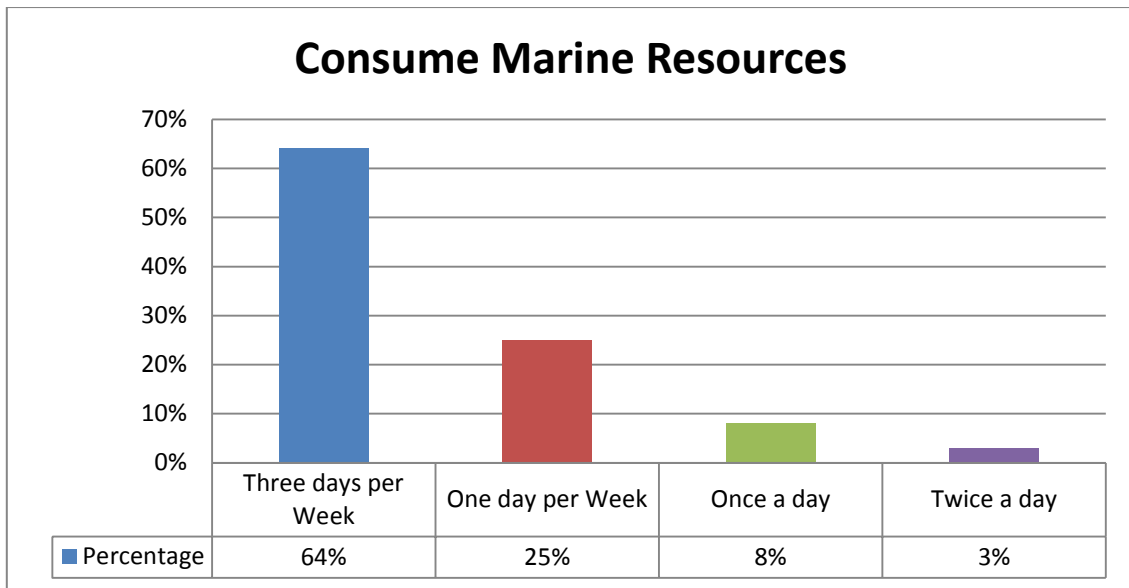


Figure 10: Household consumption of marine resources (based on household survey data)

4.2.2.2 Education

Access to further education and training institutions is vital in providing youth with increased access to employment opportunities. Education levels of the fishers surveyed in Struisbaai Noord is relatively low. Although 54% of respondents have attended primary schooling, only half of those have completed their primary education. High school attendance is low, with 34% having attended high school and 9% completing their high school education. Only 3% of respondents have pursued some form of tertiary education.

The low levels of education of respondents can in part be attributed to the lack of educational infrastructure. Struisbaai has one primary school, with the nearest high school situated in Bredasdorp some 30 km inland. The nearest tertiary education college is situated in Caledon about 96 km away. Public transport infrastructure between Struisbaai and these neighbouring towns is poor or non-existent making it difficult for learners to travel (although a school bus travels between Struisbaai and Bredasdorp). While the Cape Agulhas Municipal region has the lowest learner enrolment rate (lowest number of learners registering in school) in the Overberg region at only 11.9%, it also has the highest matric pass rate in the region at 95.1%¹⁹ (this is an indication of promising students).

From interviews it emerged that the respondent who attended a tertiary institution was not born in Struisbaai. However, his family has a history of fishing from Port Nolloth to Arniston, with his father being the only member of his family to choose a career outside the fishing industry. As a young person the respondent would visit Struisbaai on holidays and after the completion of his secondary and tertiary education relocated to Struisbaai to become a fisherman. As he explains, he could not resist the draw of the ocean.

¹⁹ Statistics are based on 2011 data (Western Cape Provincial Treasury 2012)

The fishers believe that their lack of education does not make their knowledge of the sea any less credible. In fact, it makes their local knowledge more valuable as it is knowledge gained through first hand experiences. As one fisher stated:

“I may be an uneducated man incapable of spelling my own name, but I know how to fish and I know the sea.” (Respondent N)

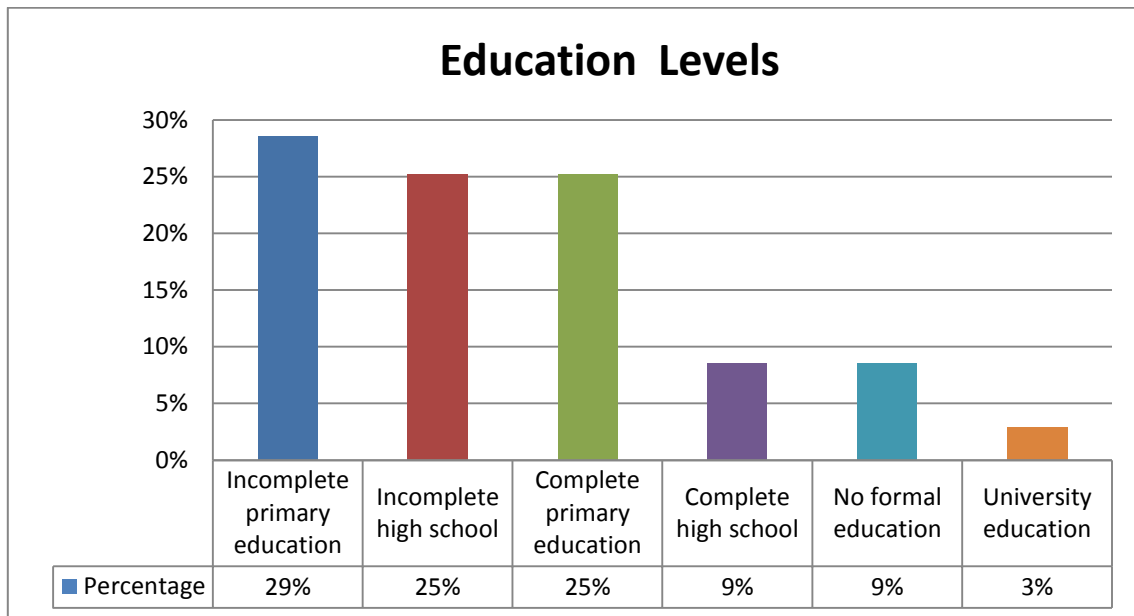


Figure 11: Education levels of respondents (based on household survey data)

4.2.2.3 Socio-cultural practices and relations

Focus group discussions revealed that a further reason for high dropout rates at school may be associated with the need to earn money and seek opportunities for income generation, especially during the early stages of fishers’ lives. The growing need to assist in the support of their families at a young age encouraged young boys to turn to harvesting marine resources at an early age. This became evident through interviews with some of the older fishers who were the eldest of their siblings and subsequently forced to assist in raising the younger siblings.

The youngest and oldest ages of respondents’ first recollection of harvesting marine resources were 3 years old and 22 years old, respectively. This is the age at which respondents’ have had their first experiences of fishing. The average age of respondents’ first recollection of harvesting marine resources is 12 years old. However, the average age of respondents’ first involvement in the fishing industry was 22 years old. This is the age at which respondents became formally involved in fishing activities as crew, skippers or angling as a means of income and food security. The youngest and oldest ages of respondents

entering the fishing industry were 11 years and 54 years old respectively. This means that members of fisher households have been fishing in Struisbaai (and nearby Skipskop, Arniston and Buffeljag) for an average of 34 years. Table 4 below illustrates these ages.

Through interviews and focus groups it emerged that the reason for the notable difference between the age of first recollection of fishing and age of respondents involvement in the fishing industry is that many people have the recollection of fishing (angling) with their fathers at an early age, yet only enter the fishing industry formally as crew members later on in their lives. At that time no formal permits were needed in order to fish from the shore (now recreational permits are needed). Through interviews the fishers expressed their clear and fond recollections of their first years of fishing, expressing that fish were plentiful and the ocean was open to everyone.

Table 4: Age of fishers according to household survey data

	average	oldest	Youngest
Age of fishers	46	70	26
Age of first harvesting marine resources	12	22	3
Age of first involvement in fishing industry	22	54	11

One respondent recollected his first catch, the pride he felt and his determination to land a better and bigger catch:

“But the first day I will never forget, I caught 1.5 kilo fish that day and I was upset, I wanted a bigger catch.” (Respondent L)

Ninety four percent (94%) of respondents indicated that their fathers have been involved in the fishing industry. Respondents stated that their fathers were mainly crewmen on ski boats and chukkies, but also worked in the commercial fisheries sector (as crew on commercial fishing boats for companies such as Irvin and Johnson and Sea Harvest).

The majority of the respondents originate from Struisbaai (44%) and surrounding fishing towns or villages (27%). Only 3% of respondents were born outside the province or country. Of the total respondents, 22% moved to Struisbaai from Bredasdorp and its surrounding farms. These respondents’ families used to work on the white owned farms, which at the time entailed hard labour for minimal income. They subsequently moved to coastal villages to take on fishing as a more sustainable alternative. Some respondents from surrounding

fishing villages relocated to Struisbaai after being evicted from Skipskop, a small village neighbouring the De Hoop nature reserve.

The people of Skipskop were predominantly fisher households, who were evicted to make way for the Overberg Test Range²⁰, and subsequently moved to other nearby coastal towns (such as Struisbaai and Arniston). The entire community was dispossessed of land and access to marine resources. When they relocated to Struisbaai, the fisher families of Skipskop automatically continued to fish here, as this was the only livelihood they knew. The original Skipskop fishers interviewed had relocated to Struisbaai when they were still young, and so although they are resentful at having been evicted, they have become integrated into the Struisbaai community and are not viewed as outsiders. Dennis (2010), describes how evicted Skipskop residents recollect the hardship and desolation of being relocated and have fond and longing memories of the abundance of marine resources and freedom of access at Skipskop. If a marine conservation plan for the region were to cut off Struisbaai fishers' access to the sea, the original Skipskop fishers will be dealt another big blow.

A Skipskop fisher relates what fishing was like in Skipskop:

“That time it was everyone’s sea and the fish were plentiful. And with time it became more difficult... the fish became scarcer and scarcer. And then Denel came in there. And everyone who lived and fished there had to leave... that whole fishing community had to move... they threw us here into Struisbaai” (Respondent K)

²⁰ Established in the mid-1980s, the Overberg Testing Range's first tests were conducted in 1987. It was only in 1992 that the division officially became part of Denel (Pty) Ltd. Denel is a South African state owned aerospace and defence technology conglomerate and is the largest manufacturer of defence weapons in South Africa. The Overberg Testing Range specialises in missile and aircraft testing.

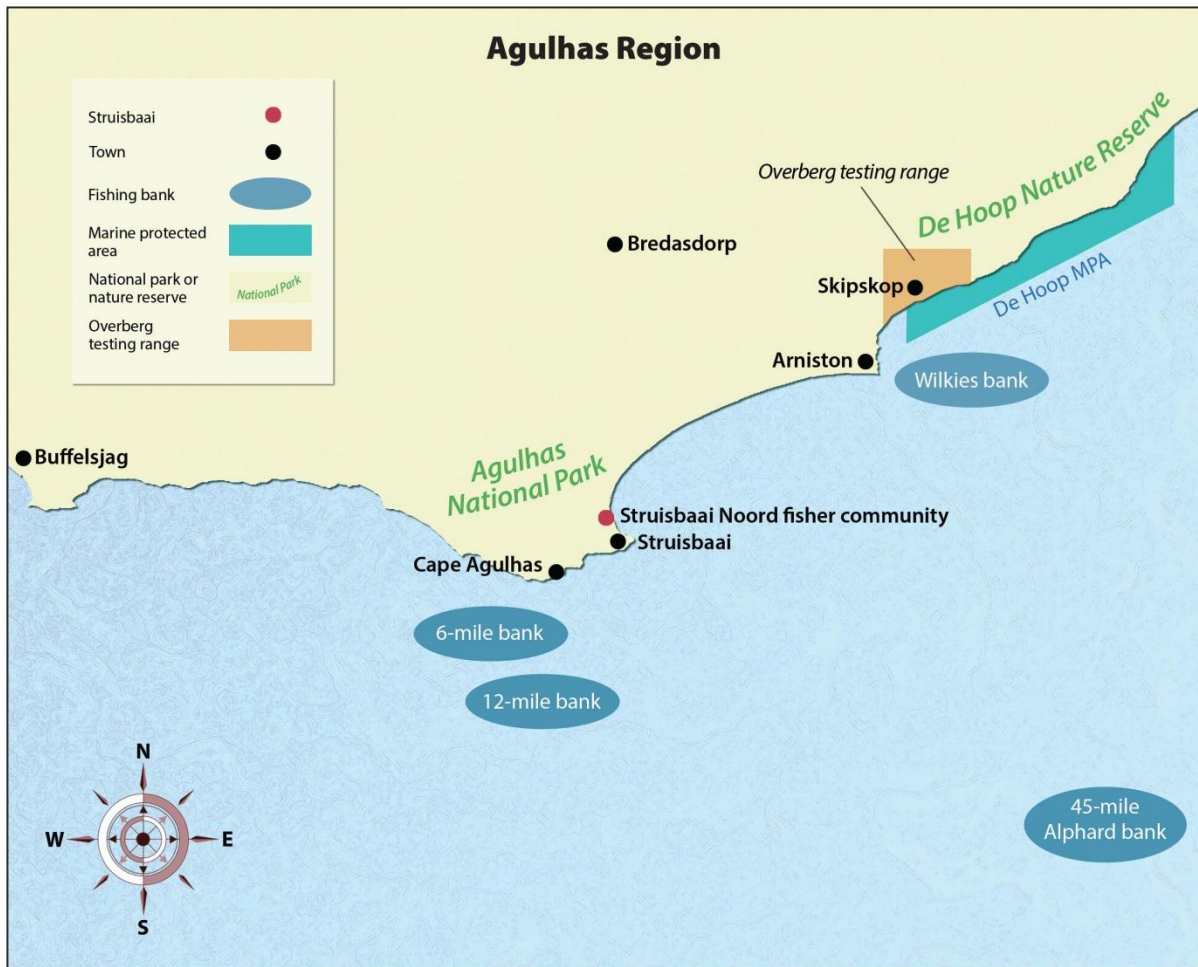


Figure 12: Map²¹ illustrating the location of the historic fishing village of Skipskop, the present location of the Overberg testing range and the proximity to the DeHoop Nature reserve and MPA.

It is important to note that fishers of Struisbaai Noord show a strong connection to place, whether they were born in Struisbaai, or moved there from other areas. Similarly, they show a strong connection to fishing, whether they are first generation fishers in their families or have a family history of fishing. Listening to respondents, the sense of community is tangible. On many occasions fishers have stated how chukkies and ski boats (from Struisbaai Noord) fishers assist each other at sea or via information of activity at fishing banks. Boats also share crew as many skippers and boat owners have stated that they do not expect their crew to go hungry if they are unable to go out to sea. The sense of community is also evident in the acceptance of Skipskop fishers into the community, as well as tales of sharing fish with neighbours, friends and family in times of hardship, and the hierarchical relationships of respect for elder fishers and community members. A respondent describes:

²¹ Map adapted from Raemaekers (2012)

“If your pan screams tonight, then your neighbours should also be screaming. If there hasn’t been fish for a long time, it gets shared. However small the fish is... everyone must share in the catch. Our community... is very close knit. If one person gets hurt everyone feels the pain. And you see it when some one dies... everyone turns out. And everyone turns out to help. And that is the nice thing about living in a fishing community.” (Respondent H)

Women’s presence in the fishing industry is not dominant with only 3% of respondents interviewed as part of the household survey indicating that their mothers have been involved in the industry (contrasting to 94% of respondents’ fathers being involved in the fishing industry). Traditionally, women in fishing communities have been heavily involved in post-harvest activities such as processing. These post-harvest activities provide some form of income and employment for women in rural areas who have limited opportunities open to them. Yet in Struisbaai, women are no longer involved in the fishing industry. Previously, fishers would bring the fish to the harbour to be cleaned by the women in the fish factory. Today the fish are cleaned by the fishers at sea and they have eliminated women’s active roles in the fishing industry. The lack of women’s role in the fishing industry in Struisbaai was also found by van der Bank (2012), who states that women feel that they would still like to be included in activities relating to fishing (e.g. meetings).

4.2.2.4 Local institutions and capacity building

There are 2 fisher organisations currently active in Struisbaai Noord, with which fisher respondents are affiliated, namely Coastal Links and the Struisbaai Fishers Forum (Struisbaai Vissers Vereeniging). Coastal Links is a community based organisation and a movement of the Masifundise Development Trust, whose presence in 21 coastal fishing communities in Western and Northern Cape is primarily to ensure that fishing communities are in a position to mobilise themselves in order to secure their livelihoods and human rights. The Struisbaai Fishers Forum is a community structure established by the fishers of Struisbaai Noord, which provides a platform through which the fishers can be represented. The Forum was formed in 2007 and supported by the local municipality in 2008. However, the Forum is presently inactive (2013).

Of the total respondents interviewed as part of the household survey, 69% are members of local fisher organisations, while 31% have no affiliation to any fisher associations. Of those who belong to fisher organisations, 84% are members of the local Struisbaai Fishers Forum, while 16% are members of Coastal Links. However, 44% of the members of the Struisbaai Fishers Forum hold the view that this organisation does not meet the needs of the Struisbaai fishers. Indeed, some respondents regarded Struisbaai Fishers Forum to be dormant or inactive. Of the total respondents who regarded their fisher organisation as useful for the fishers, half of these respondents belong to Coastal Links.

4.2.3 Natural assets and resource use

The study revealed that respondents harvest a diversity of marine linefish species that most commonly occur in the waters off Struisbaai. The South African line fishery is a multi-species and multi-user fishery system that consists of around 200 species of fish, of which 95 species contribute significantly to recreational, small-scale and commercial catches, and 50 species are regarded as economically important (DEAT 2005). Waters of the Agulhas bank are one of the most important economic and biological marine regions of South Africa. The Agulhas bank is a triangular extension of the continental shelf with its apex extending off Cape Infanta. Its western boundary is characterised by the Benguela upwelling system, with the warm Agulhas Current in the east (Olyott et al. 2006). These oceanographic and atmospheric interactions result in a high diversity of fish species and a resource rich ocean that attract large commercial trawlers, small scale fishers and recreational fishers to its waters.

As discussed in section 4.3, the extent to which people can harvest and gain access to natural resources is regulated by law. Access is granted by the South African government through the Department of Agriculture, Forestry and Fisheries. Those who wish to gain access to natural resources need to apply for and acquire permits.

4.2.3.1 Resources harvested

The type of marine resources harvested in the lifetime of respondents in the Struisbaai area include linefish species such as yellowtail, Cape salmon (geelbek), kabeljoe (kob), red roman, red stumpnose, steenbras (red), carpenter (silverfish), snoek, mackerel, shark (soupfin), galjoen, elf, mussel cracker (black), seventy four, squid, and tuna (skipjack). They have also harvested West Coast Rock Lobster (WCRL), abalone (diving) and harders (netfish). Respondents indicated that the most important marine resources with regard to income were yellowtail, Cape salmon and kob. These species yield the most monetary income. Species that are most important for consumption include smaller species that yield less monetary value such as silverfish, mackerel and harders. These fish will also be distributed by fishers amongst community members and families in need. In addition, respondents also indicated that they consume “red fish” (which includes red roman, red stumpnose and red steenbras), kob, yellowtail and Cape salmon.

Table 5: Importance of marine species for income and consumption according to household survey data

In order of importance	Income	Consumption
Species 1	Yellowtail	Silverfish
Species 2	Cape Salmon	Mackerel
Species 3	Kob	Harders

The main fishing season occurs during the summer months from November to April. Generally the fishing season starts around October/November. During November/December the fish start to become more abundant and December/January are considered to be the best months for harvesting. During this time yellowtail, Cape salmon, kob, silverfish and shark commonly occur in these waters and are the main species harvested. February is the main month for harvesting Cape salmon. In recent years, however, (since 1999/2000), respondents indicated that the fishing season has been commencing later²². This was highlighted during the focus group meetings undertaken between November and January, during which time respondents indicated that the fishing season had not yet started. Even though the fishing season may last several months, one respondent indicated that it may only contain approximately 28 fishing days on which the conditions are suitable for going out to sea or are conducive to a good catch. Sea days are dependent on such factors as weather conditions, availability of fish and boats in good working condition.

‘Red fish’ as the respondents refer to them, commonly occur and are frequently caught during the winter months (May to August). However, weather conditions during the winter (heavy winds, rain and storms) are not conducive to going out to sea. This results in only a few fishing days per month. During one of the focus groups, the fishers stated that during the past winter (2011) they had only experienced about 3 sea days. For the fishers, winter months are the most difficult and their lifeline to survival during this time is based on their ability to harvest ‘red fish’. No catch equates to no income and no food. It is particularly during these months that fishers turn to angling or harvesting periwinkle in the intertidal zone, and share their catch with neighbours and the rest of the community in order to sustain them.

Fishing activities mainly occur offshore on the 5 mile, 6 mile (Blougans), 12 mile and 45 mile banks (Alphard). Previously, species were harvested on the 5 mile bank. This was the closest bank and did not require much travelling time to reach there. Respondents say that the fishing has now deteriorated on this bank and the last time they caught fish here was about 5-6 years ago. The perceived reasons for this deterioration is the presence of chokka boats

²² Reasons for this are discussed in section 4.4.1 on threats to marine resources

and trawlers harvesting on the banks, as well as changing currents and water temperatures as a result of climate change²³. Table 6 below illustrates the type of linefish species harvested at these banks and the time it takes for boats to reach them.

Table 6: Fishing banks and resources

Bank	Resources	Travelling time for Chukkie	Travelling time for Ski boat
6 mile	Yellowtail, Cape salmon, silverfish, mackerel, redfish	1h30 minutes	20-30 minutes
12 mile	Yellowtail, Cape salmon, silverfish, mackerel, redfish	2h30 minutes	40-45 minutes
45 mile	Yellowtail, Cape salmon, silverfish, red steenbras, shark	Does not go to 45 mile bank	2h10 minutes

The 2 main banks for the chukkie fishers are now the 6 mile and 12 mile banks. Many fishers state that the fishing is also deteriorating on the 6 mile bank. The 2 main fishing banks for the ski boat fishers are the 6 mile and 45 mile Alphard bank. Because of the great distance, travelling to the Alphard bank is much more expensive as about 300 litres of petrol is required for a return trip, yet travelling there is a chance they are willing to take if the fish are in abundance on that day. In one year (2010), 2 tons of silverfish were caught there. In addition, that is the main bank for harvesting shark. Ski boats and chukkies also sometimes fish at Wilkies bank near Arniston (which is approximately 15 km offshore). The same linefish species are harvested there. Chukkies will only make the trip if the boats are in good working condition and if the reports of fishing are good. The map²⁴ in Figure 13 below illustrates the main fishing banks (6, 12 and Alphard banks) and the main species caught on these banks.

²³ These perceived threats to resources are discussed in more detail in section 4.4

²⁴ Map adapted from Raemaekers (2012)

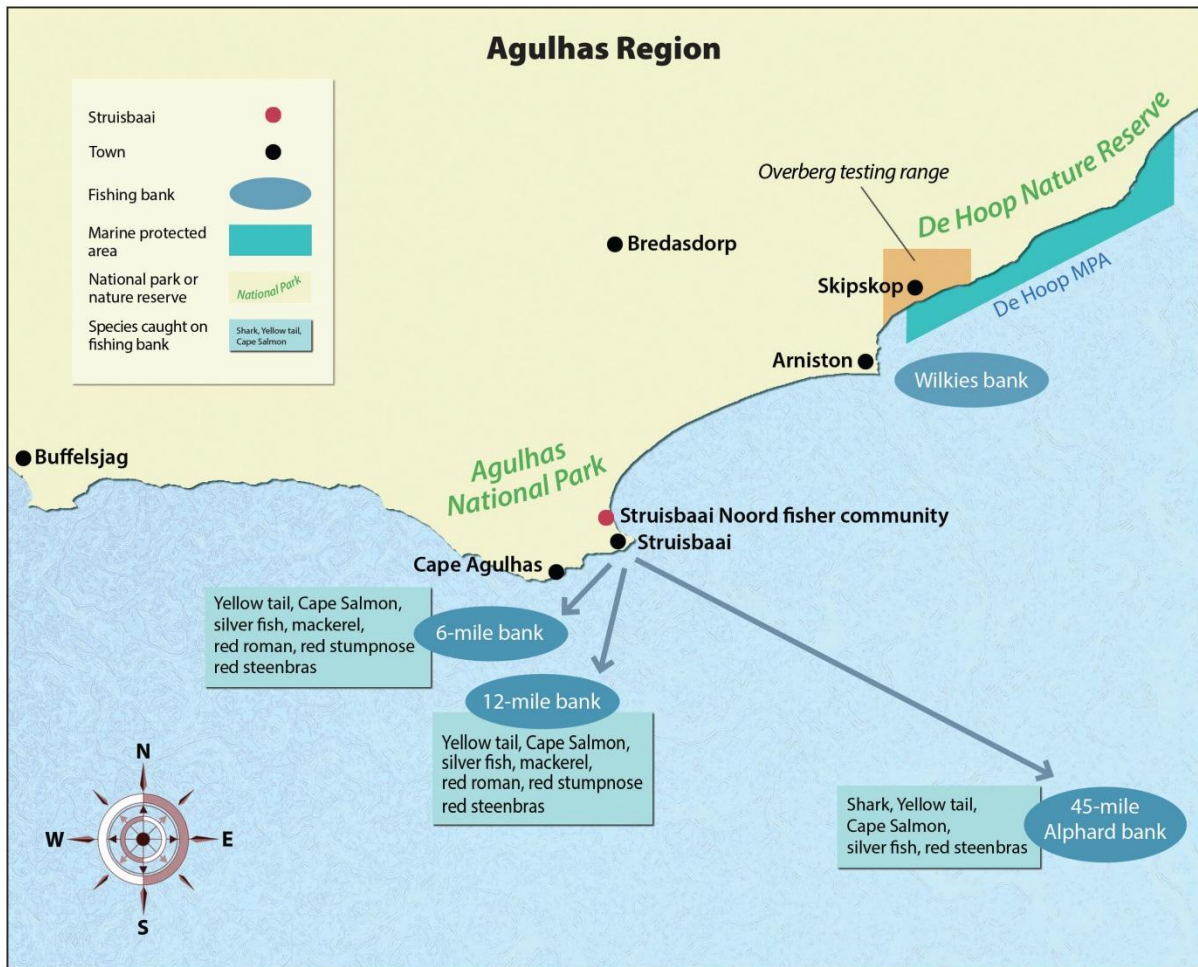


Figure 13: Map illustrating the main fishing banks (6, 12 mile and Alphard banks) and the main species caught there.

4.2.3.2 Process of fishing

To understand the fishery system we also have to understand the actual process of fishing. Going out to sea is dependent on and determined by the weather. Today, the fishers of Struisbaai Noord receive their weather predictions through internet sites such as Windfinder (<http://www.windfinder.com>), which they access through the local library. This site provides them with essential local weather information such as wind speed, wind direction, precipitation, wave direction and height, and temperatures.

The fishing day starts in the early hours of the morning. Although this is traditional, changing resource patterns have necessitated that fishers also fish during the night (both boat based and shore angling). The time of day and length of time they stay out at sea varies. Fishers use sardines, chokka and 'seekat' (a type of octopus) as bait. Once they have reached the fishing banks, every crewman has his own bucket and section on the boat. It is each man's responsibility to keep their fish in good condition. This is done by keeping the fish cool by keeping them wet and covering them with plastic bags to protect them from the sun. Most

boats (whether chukkie or ski boat) have regular crewmen, but fishers say they will fish on any boat that has space for them.

4.2.3.3 Illustrating fishing locations and resources harvested

Figure 14 illustrates the components of the natural fishery system in Struisbaai. Resources are harvested by the traditional linefish sector, commercial sector and the recreational sector. The type of resources harvested is illustrated by the left inner circle in Figure 14. Species such as dorado, marlin, steenbras, shad, grunter, belman, blacktail and yellowfin tuna are mainly targeted by boat and shore based recreational fishers (Crowe 2012). Fishing locations are illustrated in the right inner circle. Environmental changes in ecosystems and climate have an impact on resource availability and migration. External factors such as fisheries management practices also have an impact on the natural system as they regulate how and when resources may be harvested.

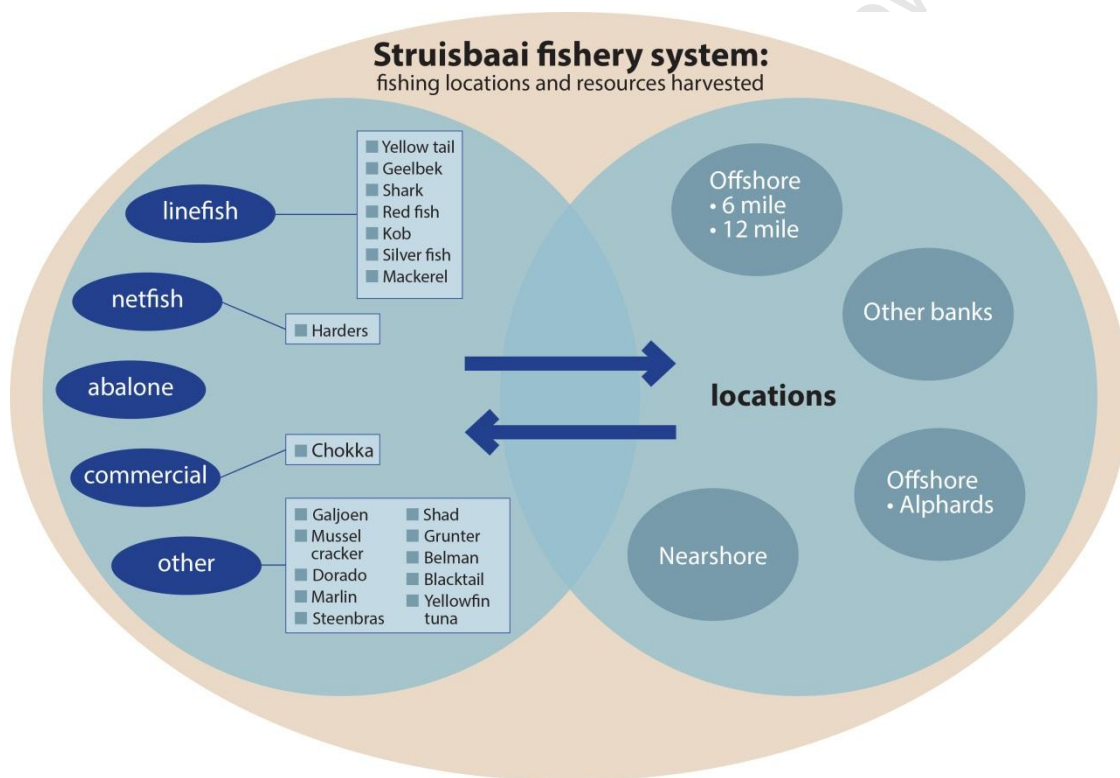


Figure 14: Struisbaai fishery system – fishing locations and resources harvested

4.2.4 Physical assets – gear and technology

Currently there are 8 operational²⁵ chukkie boats and two operational ski boat in Struisbaai Noord. Chukkies are old wooden boats traditionally used by Struisbaai and Arniston fishers. They are named as such because of the ‘chukking’ sound the engines make. According to Dennis (2010), the use of chukkies in this region started after World War II. The Struisbaai chukkies are old, slow and in constant need of maintenance. Many fishers say their engines are failing and their woodwork is worn out, and therefore the costs of maintaining these boats to keep them in sea going condition are high. The fishers relate that at least two chukkie boats are required to go out to sea together in the event of one of them breaking down at sea. They also describe how the ‘highway’ of cargo ships between the 6 mile and 12 mile bank pose a threat in foggy weather when chukkie boats are unable to see or locate them (the chukkies have no radar).

The Struisbaai Noord ski boat skipper is the owner of his boat, but some chukkie skippers do not own their boats. Some skippers are still paying off their boats to a local boat owner and entrepreneur. In the early 1900s big commercial fishing companies such as Sea Harvest and I&J were active in the Struisbaai harbour. All boats belonged to them with the community working as crewmen for the companies. When the companies downscaled and moved out of the Struisbaai harbour, the boats they owned were sold. A businessman, who came from Cape Town in the 1970s, bought many of them and fishers subsequently worked for him. Some years later he started the process of leasing/selling the chukkies to the local fishers.

It was described in focus groups and interviews that Chukkies are not only considered by fishers to be a safety hazard at sea, but also as restraint on their ability to harvest marine resources. As described in section 4.2.3.1, it takes a chukkie up to 3 times longer to reach the fishing banks as compared to their ski boat counterparts. In addition, as opposed to the trailer based ski boat, chukkies are moored in the harbour and fishers require rowboats to reach them. This means that chukkies are at a disadvantage as ski boats are able to travel, catch and sell their fish much faster and in a shorter time. It also makes the fishing day of chukkie fishers much longer. Chukkie fishers say that because they lack the speed of the ski boats, they are unable to travel from bank to bank in search of fish. During the peak holiday seasons, when recreational fishers flock to Struisbaai, the chukkies have additional competition as recreational fishers reach the fishing banks before they do.

The respondents who own or crew on chukkies express the need to upgrade their chukkies to ski boat licenses in order to be able to fairly compete for and harvest resources for consumption and income. Their boats are affecting their ability to catch fish, and therefore their ability to earn an income. Yet their expenses increase as a result of constant maintenance and regular expenses become more difficult to settle as a result of their inability to catch and sell fish. Transfers to ski boats would drastically improve their lives.

²⁵ “Operational” refers to the chukkies that are actively going out to sea.

Many have applied for this transfer but have been unsuccessful. They perceive the reason for unsuccessful applications to be racial prejudice against the coloured community by the Fisheries Authority (DAFF). They believe this is because they have seen that people of other racial groups²⁶ are being granted ski boat licences. They also perceive that the department fears resource depletion and an increase in Total Allowable Effort²⁷ (TAE) as a result of boat transfers. They argue, however, that their owning ski boats will not have any negative effects on the resources:

'A fish will bite if he wants to and not bite if he doesn't want, he does not care whether the bait and line was cast by a ski boat or a chukkie' (FG2).

Other recent studies undertaken in the region, such as Van der Bank (2012), Dennis (2010), and Isaacs (2011b) have all found that, for chukkie fishers, the need to convert chukkie boats to ski boats is an urgent issue. Views expressed in focus groups illustrate the discontentment among the fishers:

'A man must be given the opportunity to better his life.' Our chukkies are our biggest threat. Everything is changing, why should we stay the same. Look at how technology is advancing, I cannot live with the technology that my grandfather used.' (FG2)

4.2.5 Financial Assets

Access to financial capital is essential to building sustainable livelihoods. While the research has not revealed fishers' access to credit or saving facilities²⁸, it has illustrated the type of financial assets available within the household. It has been stated (by a respondent) though, that many of the fishers do not have bank accounts. The research indicates several households are dependent on some form of social government grant. In fact, 33% of households surveyed as part of the household survey have one member who is receiving a government pension grant. This grant is a sum of approximately R1200 rand, paid on a monthly basis to persons who are over the age of 60 (who are not earning more than R50000 a year). This grant becomes an important financial asset during periods of low household income. The fisher community at large is also dependent on government child support grants. These grants are accessible to care givers of children under the age of 18, who earn below a certain threshold per annum. Though the amount is only around R280 per month (much less than a pension grant), it is a welcome form of income to many households to assist with their children's growing needs. Fifty percent of households also

²⁶ South African racial classification is still based on the Apartheid era racial divisions (Black, White, Coloured, Indian, Asian). The Coloured population is a group of people generally regarded as mixed race, descended from slaves, indigenous Khoisan, other black people and European settlers. Historically, the Coloured population occupied an intermediate status in Apartheid South Africa (van Sittert et al. 2006)

²⁷ Total Allowable Effort (TAE) is set by DAFF and defines the amount of 'effort' (vessels, fishers or hours) applied to a fishery (WWF 2011 – fisheries facts and trends)

²⁸ This was not investigated as part of the research

have one other household member who is either part time or fully employed. This greatly assists the household when the primary earner (fisher) is unable to earn an income through fishing (especially during the winter months).

4.2.6 Livelihood strategies and outcomes

4.2.6.1 Range of existing livelihood activities

The results have indicated that none of the respondents was involved in any other paid income generating activities outside the fishing industry. Some of the older fishers had worked for I&J²⁹ when the company was still active in Struisbaai. The majority of respondents fish from the shore or collect inshore resources on days when it is not possible to go out to sea (although this is merely to be able to feed their families and not for income). Some fishers crew on fishing boats along the west coast catching snoek.

Fishers believe that there are no alternatives for them outside the fishing industry. Besides transport and skills constraints, they believe that their inability to access the job market is based on racial prejudice and nepotism. Many jobs are given to people outside the community, for example all the teachers employed at the primary school are from Bredasdorp. The town of Struisbaai sees many housing developments, yet building and other maintenance contracts are given to white owned companies. In addition, according to respondents, these building and construction companies employ foreign black workers (such as Zimbabweans), as they will work for lower wages. The fishers also believe that, because of the seasonal nature of fishing, companies are hesitant to employ fishers who will then return to sea at any opportunity. Instead, they prefer to employ people who will offer a more permanent labour source. Fishers state that within the municipality employment is based on nepotism. None of these claims has been confirmed, however.

While the fishers themselves are not involved in any other livelihood activities, members of their households, as well as the community of Struisbaai Noord at large (this includes non-fisher households), have been involved in livelihood activities outside of fishing. This includes maintenance and building work, painting jobs, shop assistants in Struisbaai and Bredasdorp, municipal work (refuse removal, road maintenance etc.) domestic work, gardening, jobs in the Struisbaai industrial area, spaza shops, harvesting figs, pastors, librarians, work at the Cape Access centre based at the Struisbaai local library, and temporary work such as the EPWP projects³⁰ (which at the time focused on cleaning up the Struisbaai harbour). There is at least one former fisher who is now a building contractor and is currently contracted by SANParks to undertake maintenance work at its rest camp, (while

²⁹ Irvin and Johnson (I&J), a offshore commercial fishing company established in South Africa in 1912

³⁰ The Extended public Works Programme launched in 2004 is one of the government's programmes aimed at providing income and poverty relief through temporary work for those who are unemployed.

this fisher owns a boat, he did not receive a linefishing right under the new allocation and thus was forced into other activities).

In the focus groups the fishers state that the government has told them that fishing is no longer sustainable for them, and that the community needs to look into alternatives to supplement their income. According to the fishers, this is not straightforward. In one of the focus groups it emerged that two fishers had approached the Department of Land Affairs in Bredasdorp, as they were aware that the department was facilitating a project that assisted people with small farming initiatives. They understood that the project would include training and start up facilities and they were aware of people in Elim, Napier and Arniston who had been successful in attaining land for small-scale farming. Many people who now reside in Struisbaai moved to Struisbaai from neighbouring farms, and the fishers felt that their background in working on the farms would count in their favour. They were, however, unsuccessful in accessing the project, being sent from pillar to post in their application process. The fishers expressed their belief that it is not that the community does not want to look at alternatives, but rather that there are no alternatives, and those that do exist are out of their grasp.

Some of the respondents (22%) surveyed as part of the household survey, hold shares in the Struisbaai Fishers Union (PTY), a company which was formed in order to apply for fishing rights. The Figure 15 below illustrates respondents' involvement in livelihood activities outside boat based fishing.

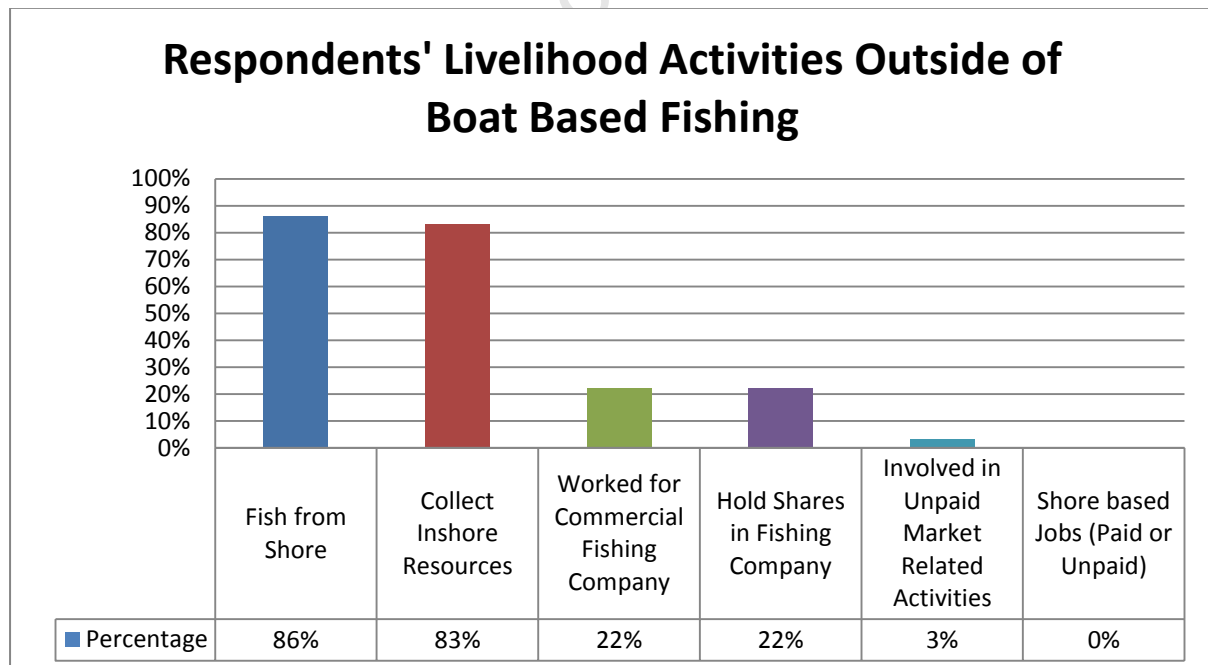


Figure 15: Involvement of respondents in livelihood activities outside boat based fishing (based on household survey data)

The household survey indicates that 88% of respondents have stated that, at times they feel forced to fish (irrespective of catch limits or prohibited species), in order to feed their families and put food on the table, while 12% said that they did not feel forced to go out to fish. During the focus group the fishers explained how they catch fish from shore on days that they are not able to go out to sea and many times are fined about R300 for fishing without a permit³¹. Very little fishing activities occur during the winter months and the traditional summer fishing season is starting later. As a result, especially over the past few years, there are longer periods in which fishers have no other means of income, but still have to pay expenses. Some fisher households have wives or children who are employed and, therefore, have some form of subsistence during these times, but for others their only means to feed their families is to fish. The dire situation of how many fisher households struggle to make ends meet is expressed in the words of two fishers quoted here:

“So we are not catching any fish but we still have all our expenses. We have to pay the moorings which is now R900 a year. You must pay your levy (which is dependent on the amount of fish you catch). Then you must pay your license (boat) and you must drive to Cape Town to pay it. Then you must still pay the VMS. That was in 2008. And it was forced upon us. And you have to pay R200 per month. Even if your boat is just standing in the harbour, you still have to pay that. We don’t even have money for diesel, we don’t even have money to fix our boats.” (Respondent K)

“The fishing industry is not an easy industry. It is one of the most difficult that you can get. And people who do not live within the industry will not understand that. You can see, we have had no sea days this week, you can see how the people are sitting on the street corners all day. My wife works but if she hadn’t been working then there would be no income. And so at the end of the day that is how it is going to be... the woman will be the breadwinner.” (Respondent L)



Figure 16: Photographs of fishers involved in activities during non-fishing seasons – fixing and painting boats and angling from shore

³¹ Fishing from shore requires a daily recreational permit which costs R7.

4.2.6.2 *The willingness of respondents to pursue alternative livelihoods*

As part of the survey, respondents were asked whether they feel they would leave the fishing sector if given the opportunity to work in another sector. All respondents (100%) stated that there are no alternative livelihood options, other than fishing, for the people of Struisbaai Noord. They stated that more opportunities and jobs should be created for the people of Struisbaai. There may be opportunities in nearby towns such as Bredasdorp, but travel and transport remains an obstacle.

Of the total respondents, 31% said that if given a choice of work in another sector they would choose an alternative livelihood. The main reasons given by respondents for wanting to choose an alternative livelihood were that the fishing industry is deteriorating and they are struggling to make a living out of the sea. Fishing also does not offer a fixed salary like other industries. The majority of respondents however (69%), stated that they would remain within the fishing industry. Various motivations were given, with one of the main reasons being that fishing has been a lifelong profession. Respondents also stated that fishing is their life and it is what they love to do. Some said they were too old to find alternative jobs, and others said that they would find it difficult to leave the sea.

Findings from the interviews and focus groups revealed that, for the local fishers of Struisbaai Noord, fishing is more than a means to put food on the table or income. Fishing is part of their tradition, history and culture, and these are aspects not easily abandoned. Focus groups and interviews highlighted the hardships and struggles that fishers endure that are outside of their control, at the hands of government, local authorities and even climate change. Yet, despite these difficulties, fishers would choose to remain within the industry, because fishing is in their blood.

The strength of this historical and cultural link to fishing and the sea is expressed in the following two quotes from two respondents interviewed:

“My father was a fisherman, my father’s father was a fisherman. We live out of the sea... and this is how I want to die. A fisherman’s life is about hope, we live with hope... if there is nothing today we hope that tomorrow will bring something.’ ‘I grew up next to the sea... no, you could say I grew up IN the sea.” (Respondent N)

“I am going to share with you what the minister has said to us: That the fisherman must start to look at alternatives. This is what I told them: HOW DO YOU TAKE THE BLOOD OUT OF YOUR VEINS? To be a fisherman all your life and then you have to change. 26 years ago, I went into building for a bit... your heart is not in it, it’s not your life, and you just don’t manage. You are there, but your mind is not there, it’s with the fish.”(Respondent H)

While it emerged (from focus groups and interviews), that fishers want to stay within the fishing industry, they also want to see change within the industry - change that will better

their social and economic circumstances and improve future conditions. Fishers say that they have faith that the linefish will never disappear. Therefore, their fear is not that the natural system will fail them, but rather that institutions, such as government, needs to assist them to gain access to these resources, as well as improve access to better living conditions and basic services.

Ski boat fishers (skipper and crew), in particular, expressed in the focus group that they would like to have more crewmen than their allowed 7. The ski boat fishers state that they have space for 3 more members and denying 3 more spaces on their boat is denying three families the opportunity of making a living. Ski boat fishers would also like to see the government ease up on regulations regarding legal sizes of certain species. For example, they say that the legal size of Cape salmon is 60 cm, whereas they would like it changed to 55 cm at least. The legal size of silverfish is 35 cm whereas it used to be 25 cm. They state that the prohibition on catching 'undersized' fish is a big loss and results in days of going out to sea and returning with nothing. Other changes that respondents would like to see occur within the fishing industry are technological changes (chukkies transfer to ski boats), quotas for species other than linefish, and restrictions on chokka boats and other 'outside' commercial fishers in these waters.

4.2.6.3 Youth and the future of fishing in Struisbaai

According to the survey, the vast majority of respondents (91%) said that they would not encourage youth to enter the fishing industry, while only 9% said that they would encourage youth and gave various reasons. Many respondents showed despondency about the future of fishing for the youth, saying that the fishing industry has changed from the past. The deteriorating resources, as well as the unfavourable laws affecting fishers, have changed the industry from what it was in the past. It has become more difficult to survive in the industry. Fishers struggle more now than in the past and fishers do not want to see their children and other youth within the community go through the same hardships that they are presently undergoing. The fishing industry also offers no fixed income. Today, educated youth have the ability to seek jobs which offer more security in terms of monthly income for them and their families.

Those that would encourage youth to enter the fishing industry stated that if circumstances were improved for the fishers of Struisbaai it would give youth a better chance at success. They also stated that there is the need for more fishers, fishing is their culture and tradition after all. But youth should first pursue an education before taking to the sea. Yet, it is important to mention that, from the focus groups, it emerged that the high percentage of respondents stating that they would not encourage youth does not indicate that they would not like to see youth in the fishing industry per se, but rather that they would like to see conditions improved before encouraging youth to enter the industry.

4.3 Governance institutions and processes

Governance institutions and processes refer to organisations, institutions, policies and legislation that have the ability to affect the livelihoods of fisher communities through influencing resource access and use, and the extent to which people can harness and gain access to these natural assets.

4.3.1 Natural resource access rights

In South Africa, access to fisheries resources is determined by the South African fisheries governance regime which has historically favoured the industrial fisheries sector. Under the current legal framework of the MLRA and associated fisheries sector policies (implemented by DAFF), licences, permits or quotas are required for all types of fishing activities. The fishers of Struisbaai Noord are traditional line fishers. Ten residents of Struisbaai Noord hold a traditional linefish right (a further 5 right holders reside in Struisbaai). Two residents hold abalone diving permits and 1 resident holds a netfish permit³². There were no holders of Interim Relief Permits (IRP) in Struisbaai Noord at the time of the survey (subsequent to the survey some fishers received IRP net fish rights). Those who do not have access to fishing rights or permits work as crew for the rights holders.

The table below illustrates the number of fishers from Struisbaai Noord that have acquired rights in Struisbaai Noord.

Table 7: Rights holders in Struisbaai Noord

Permit	Number of permit holders
Traditional Linefish Permit	10
Abalone Permit	2
Netfish Permit	1

The results have shown that almost half of the respondents surveyed indicated that they had previously applied for rights for which they were unsuccessful. Most respondents had applied for abalone rights in 2003 and WCRL in 2001-2002 and 2005. As a result of their fruitless efforts, respondents are despondent towards applying for fishing rights: *'how many times have we applied, you can apply till you are red in the face'* (FG1). Chukkie fishers in particular, like many in the fisher community, are pushing for rights to harvest other species

³² Netfish refers to the beach-seine (treknet) and gillnet (drift-net, set-net) rights allocated for a period of 10 years from 2006-2015. In Struisbaai harders is the main target species of the beach-seine fishers. A limited by-catch of linefish species is allowed (DEA 2005).

in addition to linefish. They would like to be able to harvest WCRL again in their nearby waters, as access to this additional species, even in small quantities, would offer much needed income relief. Others had also previously applied for squid and linefish permits.

Holders of traditional linefish rights (TLR) are regarded as commercial fishers. These commercial rights have been allocated for a period of 8 years from January 2006 to December 2013 (DAFF, 2005). These permit holders are by law not entitled to hold any other fishing permit (besides WCRL, but this species does not occur in the Struisbaai area), nor may their boat be utilised for recreational fishing purposes (DAFF, 2005). It is also important to note that the TLF right is linked to a particular vessel that is geared for hand line fishing, is approximately 10 m or less and has an operating Vessel Monitoring System (VMS). It is the requirement of all vessels to switch on their VMS upon going out to sea, as it enables the regulating authority (DAFF) to track the vessel's location (DAFF 2005).

The number of crew that may fish from a particular vessel is determined by the size and capacity of the vessel and is indicated by the South African Maritime Safety Authority (SAMSA) safety certificate (DAFF 2005). Thus the fixed number of crew for chukkie and ski boats varies. The chukkies of Struisbaai Noord hold between 7-10 crew members. Crew also need to be registered on a Crew Register issued by DAFF. Registered crew are only allowed to fish from vessels that are authorised to catch linefish, but are not limited to work on a particular vessel, area or fishery (DAFF 2005).

Although the TLF rights holders of Struisbaai Noord are entitled to fish in the waters of Zone A (Port Nolloth to Cape Infanta), their boats rarely travel further than their local fishing banks. The map in the figure below illustrates fishing zones for the traditional linefish industry.

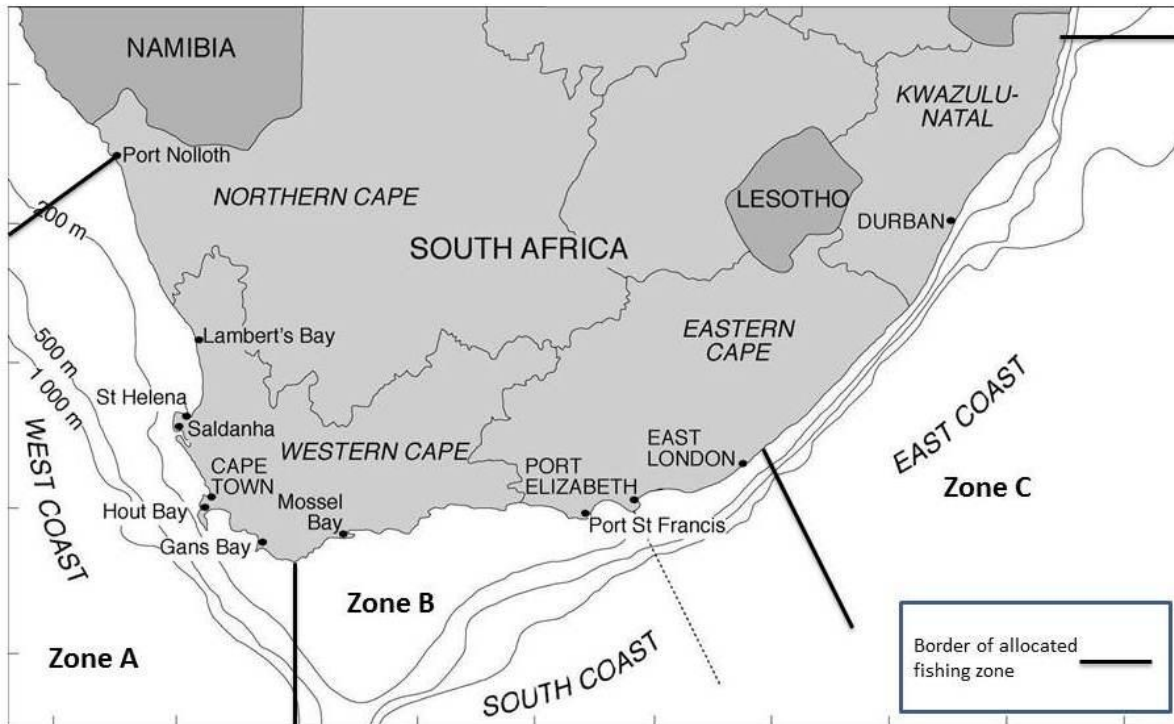


Figure 17: The South African coastline illustrating the 3 main linefishing zones as set out in the Traditional linefish policy (2005). Zone A: Port Nolloth to Cape Infanta. Zone B: Cape Infanta to Port St Johns. Zone C: Port St Johns to KZN border³³

4.3.2 Governance Institutions

The following diagram illustrates the institutions and conservation agencies that are present within the Struisbaai fishery system. National government departments such as DEA and DAFF are responsible for formulating and implementing fisheries and marine conservation policies and controlling and regulating marine harvesting and fishing activities (these departments are guided by international best practice). DAFF is responsible for the allocation of quotas and permits, the development of fisheries policies, enforcement and compliance, as well as setting catch limits. DEA is responsible for coastal management and marine protected area processes.

The Struisbaai Fisheries Compliance Office (DAFF) is situated at the Struisbaai harbour. Here 4 DAFF compliance officials are stationed. They are responsible for checking permits at the entrance of the harbour, patrolling areas within their jurisdiction, as well as monitoring boats, catch limits, catch size and poaching. At the local government level Struisbaai forms part of Ward 5 of the Overberg district municipality and is represented by the ANC.

Also within the Struisbaai and Agulhas region, conservation bodies such as the SANParks and Cape Nature have jurisdiction over certain conservation areas and conservation

³³ Map adapted from FAO

management practices. The management of the Agulhas National Park (SANParks) and De Hoop Nature Reserve and MPA (Cape Nature), and other conservation areas such as De Mond (Cape Nature), fall within the authority of these conservation bodies and they control access to these areas. These conservation bodies also undertake projects that involve the local community (SANParks does this through their People and Conservation division), such as the Working for Water Project, Working for the Coast Project and other local initiatives that involve the clearing of vegetation, harvesting of figs and maintenance of the fish traps (vywers).

At the local community level there are various organisations and NGOs to which fishers belong, or are affiliated with. These organisations exist in order to provide fishers with a platform through which to mobilise themselves. The two main fisher organisations in Struisbaai Noord are Coastal Links (Masifundise Development Trust) and the Struisbaai Fishers Forum (discussed in section 4.2.2.4). Other bodies are represented within the Struisbaai fishery system, namely the South African commercial Linefish Association and various recreational bodies.

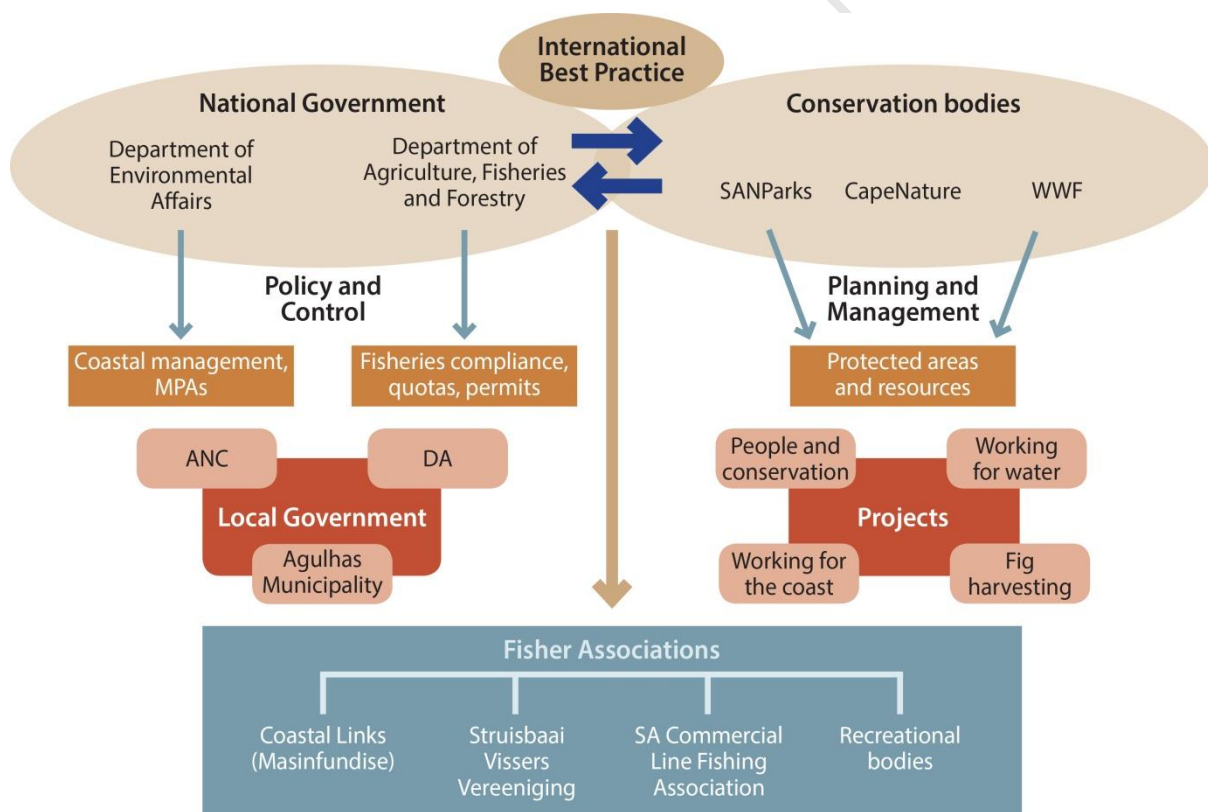


Figure 18: Struisbaai fishery system – Institutional structure

4.3.3 Community interaction and relationships

At the initial stages of fieldwork, informal interviews were held with fisheries compliance officials at the Struisbaai harbour, and Agulhas National Park (manager and park development officer). These stakeholders state that they have a good overall working relationship with each other, although certain conflicts may exist. Concern was voiced that the compliance office at the Struisbaai harbour should be capacitated in order to undertake their responsibilities more efficiently. On the other hand, inspectors of the compliance office, whose responsibility it is to patrol the coast, have mentioned that a lack of access to SANParks areas is a hindrance. SANParks have no jurisdiction from the high water mark but compliance officials and the local harbour have proposed that SANParks be made honorary officials to assist the fishing inspectors in SANParks areas.

The fishing inspector also feels that Struisbaai harbour is understaffed, especially during the busy seasons (December and Easter holidays). During these periods increased numbers of boats, cars and people fill the harbour precinct and monitoring becomes difficult and affects the ability of the inspectors to regulate catches and patrols. The fishing inspectors also only work during the daytime hours of 8am-2pm, and therefore there is no monitoring at night. Fishers have a good relationship with the DAFF fishing inspector, who they say understands their plight and is sympathetic towards the traditional small scale fishers in the area. Fishers have a poor relationship with Agulhas National Park, who they refer to as SANParks. The quotes below illustrate fishers' feelings toward the Park:

'Parks (SANParks) is the one that brought poverty. Before we could harvest figs freely, now we need permits, and so few get permits. How many farms have they (SANParks) bought, how many families have lost the ability to work on those farms.'(FG 1)

'When they (SANParks officials) see a coloured man they think that he is a crook, and will always check permits. Yet they do not check the permits of the holiday makers.'(FG 1)

'If Parks (SANParks) say to us... give us a piece of your area and then we give them. Then they will say give us another piece... and at the end of the day they will have the whole area.' *'They will tell us sign here and you can fish there... but they won't tell you about the fine print.'*(FG 2)

They have a good personal relationship with the park development officer (who is responsible for the development of marine conservation initiatives). SANParks seem to be aware of fishers' views towards them, as they have mentioned that fishers are more open to independent researchers than to research undertaken by SANParks, who are viewed as authoritarian figures. SANParks themselves seem to have a better relationship with the recreational fishers, who are more commercially viable for them and they also feel a sense

of responsibility, as the managers of a national park, to provide a space where people can get out of the city and get back to nature.

4.4 Threats to the fishery system

4.4.1 Climate change

When asked what they perceived to be the greatest threat to their ability to harvest marine resources for their food and income needs, the majority (54%) of respondents interviewed in the household survey indicated that 'climate change'³⁴ was the greatest threat. Focus groups reveal that fishers have observed a change in the currents, a change in temperatures of the water and more variable wind directions. The increase in wind and rain make it difficult to go out to sea, but it also influences the streams and ocean currents. The fishers say that the south easterly wind is an essential factor that stabilises their currents. In a focus group, a skipper revealed that the older generation used to call it 'the black south easter'. The black south easter would blow for 8 days and thereafter the fishers would know that the fishing season had begun. Today they say that the south easter is not as strong as it used to be, and it blows from September/October through December. At the time the focus group was conducted it was February and the fishers felt the fishing had not yet started. Thus their fishing seasons are starting later and becoming shorter, increasing their vulnerability during the non-fishing season.

Fishers also attribute the shift in resource distribution to changes in weather and climate. This has also been observed by Dennis (2010) and van der Bank (2012), whose research has shown that fishers recognise how changing currents, wind and water temperature have affected specifically the distribution of yellowtail and WCRL. The decreasing water temperatures in the banks closer to shore result in the fish moving out to offshore banks in search of warmer water. In a focus group, fishers say that they are hearing reports that yellowtail is now being caught in Lamberts Bay, which is a cold water region. Therefore, fishers say that the resources are not declining per se, but rather that fish distribution is changing because of 'climate change'. Fishers also state however, that they cannot blame 'climate change' alone for the changing state of the resources. Other factors may also contribute to the changing resource patterns, such as the increasing presence of chokka boats (whose fishing methods have a destructive effect on resources), and recreational fishers, who harvest more than their permitted limit.

One respondent claims that as far as his memory serves, he has never experienced the south easterly wind to blow so persistently out of season:

³⁴ This research merely presents the local understanding of the term climate change

“Our water stays cold as a result of the persistent south easter that we’re getting. It was never... from the time I can remember... it was never like this, that we’ve had such a constant south easterly until this time (Respondent H).” (time of interview was April)

4.4.2 Outside fishers

According to the surveys undertaken, half of the respondents indicated that ‘outside fishers’ were the greatest threat to resource sustainability. In the survey, ‘outside fishers’ were grouped as migratory, commercial fishers and recreational fishers (boat and shore based). Based on Van der Krogt (2012)³⁵ findings, migratory fishers have not been very active in Struisbaai in recent years.

Therefore, it can be assumed that ‘outside fishers’ referred to here are predominantly recreational fishers. It emerged from the focus groups, however, that the ‘threat’ of recreational fishers (shore and boat based) is less about a threat to the resources, and more about inequality of treatment, since recreational fishers are seen as being favoured. There is dissatisfaction about unfair or preferential treatment by authorities (DAFF). Respondents state that during off peak seasons, when they rely on angling to supplement food and livelihoods, authorities readily fine fishers from Struisbaai Noord for lack of permits or inappropriate catches (undersized fish or prohibited species). Yet during the peak seasons authorities ease up, allowing recreational fishers to catch more than their allowed bag limits. During these times authorities do not check boats and permits regularly. They also state that their fishing banks are small and chukkie fishers particularly are at a disadvantage if recreational fishers with ski boats fish on these banks.

During peak holiday seasons (December/January and March/April), recreational boats also flood the Struisbaai harbour and fishing banks and target the same species as the local fishers. Crowe (2012), whose study profiled the recreational fishing sector in the Agulhas region (with a strong focus on Struisbaai), conducted a survey of the recreational fisher population of Struisbaai. Results of the study found that recreational fishers who fish from shore are predominantly from the Western Cape, while boat based fishers travel to the area from further afield. Fisher interviews revealed some form of dissatisfaction with these boat based recreational fishers who, the fishers believe, are predominantly from Gauteng and show a blatant disregard for the overall environment. Crowe (2012) has also found that although recreational fishers practise catch and release from time to time, very few do so on a regular basis. In addition, it was found that overall, the recreational fishers contribute approximately R53000 annually (Crowe 2012) to the local economy of Struisbaai, yet apart

³⁵ van der Krogt’s (2012) thesis explored the migration of commercial ski boat line fishers in the Western Cape. While his research started out in Struisbaai, his case study was soon abandoned as it was found that migrational ski boat line fishers were no longer as frequent in this region.

from some seasonal work, fishers from Struisbaai Noord feel that they benefit very little from this economic boost.

4.4.3 Commercial squid (chokka) boats and trawlers

Thirty six percent (36%) of survey respondents indicated that the numerous commercial squid boats operating in the area are a threat. Yet in the focus group, the issue of 'chokka' boats, as they are called, came through more strongly with powerful opposition to their fishing activities in these waters. These boats are regarded as commercial trawlers. Respondents say that chokka boats arrive from Port Elizabeth when the fishing season starts. Chokka boats have bright lights and fish during the day and night. It is reported that sometimes up to 40 boats lie on the banks, giving the illusion of a city on the sea (because of the bright lights).

Fishers say that the bright lights affect the fish most, as the fish become disorientated, not knowing whether it is day or night, and this affects their behaviour. They state that the lights also kill the plant species (algae), which are a food source for linefish. In addition, species such as yellowtail feed on chokka squid and so, if there are no chokka, other species such as chokka predators may also decline. Thus some fishers believe that the chokka boats are responsible for the depletion of fish at the 6 mile bank. While there is no scientific evidence to support this, one thing is unanimous, and that is that fishers question whether authorities (SANParks) are serious about conservation, if they allow chokka boats to fish freely in these waters. Instead they suggest that authorities should assist them in preserving their resources and traditional fishing grounds by keeping the chokka boats out. One fisher describes how the abundance and frequency of chokka boats have altered their fishing patterns:

“And then the chokka boats came. And now there is no more fish on that bank (5 mile bank). We probably caught fish last 5-6 years ago on that bank. Then we went to 6 mile Agulhas bank. And so we caught for 2-3 years. But then the chokka boats moved too and now the fish are no longer in abundance there. And now they (chokka boats) have moved to the 12 mile bank.”(Respondent K)

Thirty three percent (33%) of survey respondents singled out trawlers as a main threat, while 33% singled out commercial ski boats. During focus group meetings and interviews, however, this did not emerge as one of the main threats. Commercial ski boats are seen as a threat especially to chukkie boats, as they have the ability to reach resources with more ease and in less time. In a focus group of chukkie skippers a further threat communicated was that cargo ships which sail between the 6 mile and 12 mile banks pose a danger to them. The chukkie boats do not have any type of radar and thus they are unable to see the

ships. “It is like a cargo ship highway out there”. Nineteen percent (19%) of survey respondents indicated that the fluctuation in the markets as a result of commercial ski boats was also a huge threat. Markets in particular are discussed in section 4.5.1 and 4.5.2 of this chapter.

4.4.4 Poaching

Some survey respondents (14%) indicated that poachers were a threat, while 8% indicated that all types of human activity contributed the biggest threat. From focus groups and interviews it emerged that fishers have a different view and definition of the term ‘poaching’. When they refer to poachers, they refer to people from other areas who harvest in their waters. Fishers say they understand that youngsters and people from the Struisbaai Noord community ‘poach’, because they have no other means of income. Youngsters in particular are driven to poaching because it seems an easy alternative to a hard life of fishing. They witness how their families and communities suffer and have no other alternatives. Thus, it is the vulnerability that results from the difficulty in attaining fishing rights and permits and the lack of alternative livelihoods that drive people to poach. Some fishers also say that government has a distorted view of ‘poaching’. They see poachers as those who illegally harvest perlemoen and WCRL, for instance. Yet they overlook cases where recreational fishers harvest more than their permitted quotas. One respondent describes the relationship between poaching and the youth:

“They (youth) see the hardships.... And they would rather go into something where they can make money, and that is poaching. And I blame the government for that. I am not involved in poaching but I see a lot of youngsters who are.”(Respondent L)

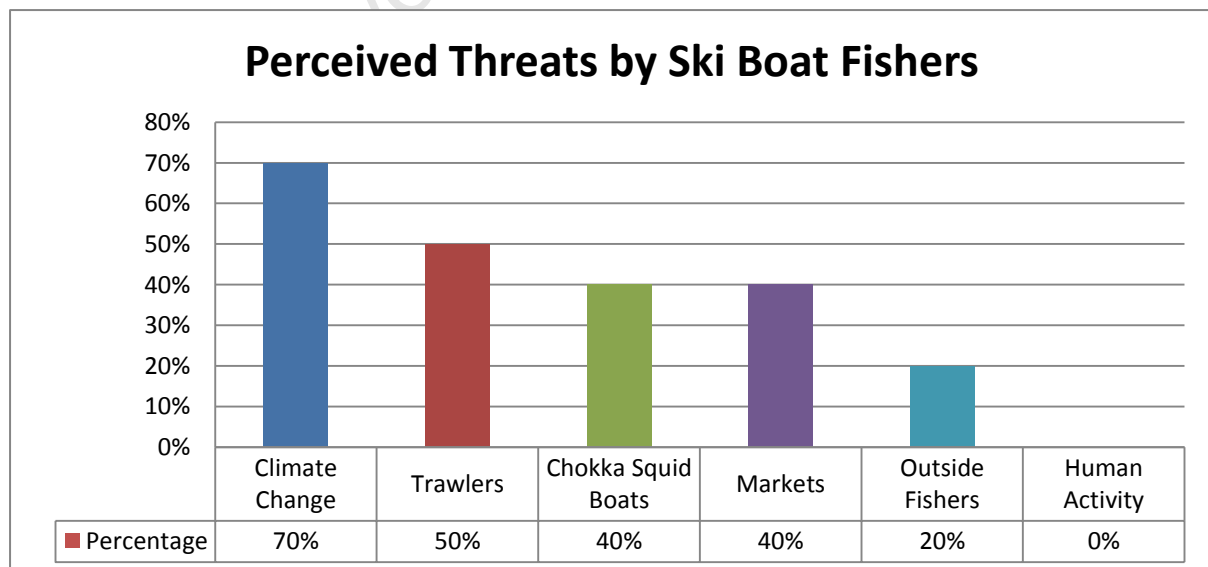


Figure 19: Threats to marine resources perceived by respondents (based on household survey data)

4.4.5 Perceived threats to chukkie fishers vs ski boat fishers

From the focus groups it emerged that chukkie and ski boat fishers have different views on what the main threats to the marine resources and their ability to harvest them are. Figure 20 illustrates that the main threat perceived by chukkie fishers is ‘outside fishers’. This is mainly due to the fact that their boats are old and slow, and therefore recreational and commercial boats have a bigger impact on them as outside fishers have the ability to reach the resources and fishing banks quicker. Chukkie fishers also place much emphasis on climate change as a factor in the changing marine resource patterns as well as commercial trawlers and squid boats.

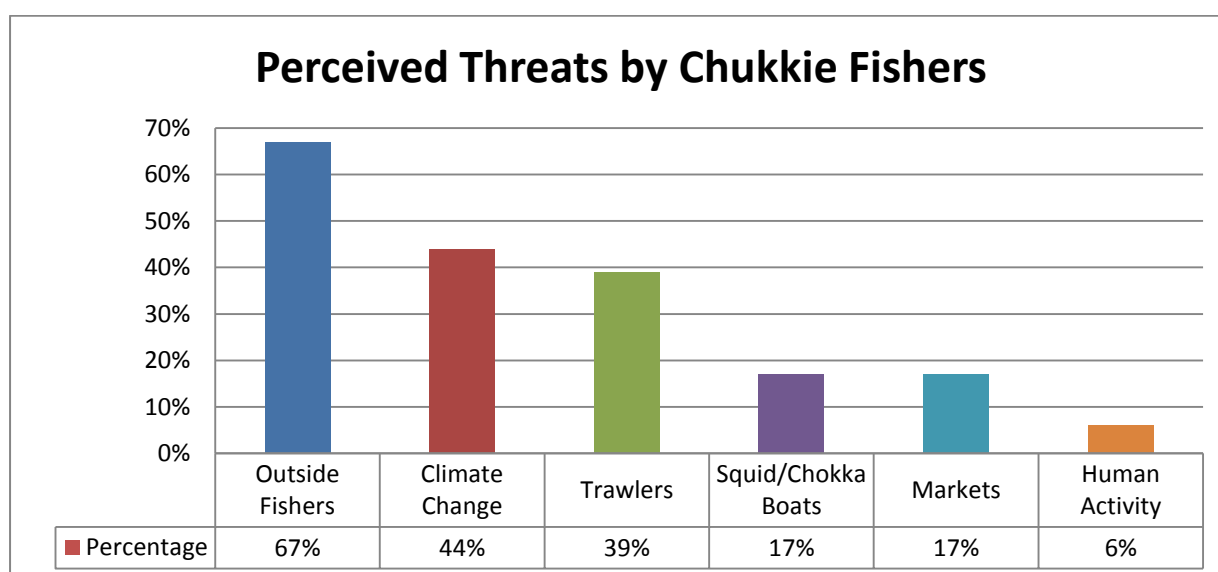


Figure 20: Perceived threats by chukkie fishers (based on household survey data)

For ski boat fishers (skipper and crewmen) however, climate change is perceived as the main factor threatening the marine resource and the ability to harvest them. In addition to trawlers and squid boats, they also place emphasis on the changing markets and the power dynamics at play. Prices of fish are not negotiated between fisher and buyer (the price is set by the buyer and fishers will only know after the fish is weighed how much they will be paid per kilo). Fishers claim that they have no control or any knowledge of the market prices of fish at any given time. Some fishers are under the perception that they are not allowed to sell their fish to any other buyers besides their regular buyer, nor would they take the chance of selling to other hawkers for a higher price. This is discussed in more detail in section 4.5.1 and 4.5.2 on markets.

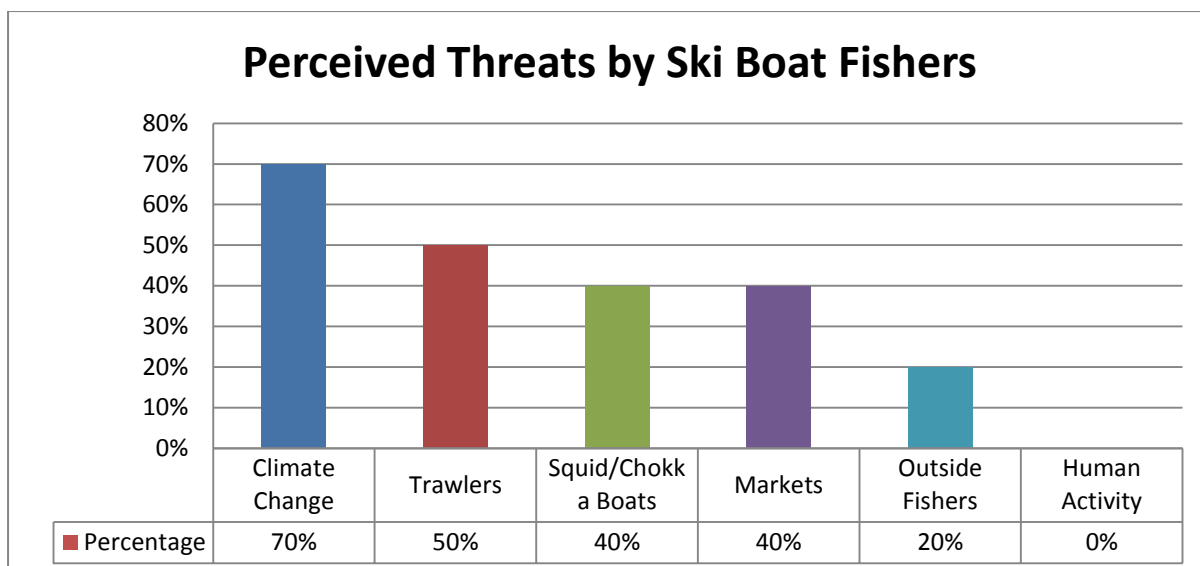


Figure 21: Perceived threats by ski boat fishers (based on household survey data)

4.5 Factors influencing livelihood outcomes

Various factors have the potential to impact on livelihood outcomes of small-scale fishers. This section reveals some of the trends that have emerged from the research.

4.5.1 Markets

Trade and post-harvest activities have the potential to contribute significantly to poverty alleviation and food security for small scale fisheries (Béné 2007). From the focus groups it has emerged that issues of power and conflict are constantly at play within the local market dynamics of the Struisbaai small scale fishery and have implications for livelihood outcomes.

The process of selling fish starts once the fish is landed at the harbour, when they are weighed by the buyer. Each crew member weighs their catch separately. The skipper and rights holder however, claims half of the crew members' fish. The buyer pays the skipper and the skipper pays his crew. Fishers are paid on a weekly basis. Each skipper has a permanent buyer for his fish. There are only 2 buyers in Struisbaai. One buyer is from the Struisbaai Noord area, the other from Struisbaai, who is stationed at the harbour and still owns many of the chukkies. There is a local handling company, which has been in existence for about 3 years³⁶, which processes and stores the fish in preparation for its shipment to Cape Town.

The ski boat skipper and one of the chukkie skippers (who is still paying off his boat so may only sell his fish to the boat owner) sell their fish to the Struisbaai buyer. The rest of the respondents sell their fish to the local Struisbaai Noord buyer. Once the fish is sold

³⁶ New companies try to establish themselves in Struisbaai every few years but the market is tough and they do not last long

respondents are unaware of what happens to the fish after that. They understand, however, that the buyers clean the fish, put them on ice and sell them. However, they do not know when they are sold, to whom they are sold or for how much.

From interviews with the buyers it has emerged that one buyer sells his fish locally at his fish shop based at the harbour, to local restaurants and also to factories in Cape Town. He does not buy fish from migratory fishers, nor does he import any fish into Struisbaai. He states that his buyers want consistency of a certain amount and type of fish for a specific month or season. In recent years this has become difficult and they look to other suppliers. The buyer from Struisbaai Noord has been involved in the fishing industry in Struisbaai for more than 25 years. In recent years his business has deteriorated due to poor catches and he has had to retrench employees. He presently has one employee and his wife who assists in his business. He sells his fish to a main buyer from Strand, but also to other buyers.



Figure 22: Photographs illustrating a ski boat offloading fish at the harbour and the process of crew members weighing their catch³⁷

³⁷ Photographs taken by P.Krogt (2012)

4.5.2 Market dynamics

Survey results have given an indication of present prices of fish. Table 8 below indicates the main species sold by the fishers and approximate prices (per kilo) they receive. Respondents are outraged at how fish prices vary from day to day... *'that is one of the nails in our coffin'* (FG 1). Fishers have no negotiating power with the buyers. They have no knowledge of the day to day market prices of fish and, therefore, are unaware of the prices they are getting paid for fish until after it is weighed. As a result of this lack of awareness fishers many times feel cheated by the buyers, as they have no other option but to take their word. If the market becomes saturated with a certain type of fish, the price of this fish may drop drastically from day to day. The market price of Cape salmon for example may be R28-30 a kilo, but if Cape salmon is caught for 2 days, the price on the 2nd day may drop to R16. Also, if the price of Cape salmon drops, the next time they catch Cape salmon the prices will start at the last lowest price. The fishers claim that the migratory fishers get more for their catch and even though they sell to their own outside buyers, they still influence the local market. Their buyers may supply to the same fish factories as the local buyers, and the volume may also cause fish prices to drop.

Fishers claim that even though they can negotiate better prices for their fish with other buyers, they do not sell to outside hawkers or anyone else beside their regular buyer. If they sell to outside buyers their regular buyers become disgruntled and refuse to pay or buy from them. And because fishers have no way of storing the fish, they are dependent on selling them as soon as they land in harbour. Thus buyers tend to hold a great degree of control over the local fishers and the market.

Some fishers have shown a keen interest in forming an association in which they themselves sell their fish. They do not, however, have the infrastructure (cold storage, transport, ice etc.) needed for such a venture. Others have said that this would not interest them as fishing itself requires long tiring hours at sea and that coming back to the harbour and having to handle, store and sell the fish themselves would require time and energy that they do not have. The unanimous view, however, is that local buyers would be in uproar if the fishers were to initiate such a venture. Some respondents have even gone as far as to say that the buyers would sabotage such an initiative.

The table below displays the price per kilo that fishers are paid for fish by their buyers:

Table 8: Fish prices per kilo³⁸

Species	Price per kilo
Yellowtail	R20-27
Cape salmon	R28-R30
Kob	R28- R32
Silverfish	R8 – R13
Mackerel	R7- R8
Shark	R15
Red fish	R30 – R35

4.5.3 Marine protected areas (MPAs)

Other external factors have an influence on the fishery system and fisher livelihoods. In recent years MPAs have become a popular tool for facilitating the sustainability of the world oceans and marine resources (REFS).

Almost all respondents interviewed as part of this research were aware of the proposal to proclaim a MPA in the Agulhas area. Many had heard about it by word of mouth or informal talks amongst fishers, but only 17% were aware of its objectives, what it would entail and how it would influence their fishing practices. Certain respondents were informed on a more formal personal basis by SANParks. Of the respondents who were aware of the plans for the proposed MPA, the vast majority of them (89%) have said that they were not involved in any meetings or processes related to the MPA. Of the 89%, some stated that they were indeed aware of one meeting that had been held by SANParks, but did not attend as they were out at sea.

4.5.4 Fisher attitudes towards conservation

All respondents remember a time when the seas were rich in resources and fish was in abundance in their waters. They have witnessed first hand how resources have been steadily decreasing, how fish patterns have been shifting and how the environment and local weather conditions have changed in the last 10 years. Because of the effects these

³⁸ Figures obtained 2011

factors are having on their livelihoods, fishers are not against the idea of conservation. They recognize that conservation may assist in rebuilding and restoring the condition of the resources. However, they say that their idea of conservation is different from that of conservation bodies.

The fishers relate that they have their own means of conserving the resources. They do not catch the same species all year round, they know when fish are breeding and they allow time for species to recover by not overfishing. They claim that they are not the threat to the dwindling resources. Instead, the threat lies in the fleets of chokka boats which fish on their banks, uncontrolled recreational fishing, and missile testing activities in their waters.

The fishers understand that a marine conservation area in their region may entail the declaration of a protected area reaching 3 to 6 nautical miles out to sea. The proclamation of such an area (especially if they are not allowed to fish there), will heavily impact their livelihoods as it would cut off access to their fishing grounds. Fishers are therefore confused and sceptical about the intentions of SANParks (and other conservation bodies). They claim that if organisations are serious about conservation they should be protecting the resources against chokka boats, outside fishers and missile testing activities.

The scepticism about conservation bodies and their intentions is also fuelled by fishers' general and historical mistrust of SANParks³⁹ and their feelings of being unfairly treated by them (due to racial prejudice). They claim that SANParks are not appropriately involving the fisher community in discussions about conservation plans. Although meetings with local fishers have been called and held, SANParks came into these meetings with plans drawn up, and therefore they feel helpless and unable to influence such plans. Further mistrust is created when fishers believe that once SANParks have demarcated a protected area they will start incorporating larger areas of ocean, just as they have expanded their terrestrial network by claiming farms and other land. Although national departments DAFF and DEA are the government authorities responsible for controlling fisheries and protected areas, very little mention is made of their local influence.

Some fishers say, therefore, that they will resist or protest against a conservation area. Yet their experience tells them that local fishers are small fry when opposed to the wants of national organisations. They suggest the idea of subsidies and preferential access if a conservation area were to be proclaimed in their region. Some fishers state that a protected area would cut off their access to fishing banks and result in little or no household income. Therefore, fisher households should be subsidised in some way. They also state that they would accept a protected area in which Struisbaai fishers may fish, but from which outside fishers (chokka boats, recreational fishers, migratory linefishers) are restricted. Yet, even if SANParks granted such preferential access they would still be wary of them:

'they (SANParks) will conserve everything besides our livelihoods' (FG1)

³⁹ Fishers refer to Agulhas National Park authorities as SANParks

4.6 Conclusion

This chapter has explored the livelihoods of the small-scale fishers of Struisbaai Noord - their social, human, natural, physical and financial assets, livelihood strategies and the trends and governance processes that affect them. The results of the research show that the local fishers of Struisbaai Noord are heavily dependent on the harvesting of marine resources for their food security and income needs. Because of their historical and traditional links to fishing, the fishers of Struisbaai Noord perceive there to be very few opportunities in the form of alternative livelihoods for them, nor would they readily pursue alternatives should they become available. They do, however, encourage youth and other household members to pursue alternatives.

Further, it was found that fishers perceive the local small scale fishing industry to have many challenges and difficulties. Changing fish distribution patterns, fish scarcity, the impact of climate change, the prevalence of large scale commercial fishing, as well as competition with recreational fishers, the lack of access to fishing permits, the changing markets and the limitations of fishing with old and out dated vessels all have an impact on the ability of fishers to harvest resources sustainably and effectively. Fishers do not dispute the need for conservation, as they have witnessed first-hand how the resources they so heavily depend on, have been deteriorating. However, their mistrust of authorities (such as SANParks) runs deep. They have been fighting a losing battle (for transfer of vessels, quotas etc.) for too long, to have faith that government or conservation bodies will have their best interests incorporated into any conservation plans for the region.

Chapter 5– Discussion

5.1 Introduction

This chapter discusses the research findings in relation to the broader literature informing this study. It highlights the key themes that emerged from the research and provides recommendations for consideration in the planning, implementation and management of fisheries and marine conservation in the Agulhas region. One of the most significant and overarching themes is the recognition and understanding of the Struisbaai fisheries system as a complex socio-ecological system, and stemming from this understanding comes the recognition of the need for an integrated and holistic approach to the management of the fishery system in all its dimensions. Within this socio-ecological system, the importance of the social or human dimension is highlighted, an aspect traditionally left out in planning and management.

For the purposes of this research, focus is placed on the small-scale fishery and the fishers of Struisbaai Noord, whose poor socio-economic conditions and lack of complementary livelihood opportunities, coupled with a high dependence on harvesting marine resources for their livelihood and food needs, as well as their traditional, cultural and historical links to the sea, make them a particularly vulnerable group. The second section focuses on the dependence of this group on marine resources by drawing on key aspects of the sustainable livelihoods approach to illustrate their vulnerabilities.

The third section identifies the challenges and vulnerabilities faced by the small-scale fishers from within the fishery system, as well as the external influences that impact on their livelihoods. The fourth section highlights ways of addressing these challenges and vulnerabilities through various approaches including the EAF, rights based approaches, participatory decision making and local economic development (amongst others). Finally, the need for effective and integrated conservation and management is highlighted, and recommendations for consideration are made towards the planning of a marine protected area in the Agulhas region, and specifically puts forward the idea of a marine spatial planning process.

5.2 Understanding the Struisbaai small-scale fisheries system as a complex socio-ecological system

A review of the literature has shown that approaches to fisheries and conservation management are shifting in favour of more integrated approaches and practices that recognize the inter-relationships between ecological and socio-economic components of a

system. The 'human' in nature or the human dimensions of fisheries development and management recognize that a 'fishery' consists not only of a community of fish in a marine ecosystem, but also human communities that are located spatially, that inevitably have a history, and a set of norms that govern them. It is this human component that some consider to be the primary and most dynamic component of the fishery system (Berkes et al 2001, Charles 2001, Garcia and Charles 2007). The literature also demonstrates the recent emphasis on the development of new approaches to fisheries management that understand that sustainable fisheries management can only be achieved if the fishery is seen as an interacting and interrelated system of ecological, biophysical, economic, social and cultural components (Berkes et al 2001, Charles 2001).

The human component in the Struisbaai small-scale fishery is indeed diverse and dynamic, and it is one of the purposes of this dissertation to understand the complexities and most important issues within this component. The research highlights that the Struisbaai small-scale fisheries sector is a complex socio-ecological system and that any resource management considerations for the sector and region need to understand not only the resource dimensions, but also the socio-economic components of the system. These include the cultural and historical dimensions, the interactions between the different fisheries sectors present in the region and the broader national policies which govern current activities.

5.2.1 Socio-economic and historical dimensions of the Struisbaai small-scale fishery

The literature has shown that small-scale fisheries play an important role in the social and economic activities of many developing countries, contributing to food security and income generation, not only at the household level, but also at the community level (Berkes et al 2001, McGoodwin 2001, Béné and Heck 2005, Béné 2006, Andrew and Evans 2009). These communities are regarded as one of the world's poorest groups (Campbell 1999, Allison 2001). They are often rural, isolated, socially and politically marginalised, and lack access to basic infrastructure and services such as transportation, health and education. Their dependence on fisheries resources coupled with their lack of status, power and infrastructure, makes small-scale fisher communities particularly vulnerable. Thus solutions to managing small-scale fisheries should not only focus on sustaining resources, but also on community socio-economic development (Garcia et al 2008).

The view of the livelihoods approach to fisheries illustrates that the understanding of historical, cultural and socio-economic aspects of small-scale fisher communities is, in many cases, fundamental to achieving sustainability in fisheries. Therefore, it is useful to understand the interactions between the fishery itself and the broader socio-economic environment (Charles 2005).

5.2.1.1 Socio-economic conditions

Struisbaai Noord falls within Ward 5 of the Cape Agulhas Municipality and results reveal that its socio-economic conditions are no different from the broader area which is characterised by high unemployment rates, seasonal jobs, a growing dependence on government support grants and a large population living on the poverty line (see section 4.2.1). While Struisbaai Noord receives service delivery in the form of water, electricity, sewerage, refuse removal and maintenance of local roads, the community feels the absence of some vital infrastructure and services that would improve their lives and living conditions. These include:

- lack of access to any form of tertiary education (the closest high school is 30 km away in Bredasdorp, while the closest college is in Caledon some 90 km away). This decreases the community's opportunities to educate themselves and learn skills for better or alternative income generating opportunities;
- lack of access to health services, with the closest clinic being situated in Bredasdorp;
- lack of transport infrastructure to other towns in the region. This hinders the ability to reach health services, schools and colleges and areas where there may be increased job opportunities (there is no rail or road public transport even to the main town of Bredasdorp).

Access to these services and infrastructure provides vital assets needed for communities and individuals, in order for them to construct sustainable livelihoods. Thus, it is important to understand the assets available to a community as these assets not only strengthens their ability to improve their livelihood circumstances, but also enables them to better deal with weaknesses that are out of their control (Campbell 1999). The literature reveals that in many instances the source of fishers vulnerability comes from the potential impacts of external or state-related factors, such as poor infrastructure (Béné and Friend 2011), which is shown to be characteristic of the situation of the small-scale fishers of Struisbaai Noord. In addition, some (Béné and Friend 2011) argue that the definition of what encompasses poverty has changed. It not only encompasses a person or community's lack of access to basic needs such as food, shelter, health and sanitation, but also the lack of certain human rights, powerlessness and social and political exclusion. Thus, it could be said that the inability of government to provide the town and region with adequate health, education and transport infrastructure and services also infringes upon basic human rights and needs.

5.2.1.2 The historical dimension – bonds of culture and tradition

It is important to avoid reducing the small-scale fisheries sector to just an economic activity. To small-scale fishers around the world, fishing is linked to culture, identity, way of life and tradition – tradition that has attached to it rituals, value systems, customs and social organisations that are closely tied to the resources they harvest (Sharma 2011). Today many cultural values, knowledge systems and beliefs linked to traditional small-scale fisheries are

weakened, and there is the need to protect and support these values and norms (Sharma 2011).

The results of this research have placed additional emphasis on the importance of the cultural and historical dimensions of small-scale fishing communities as described in the literature, by illustrating that the fishers, as well as the fisher community of Struisbaai Noord, show a strong connection to the sea. Findings revealed that fishing is more than just a means to put food on the table or generate an income, but is part of a rooted history, culture and tradition. Many of the fishers are 2nd or 3rd generation fishers, who began their rites of passage by fishing with their fathers from as early as 3 years old. While their formal involvement in the fishing industry only happened much later in their lives, this early introduction and the memories of fishing with their fathers solidifies their emotional connections to the sea. Even those whose families were not traditional fishers and who entered the fishing industry later in their lives related how fishing had become their way of life and what they loved to do. As boys, these fishers turned to harvesting marine resources in the face of the growing need to support their families. This demonstrates that fishers have a strong connection to the sea, whether they are first generation fishers or have a family history of fishing. During an interview one respondent reiterates the connection between family bonds and sea:

“I was very young when I became interested in fishing. Sons want to do just as their fathers do. We use to go fishing in Buffeljag with my father during the school holidays and we use to look forward to that. Because I went to school in Bredasdorp, school holidays was the only time I got to spend with my father.” (Respondent N)

The history of the Struisbaai Noord fishing community is not only traced to the ancient fish traps in the region, which reveal that people have been fishing there for hundreds or even thousands of years⁴⁰, but also to the relocation of fishers from neighbouring farms and fishing villages in the search for a better life and more sustainable livelihoods. Some, like the Skipskop fishers were relocated here due to forced evictions from their fishing village during the 1970s and early 1980s (Dennis 2010). Yet the common and unifying thread is their reliance on harvesting marine resources and their connection to the sea.

Research undertaken in other coastal communities of South Africa shows that the history of fishing in coastal communities is rich and can be traced back hundreds of years (Sunde and Isaacs 2008). In Langebaan along the Cape West Coast, fishers tell of how entire households would be involved in the fishing process, from catching, preparing and drying to selling and how they feel that the declaration of the present MPA was the turning point in their way of life. The lack of local participation in the decision making processes relevant to the management and establishment of MPAs has left many communities disempowered. The

⁴⁰ While initial research calculated the age of South African ‘vywers’ or fish traps to be between 1700 and 3500 years old, more recent research has calculated that they are more recent and derive from colonial times (Kemp et al. 2009)

dispossession of land, lack of access to coastal resources and the need to apply for fishing permits⁴¹ seriously curtailed their ability to maintain their livelihoods. Furthermore, the inability of government and management authorities to recognize that local communities' culture and tradition is tied to the sea has subsequently led to the slow erosion of their traditional way of life, their social roles in the household and society, and their cultural practices (Sunde and Isaacs 2008, Sowman et al. 2011). If an MPA were to be proclaimed in the Agulhas region that cut off fishers' access to resources, it would not only affect the fishers' ability to sustain themselves and their families, but also affect the social, traditional and cultural fabric of the community.

For the fishers of Struisbaai Noord, values such as tradition, history and culture, are aspects not easily abandoned by any individual or community. Therefore, although the community suffers many political, institutional and environmental hardships outside of their control, they continue to persevere in the hope that their situation within the industry will improve.

5.2.1.3 Gender dynamics – the influence of women in an industry of men

Fishing in Struisbaai is predominantly a male dominated activity. It is largely the men that are involved in the process of catching fish, as well as post-harvest, market and ancillary activities. Fisher households are also predominantly headed by the fishers themselves, who are the primary income earners. Women's role in the household and community though cannot be underplayed. International fisheries literature illustrates that women play vital roles within fisheries. In many developing countries they are not only involved in the process of fishing and post-harvest activities, but also play an important role in upholding the social, cultural and economic systems of fisher communities (Charles 2001, Sharma 2011). Findings from this research suggest that women play an important role in the fishing industry in Struisbaai and in the fishing operations carried out by the men in an indirect way. In the past, division of labour within fishing in Struisbaai was more inclusive of women. They harvested fish found in the historic fish traps, assisted in net making, and even acted as traders by walking to neighbouring towns to sell or trade fish (Dennis 2010). More recently women have been involved in the cleaning of fish at the harbour, as well as drying and salting fish (Dennis 2010).

However, current research findings indicate that the active role of women in the industry has now been eliminated due to the changing nature of fishing practices, because fish are now cleaned at sea and sold directly to the buyers upon landing at the harbour. Despite this, women today in fact still have strong views and influence within the local fisher community (van der Bank 2012). Women feel that they support their husbands and undergo the same difficulties, as the changes in the fishing industry do not only affect their husbands, but the

⁴¹ This only applies in MPAs where fishing is permitted. While most MPAs in South Africa are strict no-take zones where fishing is not permitted, there are those like the Langebaan Lagoon MPA where fishing is permitted in certain zones.

entire household. Yet, they feel excluded from the fishing industry and would like to become more involved in issues and activities relating to fishing, as women see things differently to men and can bring new and different views to the table (van der Bank 2012).

The present research shows that women in fisher households are now involved in part time domestic work and other jobs. As opposed to the seasonal nature of fishing, these jobs are more stable. Thus, in times when the primary income earner and head of the household is unable to provide an income, the woman's role becomes vitally important in providing a form of income and food for the household. Some fisher respondents have illustrated this importance by going as far as saying that, if the fishing situation in Struisbaai continues to deteriorate, then women will become the family's breadwinner. Women in the community illustrate a strong motivation, drive and ambition to seek jobs and become involved in household income earning activities (one of the fisher respondents' wives owns and runs a café within the harbour precinct). Thus, it becomes vital to address the economic, social and cultural rights and needs of women in fishing communities, because of the social and economic role they play within the household and community and their potential contribution to the fishing industry.

5.2.2 The bigger picture: interactions amongst fishery systems

The systems approach describes the fishery system as a plexus of subsystems (Garcia and Charles 2007), and it exists within a broader natural and human system and is, therefore, affected by the global environment, economy and society (Garcia and Charles 2007). Management of this system therefore needs to be interdisciplinary and integrated, involving natural and social scientists, as well as interactions between scientists, policy makers and managers, in order to better address the fisheries management issues. The Ecosystems Approach to Fisheries (EAF) proposes an alternative approach to managing complex fisheries systems (Garcia et al. 2003, Mahon et al. 2007, Garcia and Charles 2007, 2008, de Young et al. 2008, Paterson 2009, 2010), that recognizes that social, cultural, traditional, historical, economic, political and institutional aspects are all functioning within a fishery system and that linkages need to be made between all these functions (Garcia et al. 2003).

In line with these new approaches, it is important to recognize and understand that the small-scale fisheries sector in Struisbaai does not operate in isolation. It is embedded within a broader fisheries system operating in the region and interacts with other systems, such as the recreational fishery and commercial fishery, which also harvest resources in the region. Further, these different types of fisheries operating in the Struisbaai region are governed at the national level by various policies and laws, of particular relevance in this case is the Traditional Line Fish Policy (DAFF 2005).

Charles (2005) describes how the scale of a fishery system can vary greatly and the question is therefore asked as to when it is best to focus management on a localised scale and when should the fishery be looked at as a larger system. He argues that local solutions may be effective in some cases, but fisheries management decisions need to be made at higher provincial, national or even international level. Hence, the bigger picture is needed to address the linkages between fisheries and human activities, especially in regions with multiple local fisheries (Charles 2005).

Because of multiple resource users in the region, the potential for exploitation of resources is intensified. In addition, user group conflicts (especially when different groups are targeting the same resources), may have an impact on management (Charles 2001, Aas 2002, Kearney 2002). Thus it is necessary to assess and understand the socio-economic and biological impacts of the different fisheries sectors in relation to each other, in order to identify management objectives that will lead to sustainable and equitable outcomes.

The results of this study reflect that small-scale fishers interact with other resource users and fishery sectors on a regular basis, namely the recreational fisheries sector, the migratory linefish sector and the chokka industry. Apart from the recent increase in the presence of chokka boats in the waters of Struisbaai, resources harvested in the Struisbaai region have traditionally and historically been linefish. The harvesting of linefish species is governed at the national level by the Traditional Linefish Policy (DAFF 2005). Nationally, this multi-user, multi-species fishery consists of approximately 200 species of which 95 contribute significantly to commercial and recreational catches and around 50 species are regarded as economically important. The recreational sector is estimated to comprise approximately 450 000 users nationally, while the boat-based commercial fishery is numbered at around 450 vessels (DAFF 2005).

Of the 450 vessels, approximately 20 are locally registered in Struisbaai⁴². In addition, six full or part-time recreational charter boat companies launch from the Struisbaai harbour, and around 43⁴³ private recreational vessels launch from the harbour during the fishing season.

Most linefish species are listed as restricted species and are either illegal to harvest or highly regulated. Species may be regulated as a result of being regarded as depleted or exploited, as ascertained by scientific methods (WWF 2011). As a result and owing to the large number of users and species targeted, the policy (DAFF 2005) proposes that the commercial sector of the line fishery is managed in terms of a TAE (as described in the literature review), bag limits for species, closed areas, limitations on the gear used and restraints on the trade of

⁴² In addition to the line-fishers, a few fishers in Struisbaai Noord also hold netfish interim relief permits.

⁴³ This number is presented by Crowe (2012) as an average estimate, as the Struisbaai harbour compliance office (DAFF) does not keep records of recreational boat launches from the Struisbaai harbour

collapsed and overexploited species, in an attempt to stabilise the declining trends and assist in rebuilding overexploited species (DAFF 2005)⁴⁴.

The figure below illustrates the linefish components present within the Struisbaai Line Fishery System⁴⁵.

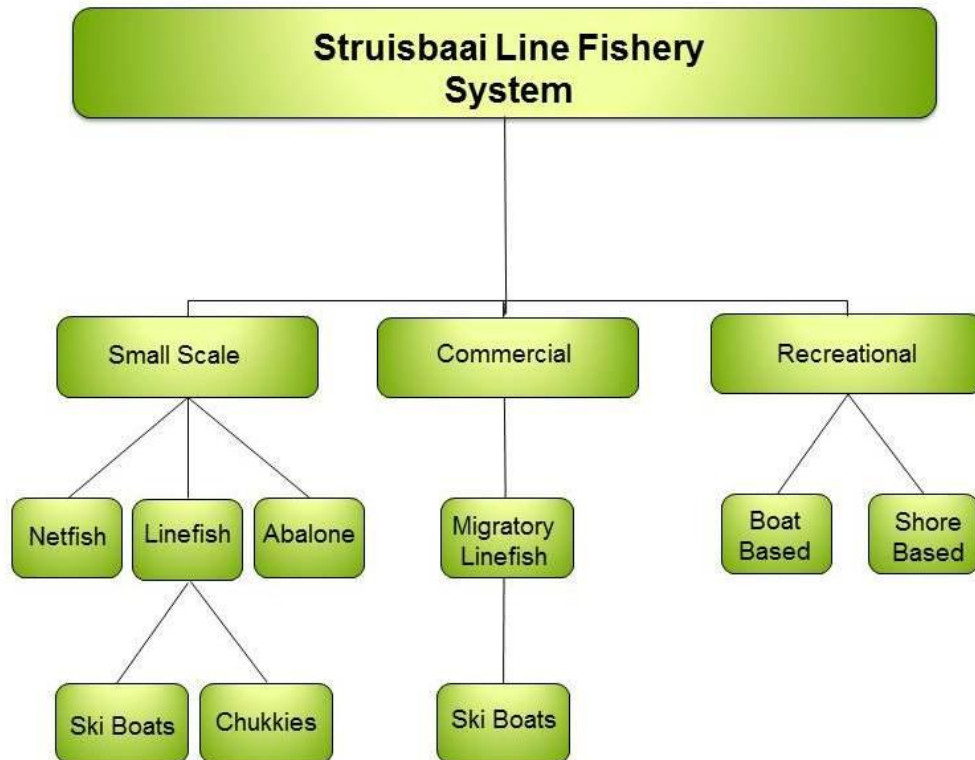


Figure 23: Diagram illustrating the fisheries sectors present within the Struisbaai fishery system

5.2.2.1 Recreational fishers

A recent study (Crowe 2012) has attempted to assess the positive and negative ecological and socio-economic impacts of the recreational fishing sector in the Agulhas region. The recreational fishing sector in the Agulhas region can be divided into boat-based fishers, shore-based anglers and spear fishers. Through the research sample, the study illustrated that recreational fishers who frequented the region spend an average of 59⁴⁶ days a year fishing in the region and caught an average of 4.96 fish per day. These fishers, both boat and shore based, target many of the same species as small-scale fishers (with high income

⁴⁴ The line-fishers of Struisbaai Noord hold the Traditional Linefish Right and are officially classified as commercial fishers according to the Policy (2005). Yet in this study and as per the Small Scale Fishery Policy they fit under the definition of small scale fishers.

⁴⁵ The commercial squid sector is not represented in this diagram depicting the linefish system. The chokka fishery does not launch from, land or utilise Struisbaai harbour.

⁴⁶ This high number of days may perhaps be attributed to the fact that the majority of recreational fishers surveyed travel to the region from within the Western Cape and therefore are able to make weekend trips on a more frequent basis

species such as kob, yellowtail and Cape salmon being the most targeted), as well as frequent the same fishing banks. The most frequented fishing banks by recreational fishers is shown to be the 12 mile, 5 mile (conflicting with small-scale fisher reports that fishing is poor on this bank) and 6 mile banks (Crowe 2012). This may place strain on an already scarce and deteriorating resource.

In addition, the times of year most frequented by recreational fishers due to school, summer and public holidays (November to April) coincide with small-scale fishers main fishing seasons (Crowe 2012). During these periods the Struisbaai harbour becomes the launching site for recreational, commercial and small-scale boats simultaneously, thus causing congestion, overcrowding, and additional strain on an already under capacitated harbour monitoring team. In addition, these boat-based recreational fishers may cause increased competition for space on the fishing banks as small-scale chukkie fishers state, their banks are small and chukkie fishers particularly can be at a disadvantage if recreational fishers with ski boats are first to reach the banks.

Crowe's (2012), study found that recreational fishers also perceive that the quality of fish in the region has deteriorated over time, and that conservation in the area is in fact needed. Recreational fishers, however, believe that poaching (referring to illegal harvesting of marine resources in general) is a huge problem and that enforcement is poor. Although not easily quantifiable, the research suggests that, not only is it perceived (by the small-scale sector) that the recreational sector has a negative impact on the resources, but that research based on catch and effort estimates suggests that this sector does contribute to the overexploitation of linefish stocks in the region (Crowe 2012). Through comparing perceptions of recreational and small-scale fishers, it becomes evident that, although different resource users are all recognising the deteriorating resource and calling for conservation measures, they are in conflict as they are blaming the other for the poor state of the resources.

The fact that recreational fishers feel that enforcement is poor is in stark contrast to the view of small-scale fishers, who feel that stringent enforcement is placed upon them by officials and authorities. During off-peak seasons small-scale fishers rely on shore angling to supplement food and livelihoods. Yet, according to the fishers, authorities easily fine fishers from Struisbaai Noord for lack of permits or illegal catches (undersized fish or prohibited species), whereas during the peak seasons authorities ease up, allowing recreational fishers to catch more than their permitted bag limits. Fishers state that during these times authorities do not check boats and permits regularly. Perhaps the issue here is not so much unfair or racially discriminatory treatment of small-scale fishers by authorities (as is perceived by them), but rather an under capacitated and understaffed local compliance office, who just do not have the resources and capacity to monitor and appropriately control the influx of different types of fishers during peak seasons.

Although the average recreational fisher was found to contribute approximately R53 000 annually to the local economy of Struisbaai, much of this expenditure can be attributed to the hospitality and tourism industry (Crowe 2012). Local people, many of whom hail from Struisbaai Noord are employed on an informal basis by recreational fishers as domestic cleaners and gardeners, as well as for maintenance and fishing related activities, such as crew. The key point is that recreational fishers exert significant pressure on the fishing resources, that is so critical to local small-scale fishers, and while some fisher household members are employed by them, this income contribution is seasonal and minimal.

5.2.2.2 Migratory line fishers

The second fishery system operating in the Struisbaai region is the migratory line fishery. The migratory fishers are commercial fishers who travel the waters of the Western Cape on a seasonal basis in search of migratory linefish species. Specific marine resources congregate in certain areas at certain times of the year. These fishers for example, may follow schools of snoek up the cold waters of the west coast, or yellowtail in Struisbaai during the summer months. As noted by small-scale fishers as well as migratory fishers themselves (van der Krogt 2012), the areas in which yellowtail run would traditionally attract huge numbers of migratory boats during the summer months. Small-scale fishers, and especially chukkie fishers, have expressed dissatisfaction with the ability of these migratory fishers to fish in their traditional fishing grounds, as well as their ability to overcrowd the fishing banks and harbour area. Migratory fishers also have an effect on the local market structure. While migratory fishers do not sell their catch to local buyers, the increased volume of fish caught in the same area causes the prices of fish to drop. As a result local fishers may receive less for their catch.

However, research conducted on the fishing and livelihoods of migratory fishers of the Western Cape revealed that fishers from the Cape Peninsula and further up the west coast have not ventured to Struisbaai for several years (van der Krogt 2012). In fact, a few migratory fishers have even settled in Struisbaai with the intention of no longer migrating. This illustrates that small-scale fishers may have a misconception of the impact of migratory fishers in the area. Yet, the traditional small-scale fishers of Struisbaai often talk about their right to preferential access to resources in view of their traditional fishing practices in the area. They view preferential access as a means of allowing the traditional small-scale fishers to fish, while limiting access to other fishery systems such as the recreational and migratory linefish sectors. These differential rights will need to be considered in any future marine protected area planning for the Agulhas marine area.

5.2.2.3 Chokka industry

The research also revealed a third fishery, namely the chokka squid industry, increasingly operating in the region. Fairly recently, opposition to this fishery has become more vociferous. The squid fishery (or chokka as it is referred to in colloquial terms), is regarded as one of South Africa's commercial fisheries, but classed as a medium sized fishery. It operates mainly out of Port Elizabeth in the Eastern Cape, providing employment to approximately 500 people. It also generates high foreign revenue, with the chokka industry being regarded by conservation authorities as being fairly stable (WWF 2012 trends). Chokka is normally caught during the daytime hours, but in order to maximize catches and as a result of their prolonged period of time at sea, most chokka boats now also operate at night time using glaring bright lights. The Agulhas region has recently seen an influx of chokka boats, which are targeting squid on the major traditional line fishing banks (6 mile and 12 mile banks). This research has revealed that up to 40 chokka boats can be operating on the banks at any given time.

Respondents in this study expressed a strong opinion regarding the fishing methods involved in harvesting squid. They claim that the bright lights not only disorientate the fish, affect their behaviour patterns, disrupt the natural habitat, and deplete plant species such as algae, but some fishers also strongly believe that the chokka boats play a huge role in the depletion of resources on their fishing banks. These findings are supported by van der Bank (2012) and van der Krogt (2012), whose research has also illustrated small-scale fishers' dissatisfaction with the operation of the chokka industry in the Agulhas region.

The influx of chokka boats and the perceived detrimental impact that the method involved in harvesting this species is having on marine resources, has led small-scale fishers to question the intentions of conservation bodies (such as WWF) and marine authorities (SANParks, DEA, DAFF) in the region. Since SANParks is perceived by them to be the main driver behind the move to proclaim a MPA in the region, most of this scepticism is directed toward them. Small-scale fishers believe that their fishing practices will be curtailed (in the event of an MPA being established), while recreational fishers (by virtue of their boost of tourism), as well as chokka boats (because of their economic value) will be allowed to continue as before.

5.2.2.4 Managing a multi-user fishery system

The Struisbaai fishery system is indicative of a fishery system with multiple users, and as illustrated in the above discussion, multiple users can lead to different users impacting on each other in inter-related ways that can also lead to conflict. According to the FAO (1998: 199), conflict can be described as, 'the interests of two or more parties clash and at least one of the parties seeks to assert its interests at the expense of another party's interest'. Many fisheries are in conflict over gear, landing sites, market behaviour, resource allocation or access rights. Such conflicts are rooted in complex issues such as cultural differences,

socio-economic issues, and political power struggles (Neiland and Bennett 2002). Conflicts arise as a result of micro- and macro-level factors, such as increased competition due to falling catches, an increase in the number of resource users, fluctuations in the market price and policy shifts (Neiland and Bennett 2002).

As described in this chapter, the Struisbaai small-scale fishery faces many of these challenges – gear restrictions, deteriorating resources, market fluctuations, increasing number of outside users, as well as commercial fishing during peak fishing seasons, and governance and policy shifts in national fisheries management and control. In developing countries especially, conflict over fisheries issues can have a significant influence on development initiatives and poverty reduction strategies. It is, therefore, essential to understand and manage these different fisheries in all their complexity and conflicting demands, in order to attain sound resource management and achieve sustainable livelihoods objectives (Neiland and Bennett 2002).

However, it is also stated that conflict can often spark from the ‘perception’ that one group is gaining at the expense of another. A specific case, which is explained above (in section 5.2.2.2), shows that small-scale fishers perceive migratory fishers as a threat to harvesting resources because of better gear (ski boats). Yet research conducted amongst migratory fishers (van der Krogt 2012) illustrates that migratory fishers’ presence in Struisbaai has diminished in recent years. Yet, even though the results of the current research present the small-scale fishers’ perceptions, other studies undertaken in the region (Dennis 2010, Isaacs 2011b, Crowe 2012, van der Bank 2012, van der Krogt 2012), which have focused on different fisheries in the region, have all shown similar findings that correspond to the current research. It is, therefore, argued that views of small-scale fishers should not be disregarded, and that the views of all users are essential for planning and managing such a diverse fishery system.

5.2.2.5 Importance of recognizing all fishery sectors

This section (5.2.2) of the discussion serves to illustrate that the traditional small-scale fishing sector in Struisbaai is merely one part of the broader fishing industry operating in the region. It illustrates the different types of fisheries present in the broader Struisbaai fishery system, how they interact with the small-scale fishery system, and how they are perceived by the small-scale fishers. This section also describes conflict between the different types of fisheries (small-scale, recreational, migratory, commercial) within the Struisbaai fishery system, and the need to manage conflict. In doing so it is important to understand the fishery system in Struisbaai as a complex, interrelated, interacting socio-ecological system. Each of its components needs to be understood in relation to each other to ensure appropriate and effective management of resources and specific components.

Small-scale fishers question whether authorities (such as SANParks) are serious about conservation, if they allow other sectors (which they believe have a negative impact on the resources), such as chokka boats, recreational fishers, and migratory fishers to fish in these waters. Instead they suggest that authorities should assist them in preserving their resources and traditional fishing grounds by placing appropriate restrictions on these competing fisheries. It is important for any management authorities in the region to heed these views. There is the existing historical bitterness towards and mistrust of authorities by small-scale fishers, as they have suffered the most under the previous regime's unequal distribution of resources and forced removals. If future marine plans place further restrictions upon them without addressing and appropriately managing other fisheries in the region, plans to implement marine conservation effectively in the region will face stiff obstacles and difficulties, and will most likely lead to non-compliance.

5.3 Struisbaai small-scale fishers, livelihoods, dependency and resilience

Research findings have revealed that the small-scale fishers of Struisbaai Noord are heavily dependent on harvesting marine resources for food security, livelihood and income needs. In addition to consumption, the results clearly indicate that the harvesting of marine resources is the primary and most important activity that contributes to fisher households' income. The survey indicated that fisher households have an average of 4 people per household, many with dependent children, with the fisher being the primary income earner and with women who work part-time. The deteriorating state of marine resources, and the characteristics of the fishing industry (in which different fishery groups compete for marine resources) in the region have threatened fishers' ability to provide a sustainable income for themselves and their families.

5.3.1 *Diversification and livelihood alternatives*

One of the main strengths of the sustainable livelihoods approach is diversification in order to avoid the reliance on a particular livelihood strategy, leading to the neglect of other options that may be available (Allison 2001). The key principle of diversification is the process by which households engage in multiple income generating activities, in order to reduce the dependence on one resource or activity (Brugere et al. 2008). It is important to note that diversification does not necessarily entail fishers moving away from fishing entirely, but promotes alternative activities that supplement fishing. International development bodies have viewed these alternative approaches as a key aspect in reducing the vulnerability of communities (Brugere et al. 2008).

In West Africa the Sustainable Fisheries Livelihood Programme (SFLP) involved 25 West African countries and promoted diversification of livelihoods as a means to improve household incomes. With the support of the SFLP through co-management initiatives and

the provision of loans and credit initiatives, fisher communities in Ghana, Congo and Gabon engaged in agricultural activities such as crop and livestock farming (Westlund et al. 2008). In fact, case studies of fisher communities' engagement in alternative livelihoods, in order to supplement their income from fishing, are too numerous to discuss here. In the Western Indian Ocean Islands, Ireland (2004) identifies 100 different coastal livelihood income generating activities that rely on the use of natural resources. In the Phillipines and Indonesia, Sievanen et al. 2005, describe a case study illustrating a seaweed farming initiative as a supplemental livelihood activity. In Paraty, Brazil, fishing was also combined with tourism (Hanazaki et al. 2012).

Creating an environment, opportunities and incentives for fishers to diversify their livelihood strategies is by no means a simple task and alternative or supplementary income generating activities are highly specific to different regions and communities. The complexity of creating such an environment is evident through the SFLP, in which a multi-sectoral approach was adopted including the development of marketing arrangements, infrastructure, establishing partnerships, building capacity, and paying special attention to literacy, health care and other social services issues (Brugere et al. 2008). However, a common thread in all the case studies in which fisher communities engage in a diversification of livelihood activities, is that fishing remains the single most important livelihood. Even in communities which were provided access to loans and credit facilities, they utilised this by investing in gear or other fishing related activities (Westlund et al. 2008).

Although case studies have illustrated how coastal communities participate in alternative livelihood strategies, the lack of alternative livelihood opportunities is also highlighted in fisheries management literature (Brugere et al. 2008). The findings of this research have demonstrated that there are limited alternatives for the fishers of Struisbaai Noord and that fisher households are not engaged in a variety of livelihood activities. Only one of the fisher respondents was involved in any sort of supplementary or seasonal activities outside the fishing industry. The majority fish from shore or crew on boats catching snoek on the west coast, when it is not possible for them to go out to sea in Struisbaai. Meanwhile, fisher households consist of wives or adult children who are employed as part-time domestic workers, on temporary municipal or government projects, do part-time work at the local library, or may own a small spaza shop. The non-fisher community of Struisbaai Noord occupy maintenance and building jobs, work as shop assistants, or in spaza shops, or do local municipal work such as refuse removal and road maintenance, librarians etc. These may be regarded as low income positions.

The lack of livelihood alternatives may be attributed to a number of factors. One of the main factors is the communities' lack of access to vital capital assets, such as transport and educational infrastructure, while claims of racism and nepotism within local municipal and government offices also exist and are stated as barriers to attaining jobs. Although part

time, temporary and semi- or unskilled jobs are available from time to time, these are not long term viable livelihood solutions for the fisher community of Struisbaai Noord. Local government (Cape Agulhas Municipality), through its IDP (IDP 2011/2012) and LED (2009) initiatives, has identified projects that can be undertaken in Struisbaai, one of which is the establishment of a mushroom farm that specialises in oyster mushrooms. Some of the older fishers started working on farms as young boys and feel that this background is advantageous to them, and that farming is a viable alternative to fishing.

Due to the already poor socio-economic conditions, coupled with the changing conditions of fishing and the fishing industry, as well as the lack of availability of seasonal jobs, fishers struggle at times to make ends meet. It is at times like these that fishers turn to fishing, irrespective of restrictions on harvesting a certain species or catch limits, in order to feed their families. A large portion of this community (which is in line with the municipal region as a whole) is also dependent on some form of government grant. These include child support grants, disability grants and pension grants. During months in which fishing yields little household income, these grants form a safety net for households. In developing countries especially, small-scale fisheries has been described as a critical safety net for vulnerable households (even non-fisher households), when they are faced with declining income (Béné et al 2007). The lake Kariba region is an example of how natural resources act as a safety net in times of hardship. When thousands of miners lost their jobs working on the Copperbelt, they turned to fishing in the Lake region as an alternative support for their families (Béné et al 2007).

A clear message emanating from this research was the call by fishers for reform (to do away with racial prejudice and nepotism) within municipal and government structures, as well as provision of increased jobs and alternative initiatives. This is necessary not only for their benefit, but for the benefit of their children and the youth of Struisbaai Noord. As much as fishers did not wish to be separated from the industry, the lifestyle of struggle and hardship that has come to characterise the industry is not one that they want their children to suffer. They encourage the youth to educate themselves and seek jobs with more stability and security in order to support themselves and their families. At first glance one wonders what the future of fishing in Struisbaai would look like if today's fishers are discouraging a future generation from becoming fishers – shifting away from tradition and resulting in a disappearing industry. However, the research highlighted that the only reason for the despondency about fishing as a future for the youth is attributed to the current state of the Struisbaai small-scale fisheries sector. Fishers felt strongly that if circumstances⁴⁷ were improved the youth would stand a better chance of success in the fishing industry.

Proponents of diversification argue that although fishing, by its nature, is a highly specialised activity, archaeological evidence of coastal communities dating back to the Neolithic era

⁴⁷ The circumstances they refer to include the transfer of chukkie to ski boats and an increased allocation of fishing rights for the community

characterised diverse livelihood strategies sustaining complex societies, by harvesting marine resources in combination with local wild plants and animals (Binlaff 1977, Deith 1998 in Brugere et al. 2008). However, reflected in all the case studies in which fisher communities engage in a diversification of livelihood activities, is a common thread that fishing remains the single most important livelihood. Even in communities which were provided access to loans and credit facilities, they utilised this by investing in gear or other fishing related activities (Westlund et al 2008). This illustrates that even with the opportunity to diversify, communities are reluctant to do so. In Struisbaai Noord, not only do the fishers feel that there are very few alternative livelihood options for them and their households, but also that their strong connection to the sea and their cultural and traditional ties to it, make it difficult for them to pursue alternative livelihoods should any be created. This supports the view of many theorists (Allison and Ellis 2001, Béné 2003) that fishing is a deep rooted activity and, for cultural reasons, fisher communities will not leave fishing.

The literature reveals that diversification of livelihoods also builds resilience (Charles 2005, Folke 2006, Andrew and Evans 2011), and shows that a community's resilience, or ability to bounce back and recover from stresses or shocks in their environment that are out of their control, is increased if livelihoods can be achieved from a variety of sources (Charles 2005). Fisher communities would thus be better equipped to address vulnerabilities and cope with adversity (Hanazaki et al 2012). A case study of fisher communities in the Paraty region of Brazil analysed the relationship between local livelihoods, vulnerability and resilience (Hanazaki et al. 2012). It found that communities with fewer household options for diversification and higher dependency on fishing were less resilient than communities where households were involved in alternative income generating activities (Hanazaki et al 2012). It can be said that the fisher community of Struisbaai Noord is particularly vulnerable, due to the lack of livelihood options and alternatives, as well as the lack of interest in pursuing them, thus affecting their resilience or ability to cope with changes.

5.4 Struisbaai small-scale fishers - challenges and vulnerabilities

Sections one and two above have discussed how the fisher community of Struisbaai Noord is a marginalised community with a deep traditional and cultural link to fishing, but also a strong socio-economic link as they are heavily dependent on harvesting resources for their income and food needs. It also discusses that the fisher community is vulnerable not only because of their high dependency on marine resources, but also due to their limited alternatives for diversification of livelihoods. This section serves to illustrate that the vulnerability of this community is further exacerbated by shocks and trends within their immediate environment, their limited asset base, and a set of external factors outside the fishery (including governance processes). These are discussed in the sections below.

5.4.1 Local market dynamics – monopoly and power

The local market dynamics can have a major effect on a fisher's income, yet very little is documented on the local market dynamics in Struisbaai and especially within the context of the small-scale fishery. Recent studies such as van der Bank (2012), van der Krogt (2012), Crowe (2012) and Isaacs (2011b) have all addressed certain aspects related to markets. This study places importance on analysing the local fishery's market dynamics within the particular vulnerability context of the small-scale fishers and examines the influence that market dynamics have on fishers' ability to increase their earning potential.

Charles (2001) describes the 'market' as the process by which fish is bought and sold, and is a crucial activity in the fishery. It also describes how the theory of supply and demand is regarded as a cornerstone in the discussion of fish markets. A good system is one in which no individual controls the quantities supplied or demanded and cannot influence the prices. And there must be free exchange of information and knowledge between all actors in the fishery system (Charles 2001). Markets, however, never follow this ideal situation and problems arise as a result of the value chain being skewed. The total retail value from the sale of fish between fishers and other intermediaries can be highly variable. For example, in developing countries, the amount received by fishers may be significantly less than the final retail price. Another complicating factor arises due to contractual constraints between fishers and the fish buyers. Often fishers become obligated to the trader, thus changing the market interaction from supply and demand to a monopoly (Charles 2001).

Results show that the situation in Struisbaai is no different from that mentioned above. For the purpose of this dissertation, the objective was to understand the local market dynamics. It quickly became evident that issues of conflict and power are constantly at play.

The prices of fish such as yellowtail, Cape salmon and kob (which are also the species listed as most important for fishers' income needs) are highly variable and governed by supply and demand. These species occur most commonly in the Agulhas waters during the summer months. After 2 days of continuous supply the market will become saturated, resulting in the decrease in demand and price of fish (by as much as half). This is particularly an issue for chukkie fishers. Their boats are slower to reach and return from the fishing banks. Hence, by the time their boats reach the harbour for sale to the local buyers, the price of fish may already have dropped. Another factor which further complicates supply and demand, is the migratory ski boats. Although these outside fishers sell their catch to external buyers, they may supply the same distributor/retailer or wholesaler as the local buyers, thus also in turn causing an increase in supply and drop in demand (causing the price of fish to drop and as a result local fishers may get less for their catch). Fishers' lack of market knowledge makes them even more susceptible to being exploited by local buyers.

Contractual constraints and the monopolistic nature of buyers, as described by Charles (2001), is also experienced within the local Struisbaai market context. Some fishers are even under the impression that it is against the law for them to sell their catch to a buyer other than their regular buyer. Even if other buyers are willing to pay an increased amount, fishers are reluctant to annoy their regular buyers, who may subsequently refuse to buy fish from them. Fishers thus become dependent on the local buyer. Fishers have no mechanism for gaining information regarding broader market processes, thus they have no option but to accept the buyer's price. The buyer's lack of openness (fishers will only know how much they are being paid per kilogram after the fish is weighed) causes fishers not to trust them and they say that they feel deceived by the buyers.

Further, there have been conflicting observations about the supply and demand for fish. Certain markets seem to dominate at certain times of the year. While one buyer has stated that he will buy all the fish that the fishermen have caught, fishers state that buyers are driven by seasonal demands. If for example, it is the season for shark, the demand for shark will be high and buyers will be hesitant to buy species such as mackerel or silverfish.

As a result of these factors (lack of knowledge or power) fishers have no bargaining power. Buyers in turn hold a certain degree of power over fishers and the local market, and as a result the local market dynamics do not benefit the local community or provide opportunity for increased income for fishers. In terms of sustainable livelihoods, these types of social interactions can support or reduce the community's ability to improve their livelihoods through issues of trust and reciprocity. The relations between fishers and buyers, or fishers and outside migratory fishers, are particularly important for the market of small-scale fisheries (Campbell 1999). Many development efforts have focused on pursuing alternatives that increase the income of fishers by reducing the role of the middlemen. Charles (2001), however, states that it is important that such efforts incorporate a good understanding of all the complexities within the specific coastal system and community. In the case of Struisbaai this should also include understanding of the complex relationships amongst different fishery sectors and markets.

The figure below illustrates the chain of supply within the local market structure. It illustrates how local chukkie and ski boats supply local buyers (and rarely sell to external hawkers), who in turn supply local shops and restaurants, as well as fish factories in Cape Town. Some ski boats from Struisbaai (main town) allow a local handler to store the fish for them, for sale to factories in Cape Town. Migratory ski boats on the other hand, sell to their own external buyers.



Figure 24: Diagram illustrating the local Struisbaai market structure

In one focus group, ski boat fishers stated that they would not want to become involved in the marketing process. The process of fishing itself is a time consuming and demanding activity and they do not wish to spend the additional time and energy required to market the fish once they land at the harbour. Therefore, although the fisher has no control over the price he is paid for his fish, the buyer is the one who is taking the risk of locating external buyers. In a focus group with chukkier fishers, however, it emerged that they are keen to cut out the middleman and market the fish themselves. However, this would require resources and organisational capacity, transport, cold storage and communication infrastructure that the community currently lacks. Isaacs (2011b) states that a co-operative system to manage the marketing of resources should be considered, especially with high value species, as this would ensure that the value chain not only benefits the buyers but also the community.

Van der Bank (2012) states that the Cape Agulhas Municipality received funds in excess of R1 million from national government to establish a cooling facility at the Struisbaai harbour, that would also provide up to 200 indirect job opportunities for the local community (this is a recent initiative and not yet established). SANParks is also assisting fishers in erecting a fish cleaning station at the harbour (van der Bank 2012). If such initiatives succeed it may have the potential to positively transform the local harbour precinct and local market structure in favour of the fishers, by increasing their income from fishing and providing

more jobs for a community, in an industry to which they are culturally, traditionally and historically linked.

It is implied that, aspects such as fishers' access to ice for the preservation of fish and other such factors that hinder fishers' access to markets, should be assessed from a poverty angle (Kleih et al. 2003), and one of the critiques of the sustainable livelihoods approach to small-scale fisheries is the under-emphasis on the importance of markets and their role in the development of fisher communities (Krantz 2001, Allison et al 2006). Yet matters of markets, trade, food security and human development are inter-related. The FAO Code of Conduct for Responsible Fisheries describes the right to a secure and just livelihood. It is argued that this cannot be achieved without including the fisheries post-harvest sector and thus the issue of fishers' access to markets. Therefore, it is important to recognize the role fishers play in the entire fishery value chain (Charles 2011). The need to understand the market dynamics in the Struisbaai context is especially pertinent, as the community in Struisbaai Noord is not only dependent on the small-scale fisheries sector for their food and income needs, but also because they perceive that fishing is their only option in the region.

5.4.2 Gear – a limited physical asset base

The majority of the linefishers of Struisbaai Noord fish from wooden deck boats called chukkies. At the time when chukkies were introduced as fishing vessels in Struisbaai during the late 1940s (Dennis 2010), the vessels were considered much superior to previous vessels, as they had diesel powered engines and allowed fishers to be more mobile and increased the geographic area in which they could fish (van der Krogt 2012). In the past these chukkie boats satisfied the fishers needs, but more recently fishing practices, techniques, technology and gear have evolved along with policies, laws and fisheries governance. The 1960s - 1970s saw the introduction of ski boats into the linefishing industry in South Africa. These boats are far superior to the chukkies, as they are not only faster and more powerful, but also trailer based as opposed to the chukkies that are docked in the harbour when they are not in use. Technological advances coincided with the country's industrialisation and commercialisation of the fishing industry, as well as the introduction of regulation and output controls such as TAE, TAC, quota restrictions, bag limits, size limits and protected species.

It is important to consider that the fishers of Struisbaai Noord are still using fishing vessels that are close to 50 years old, in an industry that has greatly evolved technologically and institutionally since then. These old vessels put fishers at a huge disadvantage. The costs of maintaining these vessels are high and fishers cannot afford them. Their poor condition also make them a danger at sea as they are prone to breaking down. Perhaps one of the most important restrictions that this type of vessel places upon fishers is that they are incredibly slow compared to the new competitive ski boats. This means that the ski boats get out to

sea much more quickly, travel much further, reach the harvest resources and return to the harbour much faster, and spend less time per day in the fishing process. Thus ski boats are able to catch and sell their fish much more quickly.

In addition, few chukkie skippers own their vessels. Instead, they are often the property of an ex- fisherman and/or local entrepreneur. Thus, whatever income is generated by fishers, is in part retained by the owner of the vessel. It is evident that the limited financial and physical capital asset base of poor equipment, the inability to modernise and compete fairly for resources, as well as the lack of ownership of capital has made the fishers of Struisbaai particularly vulnerable. Yet, in many situations it is the transforming structures and processes⁴⁸ that affect fishers' vulnerability context and their ability to access capital assets. They have a direct effect on how fisheries are managed.

All these factors illustrate that the fishing vessels of the Struisbaai fishers hinder their ability to compete fairly in the industry and negatively affect their ability to harvest resources for income and consumption (this is also evident in other studies undertaken in the region, Dennis 2010, Isaacs 2011b, van der Bank 2012). While chukkie fishers have applied for the transfer of their vessels to ski boats, these calls have gone largely unanswered. The fishers believe that their unsuccessful applications are attributed to racial prejudice against the coloured community. In justifying this statement they provide examples of how people from other racial groups without any fishing history have been granted ski boat licenses. The fishers also state that the restrictions placed on TAE by DAFF is one of the reasons they are denied access to ski boats. They feel that DAFF believes an increase in ski boats will result in an increase in effort. The fishers claim, however, that the transfer of their vessels from chukkies to ski boats will not result in increased exploitation of the resource.

While issues of racial discrimination have not been a focus of this research, it has become apparent in surveys, interviews and focus groups that the perception of racial prejudice runs deep in the community of Struisbaai Noord. Whether these perceptions are warranted or not, much bitterness stems from this and in turn affects the community's trust in authorities.

5.4.3 Competition with other fishery sectors

Section 5.2.2 of this chapter describes the recreational, migratory and chokka fisheries presently active in the Agulhas region and explains the user conflicts and competition between small-scale fishers and other fisheries. This competition poses a key challenge within the Struisbaai fishery system. In order to understand and manage the types of conflict that emerge, one must understand the roots of the conflict and the underlying

⁴⁸ Transforming structures and processes refer to institutions, organisations, policies and legislation that may influence and shape small-scale fisheries

reasons. If conservation objectives, social objectives and management objectives are not in harmony, conflict is more likely (Charles 1992).

Small-scale fishers feel that they are in competition with recreational fishers over space on the fishing banks and ability to launch from the harbour (especially during peak fishing times of the year). But, in addition, small-scale fishers experience an inequality in the way they are treated by authorities (SANParks and DAFF), as they feel that recreational fishers receive preferential treatment. The competition small-scale fishers face with recreational fishers is not a result of these latter fishers exhausting the resources per se, but that the lack of control of catch limits and species caught, the poor management of the harbour precinct during peak times, as well as their better gear, all gives them a competitive advantage over the small-scale fishers. Perhaps what is most striking about the competition with recreational fishers and the advantages they hold, is that recreational fishers are fishing for leisure, while small-scale fishers are dependent on marine resources for income and food security. Yet the importance of the significant contribution of recreational fishers to the local economy seems to outweigh the negative aspects of competition with other vulnerable sectors. In addition, small-scale fishers face increasing competition with chokka fishers. The competition stems not only from fishing space on the banks, but also from the fishers' perception that chokka harvesting methods affect fish patterns and behaviour, as well as deplete other marine resources that fish feed on.

Whether it is competition for resources, space or gear, it is evident that competition with other active fishery sectors in the region poses a significant challenge to small-scale fishers' ability to harvest marine resources and increases their vulnerability. Addressing issues between fisheries will not necessarily change historical long term competition within the fishery system. In order to facilitate change, a more effective and active management approach is required that includes effective participation of all stakeholders, and that illustrates how institutional structures will support such management (Neiland and Bennett 2002). It is important for any marine conservation planning in the region to understand the nature of competition present within the Struisbaai fishery system, as well as its roots, in order to reach fisheries management, conservation and developmental objectives that are acceptable to the community.

5.4.4 External influences - environmental and climate variability

Fishers are exposed to factors in the natural environment that are outside the fishery, and in many cases, outside their control, yet have an impact on their fishing practices. On a global scale climate fluctuations are increasing with the result that fisher communities are potentially exposed to greater variability, such as extremes in rainfall, flooding, drought and natural disasters (Béné et al 2007). The impact of climate variability on fisheries may be direct or indirect. The research undertaken illustrates that the fishers of Struisbaai Noord

have local ways of understanding global phenomena, such as global warming and climate change.

For the fisher community of Struisbaai Noord, changing weather patterns are considered by fishers to be one of the greatest threats affecting their livelihood. Interviews and focus groups revealed that fishers have observed a change in weather patterns over the past few years - decreasing water temperatures, changing currents, persistent south east winds. While the persistent winds make it difficult for them to go out to sea, the changes in currents and water temperature affect the distribution of resources. This type of information regarding changing weather conditions may be regarded as local ecological knowledge and its importance in the incorporation of management decisions will be discussed in section 5.5.1. Here, it is important to note that while fishers listed other threats (such as competition from outside fishers, the presence of chokka boats, limited gear), climate change was regarded as one of the main contributing factors to resource sustainability and illustrates the extent to which this factor makes this group of fishers particularly vulnerable. It will be important for future management processes to take into account the local meaning of climate change.

While international literature has reflected on a growing body of case studies that observes the effects of climate change on the distribution and production of individual fisheries, little consideration has been given to the significance of changing ecosystems on fisher communities themselves and the millions of individual fishers in developing countries who are most vulnerable to climate change (Allison et al. 2008). One of the key elements that make fisher communities vulnerable to climate change is not only a community's dependence on marine resources, but its adaptive capacity or assets available in terms of social and human capital, or governance structures that would assist them in coping with climate variability (Allison et al 2008). In the case of Struisbaai Noord, the fisher community not only relies heavily on marine resources, but also lacks assets and mechanisms that would enable it to cope with the changing weather conditions they are presently experiencing. So, if the persistent south easter prevents them from going to sea, or if changing water temperatures alter the distribution of fish, they will have no income for that day save through shore angling.

It is essential that developing marine resource management strategies in the region should incorporate local views and knowledge of climate and weather, especially within a community whose livelihood is so closely tied to weather conditions, as well as a resource that is so easily impacted on by changing climatic conditions.

5.4.5 External influences - International conservation and protected area expansion

Conservation approaches that have dominated over the past 150 years have seen people and nature as separate entities, thus undermining human rights and excluding communities from conservation practices (Campese et al. 2007). These approaches were largely science driven with a top down approach to management and decision making (Campese et al. 2007). West (2006) argues that it is when local communities are excluded, and local management and knowledge for protecting biodiversity are disregarded, that the degradation of natural resources is more likely to occur. However, even though the need to respect human rights in conservation has increasingly been recognized (Pimbert and Pretty 1995, Wilshusen et al. 2002, Hutton 2005, West 2006, Campese et al. 2007), there are still some who argue for the return to fortress-type conservation (Wilshusen et al. 2002, Hutton 2005). This resurgence takes root in the protectionist paradigm that argues that protected areas require strict protection (Wilshusen et al. 2002, Hutton 2005).

In the marine arena, many argue that MPAs are expected to facilitate an increase in the ocean's fish stocks and prevent over-exploitation (Agardy 1994b, Clark 1996, Hockey and Branch 1997 in Tunley 2009). This objective has led to many of the world's major environmental agencies supporting the development of MPAs worldwide (Kelleher and Kenchington 1992, Pomeroy et al. 2004, Tunley 2009). Figures show that between 0.5 - 0.7 percent of the world's oceans are under protection (World Database on Protected Areas 2010, WWF undated), with the aim that MPAs will cover at least 10 percent of the world's oceans by 2020 (WWF undated). Section 2.9.2 of the literature review discusses South Africa's expanding network of MPAs, the first being established in 1964 and presently comprising 21 MPAs making up 21%-23% of the country's coastline (Lombard et al. 2004, Tunley 2009).

In 2007 Clark and Lombard (2007) undertook a study to analyse and identify the main target areas for marine protected area planning in the Agulhas bioregion, based on biological and bio-physical data. Based on this study, 2 of the 19 priority marine conservation areas were identified between Gaansbaai and Struisbaai. Accordingly, the Agulhas National Park development plan 2009-2013 (SANParks 2009) put forward the proposal to establish a marine protected area, adjacent to the Agulhas National Park, for the purpose of protecting declining marine resources in the region. According to the plan, the programme to establish the MPA would run over three years, during which time appropriate research and stakeholder participation would be undertaken. The end result would be a draft zonation to be presented to the Minister (SANParks 2009). While these plans and proposals have presently not been finalised, a scenario in which small-scale fishers' access to resources within such an area is restricted or non-existent will certainly render them vulnerable as this would curtail their main means of income and food security.

While the proclamation of MPAs is outside SANParks' mandate, yet if a MPA is proclaimed it will most likely fall under SANParks' jurisdiction. In addition, the recent governmental split

between DAFF and DEA increases complications, as the MPA management and regulation will fall under the responsibility of DEA, while the management of fisheries falls under the responsibility of DAFF.

The map below illustrates priority conservation areas for the Agulhas region highlighted in red (SANParks undated). These are based on a systematic conservation planning by SANParks scientists. They are currently proposals, and are not proclaimed yet.



Figure 25: Map illustrating priority conservation areas for the Agulhas region⁴⁹

The fishers of Struisbaai Noord have witnessed first hand that the condition of the marine resources has been steadily changing, with shifting distribution patterns and decreasing catches, which in turn are having a negative effect on their livelihoods. Although the reasons for these changes may be attributed to a number of factors such as changing weather patterns, increased competition for resources, limited gear, and changing fishing policies – fishers are not against the idea of conservation. But fishers are also aware that declaration of an MPA may result in no-take zones. The neighbouring fishing town of Arniston has been affected in that way by the De Hoop MPA. Therefore, they understand that marine conservation may cut off their access to areas where they fish, thus affecting their livelihoods.

Further, the results of this research as well as others (Dennis 2010), have described how Skipskop fishers (who now reside and fish in Struisbaai), recollect the hardship and desolation of being relocated due the establishment of the Overberg Testing Range. They

⁴⁹ Provided by SANParks (Agulhas National Park), undated

have fond and longing memories of the abundance of marine resources and freedom of access. If a marine conservation plan for the region were to cut off Struisbaai fishers access to the sea, the original Skipskop fishers will be dealt another big blow. The range's activities, which includes the testing of weapons by firing into the ocean, has raised further questions by fishers, on the effect it is having on marine resources.

The recognition of the changes in the environment and resources has led them to believe that conservation may indeed assist in rebuilding, restoring and sustaining marine resources. Their idea of conservation, however, differs from the conventional ideas propagated by MPAs in terms of no- take or limited access zones. Instead, fishers' idea of conservation entails incorporating local and traditional ways of conserving resources and limiting access to outside fishers, regulating chokka boats and uncontrolled recreational fishing. Given their dependence on local marine resources, conservation planning for the area needs to consider allowing them preferential access to those resources . Their ideas stem from the belief that they are not the main cause of the dwindling resources nor are they a threat to the ecosystem.

5.5 Reducing fishers' risk and vulnerabilities

Section 5.4 above has highlighted the issues that contribute to the high levels of vulnerability experienced by the small-scale fishers of Struisbaai Noord. This section, however, recognizes that vulnerabilities of small-scale fisher communities locally and internationally can be reduced through various developments and improvements, such as increased access to forms of capital, education and awareness, capacity building, and increased communication and involvement in decision making processes (Béné et al. 2007). While a variety of coping strategies may be employed, these strategies may be complex and differ from one region to another (Béné et al. 2007). This section presents information needed and action required to address vulnerability within the small-scale fisher community of Struisbaai Noord.

5.5.1 Incorporation of local and indigenous knowledge

The importance of incorporating different knowledge systems in fisheries management, especially local and traditional ecological knowledge, is increasingly being recognized (Berkes et al 2003, De Young et al. 2008, McConney and Charles 2009, Sowman 2011). The traditional ecological knowledge of fishers may encompass knowledge about ecological and biological systems that is gained through first hand experience and is not readily available to scientists. It is also noted that decisions and management practices are more likely to be accepted by local fishers if they take into account their values and practices (Sowman 2011). This is particularly evident in the case of Struisbaai Noord.

The line-fishers of Struisbaai Noord are governed by the Traditional Linefish Policy (2005), which recognizes approximately 40 linefish species. However, only a portion of these is harvested by the fishers of Struisbaai Noord as part of their commercially allowable catch. The rest are listed as restricted species and are either illegal to harvest or regulated, because their populations are either depleted or overexploited. Conservation bodies (such as WWF) and fisheries authorities (DAFF) state that many of South Africa's inshore marine resources are overexploited or collapsed. It is believed that this is a result of the increased accessibility of resources and the stress that a wide range of resource users (traditional linefishers, recreational fishers, inshore trawl and longline fishers) place on these resources (WWF 2011). A range of scientific methods is used to assess the condition of linefish stocks, such as examining trends in catch per unit effort, spawner biomass per recruit and virtual population analysis (WWF 2011).

Therefore, the first point that should be made regarding the incorporation of different knowledge systems is the perception that fishers have of scientific knowledge. The first perception gleaned from the results of the research (focus groups and interviews) has shown that fishers think that scientific research is skewed or inaccurate as a result of their research methods. Chukkie fishers state that research recording catch per unit effort is based on ski boat catches, and does not include data from the chukkie boats; thus results of such research may not be accurate. The mass of chukkie catches is much less than the ski boats and so generalised results for the entire fishery do not apply to chukkie boats. These results would, therefore, appear to show that chukkie fishers are more successful than they actually are. Another example of mistrust of research results is the research methods involved in assessing the state of abalone. One fisher respondent argued that the jackstay method⁵⁰ used for assessing abalone would work well in a restricted area, but abalone has the ability to relocate. Therefore, assigning permission or prohibition to fixed areas is problematic. The second issue is that there is mistrust of fishers by scientists. One respondent stated that scientists do not trust data collated by fishers and even go as far as factoring in quantified assumptions of dishonesty on the part of fishers into their equations. It would appear that both parties work together under false pretences.

The second point that should be raised regarding the incorporation of different knowledge systems, is the rich historical and traditional knowledge that fishers hold of their local environment, marine resources and the art of fishing. As illustrated in the chapter above, fishers have local experience of weather patterns and of understanding climate change and the effect it has on their resources and their ability to harvest them. In the same way, they have local and traditional ways of conserving resources by not harvesting the same species

⁵⁰ The jackstay search is a method of searching for objects underwater. It normally requires 2 divers and uses a rope stretched between 2 anchors as well as surface buoys. It is considered to be a thorough search pattern but its disadvantages are that it is time consuming, requires more equipment and advanced diving training, and swimming over the same area multiple times results in sediment being stirred up, thus obscuring objects (Adams 2010).

all year round, being able to identify when fish are breeding and allowing time for species to recover by not overfishing.

In the case of Struisbaai Noord it is evident that there is a conflict between local knowledge and scientific knowledge on issues of research and conservation. As a result of these differences in knowledge and perceptions, the fishers believe that restrictions placed on species, particularly in relation to size limits, are unfair. It creates scepticism between parties, and exacerbates the existing perception by fishers of prejudice and injustice, that they have experienced in the past. This does not foster an environment of trust and co-operation. In fact, the inability to recognize and respect local knowledge may hinder approaches such as co-management. Thus, the incorporation of local and indigenous knowledge is essential in conservation planning and management in the region and may very well contribute to its success, while neglecting it may result in lack of cooperation on the part of fishers, thus hindering the conservation process.

5.5.2 Recognize Fisher rights and capabilities

International literature on achieving human rights has been gaining momentum in the fisheries arena (Charles 2011, Allison et al. 2011, Sharma 2011, Allison 2012). Realising the human rights of fisher communities through campaigning for their social, cultural and economic rights, provides them with a strong basis through which to make claims on governments and for holding them accountable for their duties towards fishers as citizens (Sharma 2011, Allison 2012).

A human rights perspective stresses that even marginalised groups, which are often excluded or voiceless due to their vulnerability, have rights (Allison 2011). Rural fisher communities, as in the case of Struisbaai Noord, are often excluded from rights of access to alternative employment opportunities, equitable access to land, have weak political representation, and poor social services such as education, health and transport, and poor market infrastructure. In addition, they also have insecure rights of access to marine resources (through permits, quotas and limited gear) and the right to participate in management and decision-making.

Enshrined in the South African Constitution is the Bill of Rights (SA constitution 1996) that requires recognition of a citizen's rights to cultural and political freedoms, education and social services, human dignity, customary rights and a sustainable environment. Despite these provisions in the Constitution, several rights have not been fulfilled and this contributes to fishers' vulnerability. However, a recent court ruling by the Equality Court (George K and others vs the Minister of Environmental Affairs and Tourism, 2004) required the then Minister of DEAT to address the socio-economic rights of fisher communities and the skewed rights allocation process (Sowman et al. in press.) and instructed the Minister to

develop a new policy that addressed the rights and needs of this fisher group. Another case of fishers' struggle for rights is in the Philippines, where fisher villages in Honda Bay suffered from human rights violations. An Environmental Legal Assistance Centre (ELCA) project stepped in to create a system of community based management of coastal resources. Through strengthening the villages' political and judicial rights they were able to empower people, who were then able to assist in developing participatory fisheries governance in Honda Bay (Allison et al 2011).

While cases such as this highlight the rights of small-scale fishers, and act as an inspiration to vulnerable groups, there is still a long way to go to mobilise the fisher community of Struisbaai Noord. Knowing one's rights is the first step, hence education here is vitally important. Hence NGOs in the region should be encouraged to assist in educating and mobilising fisher communities to understand and exercise their rights and so decrease their vulnerability, while increasing their awareness of broader processes that lead to better co-operation or co-management. There is presently one active fisher organisation in Struisbaai, but its role and support of the community is currently limited. The creation of fisher committees or associations provides a means to empower fisher communities and they can contribute to poverty alleviation in small-scale fisheries (Bene 2006). It is stated that a coherent policy approach will be needed to secure the rights of fishing communities and that the investment in building capacity of both fishers and authorities is one of the most important steps required for translating commitment into action (Sharma 2011).

5.5.3 Strengthening participation in planning and decision making

While the small-scale fishers of Struisbaai Noord recognize that marine conservation may be what the region needs in order to improve the deteriorating state of resources, their enthusiasm for such an initiative is short lived, due to their lack of trust in authorities and conservation bodies. One of the main reasons for this is that fishers are not informed regarding broader governance processes. They believe that SANParks through the Agulhas National Park will be the main driver and regulator of any conservation management initiative in the region. They are unaware of the fact that SANParks is just one of many players in the planning process. Government agencies such as DAFF and DEA, as well as conservation bodies such as the WWF and research organisations, have all contributed to plans and ideas for the conservation of the marine environment, yet fishers make little mention of them or their local influence and role in conservation⁵¹.

The small-scale fisher community of Struisbaai Noord claim that they are not appropriately involved in discussions and plans about marine conservation in the region. While meetings were held with local fishers, it was evident that SANParks plans were already drawn up. This

⁵¹ This may be due to fishers' lack of knowledge and information on marine conservation and management processes

illustrates that fishers were not included in the early stages of research and planning and this gave fishers the feeling of helplessness and of being unable to influence such plans.

Fishers' scepticism about conservation bodies and their intentions is also fuelled by their historical mistrust of authorities such as SANParks and government in general. Their feelings of racial prejudice persist in post-Apartheid South Africa, as they believe they are being unfairly treated compared with people of other racial and class groups. The experience of how Agulhas National Park boundaries and network have been expanding terrestrially through SANParks buying more land and farms, has led fishers to believe that once an area has been demarcated for conservation, it will only get bigger. Their experience also tells them that local fishers are not important, compared to the objectives of national organisations.

The fishers' feelings of exclusion and powerlessness come strongly to the fore in this research. Yet, at the same time they claim they will strongly resist conservation processes that do not include them in decision making, that do not take into consideration their needs, or grant them preferential access or subsidise them in some way. Thus, the extent and nature of fisher participation could very well determine the success or failure of management processes in the region.

Governance approaches have been steadily changing in post-Apartheid South Africa, to include the principles of transparency, accountability and participation (Sowman 2011). The principle of participation would entail that people have to be consulted about decisions regarding their environment, their rights or their livelihoods. Yet research undertaken over the past 10-15 years in coastal communities of South Africa has illustrated that small-scale fisher communities are not appropriately or sufficiently involved in fisheries management decision making processes (Isaacs 2002, Hauck and Sowman 2003, Sowman et al. 2008, Sowman 2011). The reasons for lack of participation have been attributed to capacity constraints and poor institutional arrangements, but may be more complex than that (Sowman 2011). The new Small-scale Fisheries Policy (2012) has, however, recently been promulgated and requires incorporation of the rights of small-scale fishers to ensure their participation in decision making. While calls for increased participation have been increasing, application on the ground poses significant challenges. Therefore, there is a need to develop and strengthen local level structures that would provide a forum for fishers to interact with other role players.

In situations where actors are omitted from planning and decision-making processes, the creation of fishers' committees, local organisations or associations can represent an effective way to empower the local populations. This empowerment is an important part of the contribution of small-scale fisheries to poverty alleviation. The mobilisation and organisation of fishers is an essential part of empowering them, in order to enable them to participate in decision making processes that affect their lives. This also facilitates good

governance and enables fishing communities to secure political, economic and social rights (Masifundise 2008).

Some small-scale fishers of Struisbaai are affiliated with Coastal Links (local fisher organisation) funded by the NGO Masifundise. Initiatives of Coastal Links (not specifically in Struisbaai), have previously included the strengthening of capacity through educational exchange programmes, strengthening the role of women and youth through empowerment programmes and the organisation of mass protests. Such initiatives may continue to build capacity and create awareness (especially relating to the processes of MPAs), in order to strengthen local community participation in decision making processes. The role of local institutions such as these should not be underplayed as they have the potential to provide fishers with access to knowledge and information that could assist them in gaining access to the assets they require to better their present conditions. This is further discussed in section 5.5.4 below.

5.5.4 Building individual and institutional capacity

Capacity development can be described as *'the process by which individuals, groups, organizations, institutions, and societies develop their abilities – both individually and collectively – to set and achieve objectives, perform functions, solve problems and to develop the means and conditions required to enable this process'* (Macfadyen and Huntington 2004: pg 1). For the purposes of this dissertation, emphasis is placed on local individual and local institutional capacity development in the small-scale fisheries sector.

Building and developing human capacity is regarded as an essential aspect in ensuring that fisheries policies, legislation and management aimed at assisting small-scale fisheries can be effectively implemented and enforced (Béné et al 2007). In addition, capacity building needs to be implemented at all levels from individual level (including individuals affected by policies, management and legislation, as well as those carrying them out), to the organisational and institutional level (Béné et al 2007).

Findings of this research have shown how aspects of economic dependence, marginalisation and vulnerability characterise the fisher community of Struisbaai Noord. But also that they are a community who feel despondent and powerless in terms of influencing policies and management decisions that will affect their lives and livelihoods. At the same time, because of their connection to fishing and the sea, they live in hope of bettering their circumstances, and will not sit back and accept changes, but instead offer resistance to plans that would negatively affect their community. While this section has identified possible ways to reduce fishers' vulnerability, some of which entail active participation from the fishers themselves, such as incorporation of fishers in planning and decision making, the incorporation of indigenous knowledge and recognizing fishers' rights and capabilities, it is important to

consider that none of these initiatives will work if there is no capacity at individual, community, organisational and institutional level to respond to these new approaches.

Berkes et al. (2001) explains that, the failure to conserve resources through fisheries management has been blamed on the lack of political will that stems from the perception that fishers lack power and importance, and therefore have little influence over the political arena. However, if fishers feel confident that they are supported by a constituency, and with the proper institutional platform, participation becomes easier and ability to influence outcomes becomes greater (Berkes et al. 2001). Thus, it becomes essential to build local institutional capacity to serve such needs. Through the involvement and participation of NGOs, local organisations and independent organisations such as university research, community based projects can empower local communities. It is suggested that capacity building initiatives aimed at assisting small-scale fisher organisations should focus on strong leadership, ensuring that organisations benefit the vulnerable within the community, not only the influential. Organisations should be formed based on the needs and aspirations of the small-scale fisher community themselves and not based on outside pressures or agendas, and with appropriate assistance and support from state organisations (Béné et al. 2007).

5.5.5 Improving infrastructure and services

This chapter has discussed how the lack of education services, transport and other infrastructure render the fisher community of Struisbaai Noord particularly vulnerable, as it hinders their ability to broaden their skills base and pursue livelihood alternatives. There is a growing body of literature (Charles 2001, Berkes et al. 2001, Sharma 2011) that recognizes that small-scale fisher communities have the right to appropriate infrastructure, facilities and services in order to improve their socio-economic conditions and reduce their vulnerabilities. While the Cape Agulhas Municipality IDP (CAM IDP 2011-2012) recognizes that its network of roads is mainly gravel and public transport by taxi is expensive or inaccessible, very little mention is made of improving these public transport networks. However, it is mentioned that there is an existing non-passenger rail link from Bredasdorp to Cape Town, and that the Council is in the process of negotiating the utilisation of this rail link for transport of people, to the economic benefit of the region (IDP 2011-2012). It is unclear what this may entail. The findings of this research highlight the importance of improving public transport infrastructure in the region (between Struisbaai and neighbouring towns, especially Bredasdorp), not only for Struisbaai Noord, but for the region as whole, as it would improve the community's access to job opportunities, tourism, education and skills training, and benefit the local economy.

This chapter also previously discussed small-scale fishers' lack of access to local market infrastructure (the lack of storing, cooling and transport facilities for the fish). An initiative

has been proposed that would invest in erecting a gutting and cooling station at the Struisbaai harbour (van der Bank 2012), which would give fishers direct access to the market and so would go a long way in eliminating the power dynamics at play within the local market structure in Struisbaai). Access to credit and the ability to create savings mechanisms is a major constraint for small-scale fishers. Throughout the world small-scale fishers depend on exploitative moneylenders for their credit needs (Sharma 2011). Measures that would ensure small-scale fishers gain access to fair credit terms through credit programmes or could invest in appropriate infrastructure and capacity building on a small-scale, would greatly reduce fishers' vulnerability and lessen their economic burden.

5.5.6 Local economic development

In a scenario where diversification can contribute to improving fishers' economic situation and alleviating their dependence on marine resources, enhancing Local Economic Development (LED) through initiatives of the Cape Agulhas Municipality and partners, is an essential activity in facilitating and achieving this. It is through the IDP that initiatives and projects are put forward, some of which are discussed below.

According to the IDP (2011-2012), improvement of living conditions for the informal settlement situated in Struisbaai Noord is high on the municipality's agenda. This settlement is particularly vulnerable to natural disasters such as the fire that burnt down part of the settlement in 2009/2010 (IDP 2011-2012). In order to remedy the situation the municipality has included this settlement in its housing delivery plan, applied for funding from the Department of Human Settlement through its emergency housing programme and is looking to identify a suitable site to relocate people living in the informal settlement (IDP 2011-2012).

Local government has also tried to support youth through a bursary fund to attend tertiary institutions. During 2011-2012 approximately 16 matriculants in the Cape Agulhas municipal region received bursaries. In addition, job opportunities for the youth have been developed through the Extended Public Works Programme (EPWP), as well as the CAM Marine and Coastal Networks (IDP 2011-2012). While these are worthwhile opportunities for youth to pursue (and youth from fisher families have been involved in such initiatives), in order to lessen the economic strain on the household during certain months, they are only temporary opportunities and by no means long term solutions.

Previously mentioned in this chapter, is the desire of some of the older fishers of Struisbaai Noord to branch into agriculture as an alternative to fishing. While few fishers expressed any strong desire to leave the fishing industry for other opportunities, it was mentioned that some older fishers were aware of start-up agricultural initiatives by the municipality and felt that their background in working on surrounding farms as young boys would be beneficial in assisting them to become involved in agricultural projects. Agriculture is said to be the most

important activity in the Cape Agulhas Municipality region as a whole. Though still in its infancy, there have been plans by the municipality to assist emerging farmers, in an attempt to transform the mainstream agricultural industry. These initiatives will focus on improving access to land for agricultural purposes through LED projects, in order to improve food security and create jobs for local people (CAM 2009).

While identifying agriculture as the primary economy in the region (wheat, barley and canola are the main crops, in addition to livestock farming), it also recognizes that the main types of farming are at risk and vulnerable to extreme weather events such as droughts or storms. For this reason, the IDP (2011-2012) is calling for diversification of the economic sector to alleviate the dependence on agriculture. This raises questions as to whether agriculture is a viable alternative to fishing, or how long term job creation initiatives are. Perhaps, instead of seeking alternatives, the solution is to focus on improvement of the fishing industry.

5.5.7 Broadening networks and engagement with other actors

This study has placed significant emphasis on the systems approach to fisheries management. The systems approach has not only informed the methodological approach to this study, but also underpins theoretical ideas informing this study. Specifically, this study proposes that the Struisbaai fishery system be managed in an integrated and holistic manner by recognizing and understanding the various, and often conflicting, components and sectors of the fishery system (e.g. ecological vs human dimensions, commercial vs small-scale sectors). In addition, each of these components may be controlled, managed, influenced or represented by different actors, bodies or institutions.

In order for such management approaches to be effective, the various institutions, actors and sectors in the region need to engage with each other. While this study has highlighted the role of certain local and national level institutions and organisations in the region, the range of active stakeholders is much broader and includes: national government institutions (DAFF, DEA), local government institutions (Cape Agulhas Municipality) conservation bodies (SANParks, Cape Nature, WWF), independent research institutions, NGOs, local fisher organisations, commercial fisher organisations, and recreational fisher bodies (see fig 18).

The governance approach proposed by Kooiman et al. (2005) stresses the importance of interactions among groups and organisations, and that the promotion of interaction through networking is an essential aspect of capacity building. While organisations may have the capacity to interact meaningfully, the processes for such interactions are often absent or less clear (Kooiman et al. 2005). However, the type of networking strategy chosen should correspond to the diversity of stakeholders and actors, so that each group has the ability to communicate in a manner that they are comfortable with. If this can be done in an

effective way, by enriching communication and linkages among all levels (including the transfer of knowledge), then the potential for human resources to solve fisheries problems will be greatly increased (Kooiman et al. 2005).

5.5.8 Policy for the small-scale fishery sector

The present small-scale fisheries policy for South Africa (DAFF 2012) claims to be based on an integrated, participatory, and human rights based approach to fisheries management. While the purpose of this study is not to analyse this policy or its implementation, it recognizes that it has a significant impact in the region.

As a result of the deteriorating condition of the linefish species in the region, the fishers of Struisbaai Noord are increasingly calling for rights and quotas to harvest additional species. Of particular interest to them is West Coast rock lobster (WCRL). Some fishers had previously held subsistence quotas for WCRL (2002-2005) and their experience was that even this small quota (allowable harvest of 8 lobster per day) alleviated a financial burden during the months of May to October (which is the off peak season for linefish). In this regard, the multi-species approach specified in the policy (DAFF 2012) addresses fishers' access to a variety of species within a specified area or region. Yet, the species to be included in the multi-species system will depend on a variety of factors including the species TAE and TAC, zonal allocations and geographic availability, as well as the nature of the traditional fishing community.

The research has shown that fishers of Struisbaai Noord are drawn to the sea and would seek supplementary livelihoods within the fishing industry before considering any other alternatives. While they feel disheartened at times, they will always continue to strive for better fishing conditions. While the new policy (DAFF 2012) envisages an increase in the number of fishers that would gain access to harvesting marine resources, it is hoped that this new policy, which claims to have a strong developmental and participatory approach, will gain the appropriate support and capacity for effective implementation. The principles and objectives underpinning the new policy, as well as proposed developmental approaches, indicate that all small-scale fishers should be recognized and catered for under the new legislation.

5.6 Towards a new approach to Marine Spatial Planning (MSP)

This research has highlighted the complex, dynamic, integrated, and vulnerable nature of the fishery system in Struisbaai and the need for a holistic, integrated and participatory approach to conservation and development planning in the region. This section discusses how marine spatial planning in the region may offer an appropriate way of balancing

ecological, economic and social objectives in order to attain sustainability of natural resources and societal demands.

The findings of this study, as well as other recent studies (Dennis 2010, Isaacs 2011b, Crowe 2012, van der Bank 2012, van der Krogt 2012), have shown that the fishery system and network of conservation areas in the Agulhas region is complex. Its various components (small-scale fishery, commercial fishery, recreational fishery), as well as the wider network of conservation (such as the Agulhas National Park, De Mond nature conservation area, the nearby De Hoop MPA and further Betty's Bay MPA), coupled with the governance and institutional challenges in the region has necessitated a management approach that is able to deal with the multiple objectives of all user groups and stakeholders. Section 5.4.5 of this chapter has illustrated how the international conservation agenda has influenced conservation in South Africa's marine environment (with the implementation and expansion of MPA networks) and encouraged an expansion of marine areas under protection. While the plan and strategy for establishing a MPA in the Agulhas region is still largely undeveloped, the idea has been in existence for at least 5 years (SANParks 2009), with preliminary research, stakeholder participation process and draft zoning already initiated as early as 2009 (SANParks 2009).

Far from condoning or condemning any specific marine conservation plans for the region, this research serves to highlight the importance of understanding the fishery system in Struisbaai as a complex and integrated ecological-human system. This understanding seeks to inform planning and management processes through highlighting the importance of identifying all stakeholders, user groups and especially local communities, which depend on marine resources for their livelihood needs, and proposes that management processes are more likely to achieve success if a participatory process is undertaken. In this regard the literature discusses how the concept of MSP is fast becoming a new conservation and development approach in the marine arena (GHK Consulting Ltd 2004, Gililand and Lافoley 2008, Ehler and Douvere 2009, Taljaard et al 2012). While the concept is new in South Africa, it may provide a better solution to managing this complex system in the Agulhas region through spatial regulation.

Many countries designate or zone marine areas on a sector by sector basis, managing each sector independently without much consideration for future planning, goals or conditions, or consideration of the impact of one sector on the next (Ehler and Douvere 2009). Subsequently user conflicts may occur, as well as conflicts between human sustainability and ecological sustainability (Ehler and Douvere 2009). This is evidently the situation in Struisbaai, where multiple user fishery systems experience conflicts over gear, market behaviour, resource allocation and access rights (as highlighted in section 5.2.2). In situations like these, decision makers can only react to events after the damage is done. MSP provides a future orientated approach that allows for the management of potential

conflict situations. It can be said that MSP identifies priorities for a region and organises these priorities spatially (Ehler and Douvere 2009).

In the case of Struisbaai, small-scale fishers of Struisbaai Noord are calling for the control of recreational fishers and chokka boats in their fishing area. In the case of an MPA they call for preferential access to harvesting resources on the fishing banks. In this regard a MSP can go a long way in defining boundaries by designating specific zones for various fisheries (small-scale, recreational, commercial). For example, chokka boats could be restricted from the 6 and 12 mile bank, whose use would be preferentially for the local small-scale fishers, with recreational fishers paying an additional levy to fish here. Recreational fishing on certain banks could also be dedicated to catch and release methods, as this method could have the potential to reduce impacts on marine species. In terms of co-management and institutional arrangements, projects that regard small-scale fishers as stewards of marine resources and offers them a sense of ownership, could go a long way in building their trust and relationships with DAFF and SANParks officials.

All stakeholders in the region are unanimous that marine resource abundance is dwindling and conservation is needed. The fact that all parties recognize the importance of conservation and their willingness to work together supports a holistic and participatory conservation process proposed by MSP. It is important to note that MSP does not serve to replace single sector planning, such as MPAs. Instead it provides guidance to more comprehensive, integrated and complementary decision making processes (Ehler and Douvere 2009). One of the strengths of the plan is that it is an informed, well organised, future orientated process.

This study aims to provide information and understanding on how such a plan can move forward in a way that encourages ecological sustainability, as well as social considerations (especially the socio-economic livelihoods and cultural context of the small-scale fishers of Struisbaai Noord). This chapter has covered some of the main points that MSP in the region should take into consideration and address in its planning phases:

- The poor socio-economic conditions of the small-scale fishers of Struisbaai Noord, their lack of access to educational, health, transport and technological (gear) infrastructure, the absence of alternative livelihoods and their dependence on harvesting marine resources for their food and livelihood needs
- The recognition of the small-scale fisher community's deep cultural and historical link to the sea and its resources, and the effect of breaking these bonds on community social cohesion
- The importance of incorporating fishers' local and indigenous knowledge of marine and environmental processes
- The interactions amongst various fisheries within the Struisbaai fishery system and the need for holistic management approaches to deal with conflicts between various sectors

- The absence of local market infrastructure and the lack of transparency and openness in local market dynamics that creates a monopoly of power
- The recognition that external factors have a great impact on the fishery system thus making it more fragile and vulnerable. These influences include global climatic changes, the impact of international conservation agendas, and national institutional and governance policies
- Increasing fishers' rights and capabilities through education and building individual and institutional capacity
- Encouraging and strengthening participatory decision making processes that would build better relationships of trust between fishers and authorities
- Strengthening local economic development through local municipality initiatives and improvement of infrastructure and services
- Facilitating the engagement of all stakeholders, users and actors in the region.

The vision of MSP in the Agulhas region will be time consuming, multifaceted and by no means simple, as it will depend on ecological research and monitoring, ecosystem modelling, collaboration across government institutions, private and public sectors, educational and scientific institutions, and local communities.

5.7 Conclusion

This chapter highlights the key issues that emerged from the research and provides recommendations for consideration in the planning, implementation and management of fisheries and marine conservation in the Agulhas region. It illustrates the Struisbaai Noord small-scale fishers' strong cultural, historical and traditional links to the sea, coupled with their limited asset base, and the lack of alternative livelihood opportunities or opportunities for diversification, which make them a particularly vulnerable group within the broader Struisbaai fishery system.

It also illustrates the Struisbaai fishery system as a complex and dynamic one, with multiple users and various fisheries sectors (small-scale, recreational and commercial). The importance of recognizing all fishery sectors, as well as their impacts, relationships and conflicts, is essential in understanding and managing the Struisbaai fishery system as an interrelated system. The study has shown that small-scale fishers' vulnerability is exacerbated by other issues within their immediate environment, such as limited gear, and lack of access to educational and transport infrastructure, as well as a set of external factors outside the fishery, such as environmental and climate variability, international conservation agendas, and governance and institutional processes. While fishers witness changing marine resource abundance and distribution, and recognise the need for

conservation, their history of marginalisation at the hands of authorities (government and conservation bodies) make it difficult for them to trust that conservation strategies in the region will have their interests at heart.

A key finding has been the limited information and knowledge and lack of access to local market processes available to small-scale fishers. The need to understand the market dynamics is highlighted, as it is pertinent to increasing fishers' income generating activities. Further, this chapter provides information and recommendations for MPA planning in the Agulhas region. It specifically puts forward the idea of MSP for the region as a means of achieving ecological, economic and social objectives. It highlights that such planning should include information and strategies that address vulnerability within the small-scale fisher community of Struisbaai Noord. These include, amongst others, the incorporation of local and indigenous knowledge, the recognition of fisher rights, strengthening participation and building local capacity and ensuring local economic development.

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Chapter 6– Conclusion

This chapter provides a summary of the research, its key findings and recommendations. This research forms part of a larger research project, referred to as the Human Dimensions of Marine Protected Areas Project, funded by the National Research Foundation (NRF) of South Africa and the Green Trust. The broader project aims to understand the human dimensions of small-scale coastal fishery systems in the context of existing and expanding MPA networks in South Africa, by focusing on understanding particular human dimensions in selected case study sites throughout the country. The outcome of this broader research process is the development of a set of guidelines to inform small-scale fisheries governance and marine conservation in South Africa.

A key motivation for this dissertation is that rural coastal fisheries communities in South Africa, such as Struisbaai Noord, are dependent on marine resources for food and income needs, and vulnerable to a range of environmental and other factors that may affect these resources. While literature and government policies are increasingly calling for approaches to conservation and fisheries management that are holistic, integrated and people-centred, the realities on the ground do not reflect this. This dissertation, therefore, provides comprehensive understanding of the Struisbaai small-scale fishery system as a whole, recognizing the system as an integrated and complex one which requires holistic understanding and management of all components. This research has provided an overview of the broader Struisbaai fishery system (incorporating commercial, recreational and small-scale fishery sectors), in order to illustrate the complex relations between fishery sectors, components of the system, and ecological and developmental objectives. Its particular aim is to understand the specific human dimensions present within the small-scale fishery, in order to inform future marine conservation planning in the region. This research will also contribute useful information and insights into discussions and preliminary planning processes relevant to MPA or marine conservation planning for the Agulhas Region.

The research drew on systems thinking, as well as the case study approach. In addition to the wide range of data collection methods employed (surveys, participatory mapping, key informant interviews, focus groups), the research was undertaken through a multi-phased approach, which included scoping studies, intensive fieldwork and feedback meetings, in order to gain an in-depth understanding of the issues present within the fishery system.

The research is informed and inspired by new approaches to fisheries governance, particularly systems thinking and the recognition of fishery systems as complex socio-ecological systems, whose components should be managed in an integrated and holistic manner. This conceptual approach breaks away from traditional fisheries governance approaches that adopt top down, non-participatory, ecologically-driven management

approaches. Over the past two decades, scholars and practitioners have begun implementing a plethora of new approaches and ideas including the Ecosystems Approach to Fisheries, rights based approaches, sustainable livelihoods approach (SLA), the incorporation of different knowledge systems, adaptive co-management and the concept of resilience. These approaches are founded upon sustainability principles and require a more holistic, integrated and participatory approach to sustainable fisheries governance and management. In South Africa, the fisheries regime has not adequately catered for the rights and needs of small-scale fishers, like the fishers of Struisbaai Noord. However, recent policy changes through the promulgation of a new Policy for the small-scale fisheries sector in 2012, suggest that greater attention will now be given to the rights and needs of small-scale fishers.

For the purposes of this dissertation, the sustainable livelihoods framework was used to better understand the human dimensions present within the Struisbaai small-scale fishery through the analysis of fishers' livelihoods assets, strategies, options, and vulnerabilities, as well as their dependence on fishing activities. The small-scale fishing community of Struisbaai is a predominantly coloured community that has been historically marginalised and currently lives in poor socio-economic conditions in the area of Struisbaai Noord. The community consists of approximately 300 fisher households, where the fishers are predominantly male and are the primary income earners in the household. Struisbaai Noord is largely a community of line-fishers who hold traditional linefish rights, (who fish mainly using wooden boats called chukkies), but some are net fishers or hold abalone rights.

The research revealed various insights into the small-scale fisher community of Struisbaai Noord. It was found that the fisher community has a high dependency on harvesting marine resources for their household food security and livelihood needs. In addition, it is shown that they have a strong connection to place (whether they were born in Struisbaai or moved to Struisbaai from other areas), as well as a traditional, historical and socio-cultural link to the sea. While fishers perceive there to be a lack of supplementary livelihood opportunities to enable diversification of livelihoods, in many respects it is this bond to the sea that prevents them from seeking alternative livelihoods even if they were available. Given their strong historical and cultural link to the sea, as well as their dependence on the sea for food security and livelihood needs, small-scale fishers have a right to preferential access to these resources.

The research has also highlighted that the community of Struisbaai Noord is particularly vulnerable. Their already poor socio-economic conditions and lack of financial assets, coupled with their high dependence on harvesting marine resources, has seen them bearing the brunt of poor educational, health and transport infrastructure. They are also vulnerable to competition and conflict with other fisheries sectors in the region, as commercial and recreational fishers have far superior gear and technology (fishers lack access to physical assets is a key challenge). Furthermore, small-scale fishers believe that these other fishery

sectors, receive preferential treatment from the fisheries management authorities, which they deem unfair. They also have an increased impact on the local marine resources, especially at the fishing banks.

In addition, fishers also have limited power within the local market processes and, therefore, have minimal influence in controlling the price of fish and hence their own income. Their lack of knowledge, information and access to capital assets make them weak and powerless players within the local market structure. To further exacerbate their vulnerability, there are other factors that are for the most part, out of their control. For example, environmental and climate variability have been identified as one reason for the change in distribution and abundance of marine resources that fishers traditionally harvest. Shifting wind and unpredictable weather patterns have also limited the number of days that fishers can go out to sea. Governance and institutional processes that control fishers' access rights have placed stringent limits on fish sizes, total allowable catch, number of crew per boat, as well as limited access rights in the form of permits, rights or quotas for harvesting other resources. This serves to illustrate that small-scale fishers, with their dependence on marine resources, have suffered enormously under controls and restrictions placed on their fishing activities by the government, yet they are few in number and have limited impacts on the resource, in comparison to other sectors (recreational, commercial, chokka). Therefore they feel their rights should be protected.

In the face of all these challenges, comes the proposal for marine conservation in the Agulhas region that is driven by international conservation agendas, whose objective it is to designate a representative network of MPAs by 2020 (UNEP- WCMC 2008, Jones et al. 2011). South Africa has also committed to increasing the marine conservation areas, and many fisheries scientists see MPAs as an important tool for rebuilding threatened fish stocks. While fishers are open to the idea of conservation (as they witness the change in the distribution and abundance of marine resources in their region), they are sceptical of management and fisheries authorities agendas, and do not want to lose access to their traditional fishing grounds.

Fishers perceive the local small-scale fishing sector to have many challenges and difficulties, but they also recognize that, with positive change, the sector can once again be as sustainable to them as it once was. Furthermore, they envisage a sustainable and economically viable fishing industry that they would encourage the youth to participate in. This research thus highlights the critical importance of understanding the human dimensions of the fishery system in order to fully appreciate the complexity, diversity and vulnerability of the fishery system as a whole, and better understand the relationships and interdependencies that exist amongst the various components of the system. It also highlights the high levels of dependence of this fishing community on the marine resources of the Agulhas area for food and livelihoods. The final chapter presents recommendations that recognize these challenges, and provide ways in which they may be addressed in an

integrated and holistic manner, in relation not only to the small-scale fishery system, but to the Struisbaai Fishery System as a whole.

These recommendations should be taken into account in any future marine protected area planning for the Agulhas marine environment. Furthermore, the research proposes that rather than assume the declaration of a MPA is the appropriate tool to achieve conservation goals in the area, it would be more appropriate to embark on a marine spatial planning exercise that takes account of the complexity of the socio-ecological systems operating in the area, and seeks to find ways of addressing the various interests and needs of the different players and actors. This dissertation highlights the information pertinent to the small-scale fishers of Struisbaai Noord that needs to be considered and integrated in any future marine spatial planning process in this area. These include; the recognition of the poor socio-economic conditions of the small-scale fishers of Struisbaai Noord, their lack of access to infrastructure, the absence of alternative livelihoods and their dependence on harvesting marine resources. They also hold a deep cultural and historical link to the sea and the effect of breaking these bonds on community social cohesion, the importance of incorporating fishers' local and indigenous knowledge, and the need for holistic management approaches to deal with conflicts between various sectors should also be recognized.

In addition, the absence of local market infrastructure and the lack of transparency and openness in local market dynamics that creates a monopoly of power, and that external factors have a great impact on the fishery system, thus making it more fragile and vulnerable, should be acknowledge. The need for the recognition of the necessity for increasing fishers' rights and capabilities through education; the importance of building individual and institutional capacity, encouraging and strengthening participatory decision making processes that would build better relationships of trust between fishers and authorities; strengthening local economic development through local municipality initiatives and improvement of infrastructure and services, which would facilitate the engagement of all stakeholders, users and actors in the region, is also highlighted.

This dissertation puts forward the idea of a Marine Spatial Plan for the Agulhas region and discusses how it may offer an appropriate way of balancing ecological, economic and societal objectives in order to attain sustainability, it does not favour or disapprove of any particular conservation strategy. However, this research highlights that, whatever strategy is employed it should recognise the complex socio-ecological nature of the systems and ensure that the human dimensions are understood and addressed and that the Struisbaai fishery system is planned and managed in an integrated, holistic and participatory manner.

Chapter 7– Reference List

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Appendices

Appendix 1: Struisbaai Noord Household Survey

Household Survey Number.....

INCORPORATING HUMAN DIMENSIONS INTO MPA PLANNING & MANAGEMENT

Small-Scale Fishers Survey

Environment! Evaluation Unit, University of Cape Town

Interview Details			
Date		Village/Town	
Interviewer's Name		Respondent's Name (optional)	

Background Information			
1. Gender		2. Age	3. Birth date
<input type="checkbox"/> Male	<input type="checkbox"/> Female		

4. What population group do you describe yourself as belonging to?			
<input type="checkbox"/> Black	<input type="checkbox"/> White	<input type="checkbox"/> Coloured	<input type="checkbox"/> Asian/Indian <input type="checkbox"/> Other

5. What language do you mostly speak at home?			
<input type="checkbox"/> Xhosa	<input type="checkbox"/> English	<input type="checkbox"/> Afrikaans	<input type="checkbox"/> Other

6. Marital Status			
<input type="checkbox"/> Single	<input type="checkbox"/> Married	<input type="checkbox"/> Divorced	<input type="checkbox"/> Widow
<input type="checkbox"/> Widower	<input type="checkbox"/> Separated	<input type="checkbox"/> Common law	

7. What is your level of schooling?			
<input type="checkbox"/> No formal Education	<input type="checkbox"/> Complete High school Education [finished Gr. 12 or Std 10]		
<input type="checkbox"/> Incomplete primary education [between Gr.1 and Gr.6 or Sub A to Std 4]	<input type="checkbox"/> Technical/ College Education		
<input type="checkbox"/> Complete Primary education [finished Gr.7 or Std 5]	<input type="checkbox"/> University Education		
<input type="checkbox"/> Incomplete High School Education [between Gr. 8 and Gr.11 or Std 6 and 9]			

8. Where were you born?

Town	Province	Country

9. How long have you been living in Struisbaai?

Household Characteristics	
10. How many people live in your household/homestead?	
11. number of people in school?	

12. Housing structure	
OBSERVE and indicate what is the MAIN material used for the MAIN dwelling	
Traditional dwelling (mud brick, clay, dung, wattle)	Permanent house (brick, block)
Temporary shack (plastic, cardboard, plywood)	Other (specify)
Permanent shack (corrugated iron, mixed brick)	

12. Is your household connected to an electricity supply (even if it is current disconnected)?			
Yes		No	
13. What is the MAIN source of energy for COOKING in your household? [just ask question without going through entire list and then tick one]			
Electricity from mains or generator	LPG Gas	Biogas	Charcoal
Solar Power	Firewood	Kerosene	Paraffin

14. What is the MAIN source of **DRINKING** water in your household?

Marine Resource Use	
15. How old were you when you first became involved in?	
i)	harvesting marine?
ii)	the fishing industry?

16. Which marine resources have you and do you currently harvest?									
Marine Resources	When (if possible indicate the year[s])	Where	Have you ever had a permit or quota for this species? Y or N	If you have had a permit , which permit was it? (ie: Subsistence, Interim, Exemption??)	When did you have this permit (ie. What year(s)?	Do you currently have this permit? Y or N	If you have had a quota , how much was your quota (ie. Kilograms or tons)?	When was this quota allocated? (ie. What year?)	Do you have a recreational permit for this species? Y or N
Kreef									
Geelstert/yellowtail									
Geelbek/Cape Salmon									
Kabeljou/kob									
Roovis/red roman/red stumpnose									
Steenbras									
Silvervis									
Snoek									
Makriel/makarel									
Haai/shark									

Galjoen									
Elf									
Musselkracker									
Seventy four									
Harders									

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Galjoen								
Elf								
Mussel cracker								
Harders								

18. Have you ever applied for a permit or a quota and were not successful?			
	Yes		No
19. If yes, what type of permit was it?			

20. Rank the THREE most important species that you harvest in terms of INCOME (one is the most important)	
I	
li	
lii	

21. Rank the THREE most important species that you harvest for food (one is the most important)	
I	
li	
lii	

22. In your opinion, what are the greatest threats to the marine resources in the area?			
	Increase in human activity in area		Commercial fisheries: trawlers
	Market demand		Commercial fisheries : Ski boats
	Fishers from outside		Climate change
	Type of gear		Poachers
	Over-fishing		Other:

		Mother	Father
23. Were/are your parents involved in fisheries-related activities?		Yes	No
If yes, in which activities? Tick all that apply	Collecting inshore resources (bait, mussels, etc)		
	Worker for commercial fishing company (name(s))		
	Fish from shore		
	Boat-owner (sole or share)		
	Skipper		
	Shore based job –(PAID): driver, repair nets/engines, processing etc		
	Shore based job –(UNPAID): repair nets, cleaning fish etc		
	Crew/boat assistant		
	Diver		
	Own fishing company (specify)		
	Shares in a fisher's company (name)		
	Marketer/agent (paid or unpaid)		
	other		

24. What fishing activities have YOU been involved in over the past year?	Tick all that apply
Collecting inshore resources (bait, mussels, etc)	
Worker for commercial fishing company (provide name: _____)	
Fish from shore	
Boat-owner (sole or share)	
Skipper	
Shore based job –(PAID): driver, repair nets/engines, processing etc	
Shore based job –(UNPAID): repair nets, cleaning fish etc	
Crew/boat assistant	
Diver	
Has own company (specify) _____	
Shares in a fisher's company (name) _____	
Marketer/agent (paid or unpaid)	
Other _____	

25. If you are a boat owner do you have crew that work for you?	
<input type="checkbox"/> Yes	<input type="checkbox"/> No
26. If so, how many?	
27. What type of boat do you own	
28. if you are a crewman, on what type of boat do you work?	

Local Institutions	
29. Is there a local fishing committee or organization within your community	
<input type="checkbox"/> Yes	<input type="checkbox"/> No
30. If YES, are you a member of this committee/organization?	
<input type="checkbox"/> Yes	<input type="checkbox"/> No
31. What is the name of the organisation of which you are a member?	
32. Do you feel that this committee or organization represents your interests?	
<input type="checkbox"/> Yes	<input type="checkbox"/> No

Food security	
33. In the last month, has there been a day when your household had to skip a meal because of a shortage of food?	
<input type="checkbox"/> Yes	<input type="checkbox"/> No
34. If YES, how often:	
<input type="checkbox"/> i) 1 day per week	<input type="checkbox"/> ii) 2 or more days per week

35. Are you or anyone in your household forced to fish because of a lack of food?			
36. How often do members of your household eat fish (including lobster and mussels)?			
	Once a day		Two days per week
	Twice a day		Three days per week
	One day per week		Other

37. What present activities contribute towards income and food in your household? Tick **ALL** that are applicable and go through each. Then rank.

	All activities that contribute to HH monthly income and food (tick all that are applicable)	Rank the THREE most important activities in terms of monthly income (1 being most important)	Rank the THREE most important activities in terms of providing food (1 being most important)
(1) Harvesting marine resources			
(2) Harvesting crops (fruit, vegetables etc)			
(3) Livestock (poultry, cattle etc)			
(4) Harvesting wood			
(5) Harvesting wild plants			
(6) Employment in fishing industry (specify)			
(7) Other employment (specify)			
(8) Self-employed (ie. shop owner, taxi driver):			
(9) Pension			
(10) Government grants (specify)			
(11) other			

38. How much of your income comes from fisheries-related activities:	
	All of it
	Most of it

	Some of it
	None of it

39. How many people contribute to the total household income?

Wellbeing	
40. If you were given other opportunities in another sector for food and/or income, would you still choose to harvest marine resources/work in the fishing industry?	
	Yes
	No
Explain	
41. If there were other opportunities for young people outside of the fishing industry, would you still encourage them to harvest marine resources/enter the fishing industry?	
	Yes
	No
Explain	
42. Are there alternative livelihoods (besides activities relating to the harvesting of marine resources) that you or your family can pursue?	
Explain	

Understanding the MPA	
43. Are you aware that there is plan for a Marine Protected Area (MPA) is being explored in your area	
	Yes
	No
44. Have the objectives of the plan for the MPA, or the reasons behind why it needs to be established, been explained to you?	
	Yes
	No
45. If yes, can you explain WHY it is being proposed and what it will entail?	
46. Were you involved in any meetings or discussions where fishers were given an opportunity to discuss their needs, concerns and/or ideas in relation to the plan for a MPA?	
	Yes
	No

Appendix 2: Focus Group Schedule and Template

Focus Group Schedule

Focus Group Schedule			
Focus Group Date	Focus Group Participants	Number of participants	Code
26 January 2012	Ski boat skipper and crew of Struisbaai Noord	4	FG1
30 January 2012	Chukkie skippers of Struisbaai Noord	5	FG2

Template – Focus Group 1

Skipper and crew: Ski boats

1. Sustainable Livelihoods

Objective: To ascertain what are the alternative livelihood options available to the community of Struisbaai, and whether they are indeed viable options for household income that could alleviate the dependence on fishing activities or supplement fishing activities.

Materials needed: Flip chart or large sheets of paper, markers, different colours of paper or stickers, prestick, notebooks

Points to discuss:

- 1.1 In your household... apart from fishing, what income generating activities are family members involved in? (domestic workers, local stores and restaurants, hair salons, small businesses, gardening, building industry, tourism, teaching etc)
- 1.2 How much of your income comes from fishing... is it sufficient?
- 1.3 When do you struggle most and why? What do you do? Do you feel forced to fish?
- 1.4 Are there any other activities apart from fishing that you or other fishers are involved in? (part time work, gardening, maintenance, spaza shop etc)
- 1.5 If given the opportunity, would you choose to pursue an alternative livelihood or supplement your fishing activities with other activities? Why? Why not?
- 1.6 What are the constraints to pursuing alternative options as viable opportunities for income generation? (eg transport, skills, education, relocation)
- 1.7 What can be done to increase your ability to pursue alternatives? (better transport services to other towns, more job creation, training etc)
- 1.8 Do you derive any benefits of tourism during the busy tourist seasons during Dec/Jan and Easter? (work on boats, maintain homes etc)

- 1.9 Present a list of initiatives in other sectors. Discuss whether participants are aware of or been involved in, any of these initiatives. In what capacity? And if not, why?

Besides the initiatives mentioned... what are the other initiatives that fishers have been involved in?

	Initiatives	Opportunities	Constraints
SANParks – Agulhas National Park ABI initiative C.A.P.E	<ul style="list-style-type: none"> - Working for water - Working for wetlands - Working for the coast - Indigenous knowledge project - Community involvement in eco tourism activities - Flower production initiative 		
Cape Agulhas Municipality Initiatives	<ul style="list-style-type: none"> - Dept of public works— census - Making land available to emerging farmers - Womens empowerment initiatives 		

- 1.10 Would you encourage youth to enter fishing? Why or why not? What activities are the youth currently involved in? Do they work in Struisbaai or leave to work in surrounding towns (eg Bredasdorp).
- 1.11 How do you see the future of fishing in Struisbaai.
- 1.12 How would you like to see it?

2. Post Harvest Activities and Local Market Dynamics

Objective: To understand the local small scale fish marketing chain in Struisbaai from a sustainable livelihoods perspective. What are the dynamics involved in the post harvest of small scale fishers, the trading and marketing chain and its impact on the lives of the struisbaai small scale fisher.

Material Needed: Flip chart or large sheets of paper, markers, different colours of paper or stickers, prestick

Points to discuss:

- 2.1 What is the process once fish is caught? How much time passes between catching and landing? What preservation techniques are used?
- 2.2 What happens once the fish lands at the harbour? How long before it is sold? Is it sold at the harbour?
- 2.3 Are you able to sell all your fish, is any fish ever discarded?
- 2.4 Do you ever sell the fish yourself to locals etc?
- 2.5 Where and how is the fish weighed?

- 2.6 When is the price agreed upon?
- 2.7 Who are the handlers and buyers?
- 2.8 What determines who you sell your fish to? Do you have set buyers?
- 2.9 Do you know what happens to the fish once it is sold? How and where is it stored? To who is it sold? Is it processed? What are the costs involved in storage, icing etc?
- 2.10 Does every crewman on the boat sell to the same buyer?
- 2.11 How is the fish handled, transported, kept?
- 2.12 Are you paid in cash or by any other means? How did you enter into this relationship and what are the conditions?
- 2.13 What percentage of the crewmans stock or earnings does the fisher retain?
- 2.14 Do migratory fishers have their own buyers or do they sell to the local buyers?
- 2.15 What are the different pricings for different species and how are they determined? Are there different grades?
- 2.16 What affects the prices of fish?
- 2.17 How are fish prices affected by in season and out of season?
- 2.18 Has the system changed over the past few years? New buyers? Outside influences?
- 2.19 What are the main problems/contraints for fishers in marketing system?
- 2.20 Have any of you worked for a buyer/handler or been involved in fish marketing/processing activities?
- 2.21 Have you ever thought of creating an association and selling the fish as a group?
- 2.22 Are there another comments and suggestions?

3. Marine Resources: mapping and threats- incorporating traditional ecological knowledge

Objective: Identify fishing grounds of chukkie and ski boats, species caught, time of day, length of fishing effort, seasons, amount of fish caught, perceived threats to resources. This helps to inform our understanding of fishing effort and fishers traditional knowledge.

Materials needed: Laminated nautical maps, whiteboard or transparency markers, sheets of paper for sketch maps, markers

Points to discuss:

- 3.1 Illustrate fishing grounds (banks) and species caught there (on map provided)
- 3.2 How long does it take you to travel to that bank?
- 3.3 How long do you stay there?
- 3.4 What time of the year do you catch that species?
- 3.5 What time of the day do you go out to fish?
- 3.6 What is the amount of fish you catch on a good day (per species)?
- 3.7 What is the amount of fish you catch on a bad day (per species)?

- 3.8 How much does it cost (diesel etc) to out to fish. Do crewman contribute to fuel and other expenses?
- 3.9 Is there anything that hinders or prevents you from getting to these banks (gear, weather, lack of crew, lack of funds for diesel for example)?
- 3.10 Has the species found at a certain bank changed/moved?
- 3.11 Has the species found at a certain bank deteriorated/become scarce?
- 3.12 Have you been catching more or less of a certain species at that bank?
- 3.13 What do you perceive as the main threats to your ability to harvest resources?
- 3.14 What do you perceive as the main threat to marine resources?
- 3.15 If all the chukkies were converted to ski boats, would that increase competition?
- 3.16 What is the relationship between the chukkies (do they go out together, share information etc)?
- 3.17 What is the relationship between the chukkies and the ski boats?

Template – Focus Group 2

Skippers: Chukkies

1. Sustainable Livelihoods

Objective: To ascertain what are the alternative livelihood options available to the community of Struisbaai and whether they are indeed viable options for household income that could alleviate the dependence on fishing activities or supplement fishing activities.

Materials needed: Flip chart or large sheets of paper, markers, different colours of paper or stickers, prestick, notebooks

Points to discuss:

- 1.1 In your household... apart from fishing, what income generating activities are family members involved in? (domestic workers, local stores and restaurants, hair salons, small businesses, gardening, building industry, tourism, teaching etc)
- 1.2 How much of your income comes from fishing... is it sufficient?
- 1.3 When do you struggle most and why? What do you do? Do you feel forced to fish?
- 1.4 Are there any other activities apart from fishing that you or other fishers are involved in? (part time work, gardening, maintenance, spaza shop etc)
- 1.5 If given the opportunity, would you choose to pursue an alternative livelihood or supplement your fishing activities with other activities? Why? Why not?
- 1.6 What are the constraints to pursuing alternative options as viable opportunities for income generation? (eg transport, skills, education, relocation)

- 1.7 What can be done to increase your ability to pursue alternatives? (better transport services to other towns, more job creation, training etc)
- 1.8 Do you derive any benefits of tourism during the busy tourist seasons during Dec/Jan and Easter? (work on boats, maintain homes etc)
- 1.9 Present a list of initiatives in other sectors. Discuss whether participants are aware of or been involved in, any of these initiatives. In what capacity? And if not, why?

Besides the initiatives mentioned... what are the other initiatives that fishers have been involved in?

	Initiatives	Opportunities	Constraints
SANParks – Agulhas National Park ABI initiative C.A.P.E	<ul style="list-style-type: none"> - Working for water - Working for wetlands - Working for the coast - Indigenous knowledge project - Community involvement in eco tourism activities - Flower production initiative 		
Cape Agulhas Municipality Initiatives	<ul style="list-style-type: none"> - Dept of public works— census - Making land available to emerging farmers - Womens empowerment initiatives 		

- 1.10 Would you encourage youth to enter fishing? Why or why not? What activities are the youth currently involved in? Do they work in Struisbaai or leave to work in surrounding towns (eg Bredasdorp).
- 1.11 How do you see the future of fishing in Struisbaai.
- 1.12 How would you like to see it?

2. Post Harvest Activities and Local Market Dynamics

Objective: To understand the local small scale fish marketing chain in Struisbaai from a sustainable livelihoods perspective. What are the dynamics involved in the post harvest of small scale fishers, the trading and marketing chain and its impact on the lives of the struisbaai small scale fisher.

Material Needed: Flip chart or large sheets of paper, markers, different colours of paper or stickers, prestick

Points to discuss:

- 2.1 What is the process once fish is caught? How much time passes between catching and landing? What preservation techniques are used?
- 2.2 What happens once the fish lands at the harbour? How long before it is sold? Is it sold at the harbour?
- 2.3 Are you able to sell all your fish, is any fish ever discarded?

- 2.4 Do you ever sell the fish yourself to locals etc?
- 2.5 Where and how is the fish weighed?
- 2.6 When is the price agreed upon?
- 2.7 Who are the handlers and buyers?
- 2.8 What determines who you sell your fish to? Do you have set buyers?
- 2.9 Do you know what happens to the fish once it is sold? How and where is it stored? To who is it sold? Is it processed? What are the costs involved in storage, icing etc?
- 2.10 Does every crewman on the boat sell to the same buyer?
- 2.11 How is the fish handled, transported, kept?
- 2.12 Are you paid in cash or by any other means? How did you enter into this relationship and what are the conditions?
- 2.13 What percentage of the crewmans stock or earnings does the fisher retain?
- 2.14 Do migratory fishers have their own buyers or do they sell to the local buyers?
- 2.15 What are the different pricings for different species and how are they determined? Are there different grades?
- 2.16 What affects the prices of fish?
- 2.17 How are fish prices affected by in season and out of season?
- 2.18 Has the system changed over the past few years? New buyers? Outside influences?
- 2.19 What are the main problems/constraints for fishers in marketing system?
- 2.20 Have any of you worked for a buyer/handler or been involved in fish marketing/processing activities?
- 2.22 Have you ever thought of creating an association and selling the fish as a group?
- 2.22 Are there another comments and suggestions?

3. Marine Resources: mapping and threats- incorporating traditional ecological knowledge

Objective: Identify fishing grounds of chukkie and ski boats, species caught, time of day, length of fishing effort, seasons, amount of fish caught, perceived threats to resources. This helps to inform our understanding of fishing effort and fishers traditional knowledge.

Materials needed: Laminated nautical maps, whiteboard or transparency markers, sheets of paper for sketch maps, markers

Points to discuss:

- 3.1 Illustrate fishing grounds (banks) and species caught there (on map provided)
- 3.2 How long does it take you to travel to that bank?
- 3.3 How long do you stay there?

- 3.4 What time of the year do you catch that species?
- 3.5 What time of the day do you go out to fish?
- 3.6 What is the amount of fish you catch on a good day (per species)?
- 3.7 What is the amount of fish you catch on a bad day (per species)?
- 3.8 How much does it cost (diesel etc) to out to fish. Do crewman contribute to fuel and other expenses?
- 3.9 Is there anything that hinders or prevents you from getting to these banks (gear, weather, lack of crew, lack of funds for diesel for example)?
- 3.10 Has the species found at a certain bank changed/moved?
- 3.11 Has the species found at a certain bank deteriorated/become scarce?
- 3.12 Have you been catching more or less of a certain species at that bank?
- 3.13 What do you perceive as the main threats to your ability to harvest resources?
- 3.14 What do you perceive as the main threat to marine resources?
- 3.15 Tell me about the boats (chukkies)... are they mostly seaworthy, do you feel safe, if you had a choice would you want a ski boat or a chukkie and why
- 3.16 If all the chukkies were converted to ski boats... who that increase competition?
- 3.17 What is the relationship between the chukkies (do they go out together, share information etc)?
- 3.18 What is the relationship between the chukkies and the ski boats?

Appendix 3: Interview Schedule and Template

Interview Schedule

Interview Schedule			
Date	Interview	Organisation/Affiliation	Code
23 November 2010	Giel de Kock and Ettiëne Fourie	Agulhas National Park (Park manager and park development officer)	Respondent A ⁵²
23 November 2010	Stuart du Plessis	Coastal Links representative, line fisher, abalone permit holder	Respondent B
24 November 2010	Brandon Smith	Fisheries Inspector Struisbaai harbour compliance office	Respondent C
24 November 2010	Tracey Dennis	Independent researcher, Rural development	Respondent D
25 November 2010	Sophie and Maryna	Hotagterklip tourism houses, local economic development project	Respondent E
14 April 2011	Yandiswa Mguga	Fisheries compliance chief	Respondent F
15 April 2011	John Fouche, Brandon Holloway	DAFF task force Kleinmond office	Respondent G ⁵³
19 April 2011	Kobus Gertze	Buyer	Respondent H
19 April 2011	Kenny Coleman	Buyer	Respondent I
14 May 2011	Oom Japie	Arniston fisher	Respondent J
8 June 2011	Sias Martinus	Chukkie Skipper	Respondent K
8 June 2011	John Granfield	Chukkie Skipper and coastal links representative	Respondent L
9 June 2011	Fred Afrika	Struisbaai Vissers Forum	Respondent M
9 June 2011	Pietie Groenewald	Ski boat Skipper	Respondent N

Interview Templates

Local Key Informant Semi Structured Interview Templates

Local Buyer Interview Template

1. How long have you been involved in the fishing industry in Struisbaai?
2. How did you get into the business of marketing fish?
3. How many people do you employ in your marketing business?

⁵² Respondents A, D, and E were interviewed as part of the scoping visit

⁵³ Respondents G and J were co-interviewed by fellow student Phil Krogt as part of his research

4. Who do you buy fish from?
5. Do you buy fish from Arniston fishers or do they have their own buyers?
6. Is there a difference in the quality of fish between the chukkie and ski boats?
7. Could you describe the buying process.
8. Do you always buy all the fish that are caught?
9. What is the best fish for you to buy?
10. Who do you sell the fish to?
11. What is responsible for the change in markets?
12. At what prices do you buy the fish?
13. When do you pay out the fishers?
14. Do different buyers buy the fish at different prices?
15. What prices do you sell the fish at?
16. In a good week, how many kgs/tons of fish do you buy?
17. Do fishers sell to different buyers or switch between buyers?
18. Do prices change within the same day, or do they stay the same for a few days?
19. Do migratory fishers bring their own buyers? What impact does this have on the local system?
20. Is there any competition between the buyers in Struisbaai?
21. Do you bring fish to Struisbaai? Do you sell fish (species not found here) to the fishers?
22. Are you a member of any fishing organisation?
23. Do you think the marine resources are deteriorating? Why? How does this affect you?
24. Were you involved in any meeting regarding the proposal for an MPA in the Agulhas Region?
25. Has the De Hoop MPA affected the Struisbaai fishers in any way?
26. Do you think more alternative livelihood options should be developed for the fishers of Struisbaai?

Chukkie Skipper Interview Template

1. Where were you born?
2. Was your father a fisher?
3. How many people were in your household? How many are/were involved in the fishing industry?
4. How did you come into fishing? How old were you?
5. Are you catching fish on the same banks as you did in the past?
6. In the past did you catch fish up until De Hoop?
7. What is the relationship between the Struisbaai and Arniston fishers?
8. Why do you think the fishers who applied for transfer of chukkie to ski boats were unsuccessful?
9. Are some of the fishers in Struisbaai still paying off their boats (chukkie)? Are you still paying off your boat?
10. Does the quality of fish differ if caught on a chukkie vs ski boat?
11. How many people crew on your boat? Do they also crew on other boats? Do you always use the same crew?
12. How many kids do you have and are they involved in the fishing industry?
13. Does the De Hoop MPA have an impact on your fishing activities?

14. Are you aware of the proposal to proclaim a MPA in the Agulhas region? What is your opinion of the proposal to proclaim a MPA in the Agulhas region?
15. What does fishing mean to you and your family?
16. Are there any (that you are aware of) alternative sectors/jobs that people or fishers of Struisbaai can become involved in?

Coastal Links Representative/Chukkie Skipper/Skipkop fisher Interview Template

1. Where were you born?
2. Was your father a fisher?
4. How many people were in your household? How many are/were involved in the fishing industry?
3. How did you come into fishing? How old were you?
4. How old were you when the community at Skipkop were evacuated from that area?
5. How do the marine resources today differ from the past?
6. What are the other alternative opportunities for the people and fishers of Struisbaai (that you are aware of)?
7. How many people crew on your boat? Do they also crew on other boats? Do you always use the same crew?
8. Do you fully own your boat?
9. What do you consider to be the greatest threat to the fishing industry in Struisbaai?
10. What would you say to your kids and other young people who would want to enter the fishing industry, would you encourage them?
11. Have you applied for the transfer of your chukkie to a ski boat?
12. What is your involvement in Coastal Links?
13. When did coastal links form in Struisbaai?
14. In your opinion, does it serve the fishers' needs?
15. Has the De Hoop MPA had any effect on your fishing activities? When you lived in Skipkop did you fish there?
16. Are you aware of the proposal to proclaim a MPA in the Agulhas region? What is your opinion of the proposal to proclaim a MPA in the Agulhas region?

Struisbaai Vissers Forum Representative Interview Template/Chukkie Skipper

1. Where were you born?
2. Was your father a fisher?
3. How many people were in your household? How many are/were involved in the fishing industry?
4. How did you come into fishing? How old were you?
5. How did you come to own your boat?
6. What is your involvement in the Struisbaai Vissers Forum?
7. When and how did the Vissers Forum form in Struisbaai?

8. In your opinion, does it serve the fishers' needs?
9. You are no longer actively fishing, what has made you leave/stop?
10. What is the relationship between the fishers and the harbour inspectors/Daff officials?
11. Are you aware of/invited to any meetings held by SANParks regarding the proposal for a MPA in the region?
12. What are the other alternative opportunities for the people and fishers of Struisbaai (that you are aware of)?

Ski Boat Skipper Interview Template

1. Where were you born?
2. Was your father a fisher?
4. How many people were in your household? How many are/were involved in the fishing industry?
3. How did you come into fishing? How old were you?
4. Do you fish in other areas outside of Struisbaai region (eg West Coast)?
5. Have women previously been involved in fishing activities in Struisbaai?
6. Are women presently involved in fishing activities in Struisbaai?
7. How many people crew on your boat? Do they also crew on other boats? Do you always use the same crew?
8. Do you fully own your boat?
9. Are you catching fish on the same banks as you did in the past?
10. How do the marine resources today differ from the past?
11. Do fishers (migratory and recreational) from other areas have an impact on your fishing activities?
12. What is the relationship between the fishers and the harbour inspectors/Daff officials?
13. What would you say to your kids and other young people who would want to enter the fishing industry, would you encourage them?
14. What are the other alternative opportunities for the people and fishers of Struisbaai (that you are aware of)?
15. What laws have had the biggest impact on your fishing activities?
16. Does the De Hoop MPA have an impact on your fishing activities?
17. Are you aware of the proposal to proclaim a MPA in the Agulhas region? What is your opinion of the proposal to proclaim a MPA in the Agulhas region?

Coastal Links Representative/Ski boat crew member/abalone permit holder Interview Template

1. Where were you born?
2. Was your father a fisher?
3. How many people were in your household? How many are/were involved in the fishing industry?
4. How did you come into fishing? How old were you?
5. Are you catching fish on the same banks as you did in the past?
6. In the past did you catch fish up until De Hoop?
7. What is the relationship between the Struisbaai and Arniston fishers?
8. What does fishing mean to you and your family?

9. Are there any (that you are aware of) alternative sectors/jobs that people or fishers of Struisbaai can become involved in?
10. What would you say to your kids and other young people who would want to enter the fishing industry, would you encourage them?
11. Have women previously been involved in fishing activities in Struisbaai?
12. Are women presently involved in fishing activities in Struisbaai?
13. Does the De Hoop MPA have an impact on your fishing activities?
14. Are you aware of the proposal to proclaim a MPA in the Agulhas region? What is your opinion of the proposal to proclaim a MPA in the Agulhas region?

Agulhas National Park Representative Interview Template

1. What is your role within the Agulhas National Park?
 2. What does this role entail?
 3. What does ANPs marine project/component entail?
 4. Why is it important to have a MPA proclaimed in the area?
 5. What will a MPA in the region entail?
 6. Where is the process at thus far?
 7. What is the level of engagement with fishers and stakeholders?
- What is your relationship with local DAFF fisheries inspectors?

Local Fisheries Inspector Interview Template

1. What is the structure of the DAFF compliance system?
2. What is the role and importance of compliance within the fisheries sector?
3. What is the role and purpose of regional compliance officials?
4. What is the role and purpose of the local compliance officials in Struisbaai?
5. What is the structure of the Struisbaai compliance office. How many officials are based here. What are their roles?
6. What is the day to day working of a local compliance office such as the Struisbaai office?
7. What are the harbour hours? How are patrols carried out? What are the area boundaries in which patrols are carried out?
8. How are permits and levies managed? What is the state of the Struisbaai harbour eg, moorings, slipway etc? How many and what type of boats utilise the harbour?
9. What are the challenges faced by compliance officials?
10. What is the working relationship between DAFF/DEA re compliance?
11. What is the working relationship with other bodies eg SANParks and local conservation authorities?
12. Does DAFF compliance have any jurisdiction within national parks and MPAs?