

# Fishing rights and small-scale fishers: An evaluation of the rights allocation process and the utilisation of fishing rights in South Africa

**Editor: Alison Joubert**

## Authors:

Alison Joubert  
Theodor Stewart  
Leanne Scott



*University of Cape Town*

Alison Gilbert  
Ron Janssen  
Marjan van Herwijnen



*Vrije Universiteit, Amsterdam*

Jossette Mathee  
Linda de Vries



*University of the Western Cape*

## With additional contributions from:

**Hawston community workshops:** Annie Booie, John Prins, Jakobus JDC Swart, Paul Wyngaard, Richard Geweldt, Adam Meyer, Belinda Hess, Hans Montague, Riaan J Erwee, Calvin Hendricks, Hendrick Booie, Hendrika Johannes, Salie Cyster, Rosie Swartland, Robert Groenewald, Yeshuo Sias

**Hawston local knowledge:** Solomon Gillion, Hans Montague, Stephan Francois Smuts, Jakobus Gillion, Adam Meyer, Ernest Raaff, Jerome Figaji, Hilton Marais, Mervin Mathee, Roger Swart, Tyron Fisher.

**Kalk Bay community workshops:** Tony Trimmel, Jacobus Poggenpoel, Sulaiman Achmad, Edriees Manuel. Local knowledge: Jacobus Poggenpoel, Edriees Manuel.

**Ocean View community workshops:** Charles America, Kevin Daniels, Matthews May, Stanley Williams, Peter Melvin May, Donovan Williams, Johannes Edwards, Devina Christians, Gershon Hayward, Phillip Sanders, Mark Daniels, Achmat Davis, Japie Britz, Heinrich Stoffels, Alexander Louw, Sharon van Sittert, Charmaine Daniels.

**Marine and Coastal Management workshops:** Steve Lamberth, Horst Kleinschmidt, Shamera Daniels, Shaheen Moolla, Danie van Zyl, Rob Tarr, Andy Cockcroft, Sven Munkejord, Craig Smith, Chris Wilke.

**Marine and Coastal Management information:** Danie van Zyl, Alan Boyd, Steve Lamberth.

*Photo: Alan Boyd*



# Acknowledgements

This project was funded by **The Poverty Reduction and Environmental Management (PREM)** programme, an Institute for Environmental Studies (IVM) initiative, funded by the Directorate General of International Cooperation: Ministry of Foreign Affairs of the Netherlands.

The team would like to thank all the **workshop participants**.

We would also like to acknowledge the facilitators of the entrepreneurship and business skills training workshops run with schoolchildren in Hawston as part of this project. The facilitators were: **K. Lincoln Pilane, C. Lion, A Buys** and **K Ramontja** all from University of the Western Cape.

We would like to thank **Steve Lamberth** (Marine and Coastal Management) for his advice during this project.

We would like to acknowledge others who generously gave time and information including Moenieba Isaacs (Researcher UWC), Merle Sowman (Researcher EEU, UCT), Andy Johnston (Artisanal Fishers Association), Danie van Zyl (Researcher, MCM), Alan Boyd (Researcher, MCM), Pat Stacey (Kalk Bay harbourmaster, MCM).



## Table of Contents

<b>Acknowledgements</b> .....	<b>i</b>
<b>Figures</b> .....	<b>vi</b>
<b>Tables</b> .....	<b>viii</b>
<b>Boxes</b> .....	<b>viii</b>
<b>Glossary and Acronyms</b> .....	<b>ix</b>
<b>1. Introduction and approach</b> .....	<b>1</b>
1.1 Fisheries, poverty and politics in South Africa .....	1
1.2 Research objectives, approach and methods .....	4
1.3 Framework: Multi-criteria decision analysis .....	6
1.4 Approach: Action research .....	8
1.4.1 Evolution of action research.....	9
1.4.2 Action research: Pros, cons and cautions.....	9
1.4.3 Action research within this project .....	10
1.5 Structure of report.....	10
<b>2. Review of fishing rights allocation</b> .....	<b>11</b>
2.1 Rights allocation systems and processes internationally .....	11
2.2 The political and institutional context of the allocation of fishing rights in South Africa .....	12
2.2.1 The 2001 rights allocation system .....	16
2.2.2 Determining the TAC/TAE, the share of different sectors and allocation of the TAC/TAE .....	18
2.3 The resource management context: Notes on four South African fisheries .....	19
2.3.1 Hake.....	19
2.3.2 Linefish .....	20
2.3.3 West coast rock lobster.....	21
2.3.4 Abalone.....	23
2.4 The social context of South African fisheries: Notes on three communities.....	27
2.4.1 Hawston town and fisher community.....	28
2.4.2 Kalk Bay village and fisher community .....	33
2.4.3 Ocean View village and fisher community.....	34
2.5 Summary and conclusions .....	35
<b>3. Interaction with fishers: Local knowledge and training as tools for empowerment and fisheries management</b> .....	<b>39</b>
3.1 Aspects of sustainability .....	39
3.1.1 Environment – sustainable resource stocks .....	39
3.1.2 Economics – sustainable resource use.....	41
3.1.3 Society – sustainable users .....	41
3.2 Interaction with fishers: The value of local knowledge (west coast rock lobster) in management and empowerment .....	43
3.2.1 Introduction .....	43
3.2.2 Management and history of the west coast rock lobster fishery .....	43
3.2.3 West coast rock lobster biology.....	44
3.2.4 Good news and bad news for fishers and west coast rock lobster .....	46
3.2.5 Survey method.....	46
3.2.6 Results.....	47
3.2.6.1 Environmental .....	47
3.2.6.2 Economic.....	49
3.2.6.3 Social .....	49
3.2.7 Discussion and Conclusion.....	50
3.3 Interaction with communities: Skills and training needs for empowerment of fishers .....	51
3.3.1 Hawston grade 11 students.....	52
3.3.2 Informal discussions .....	53
3.3.3 MCDA “post-it” session .....	53
3.3.4 Conclusions and recommendations .....	53
3.4 Summary and conclusions: Empowerment and co-management .....	55

<b>4. The current allocation system.....</b>	<b>57</b>
4.1 Description of the allocation process.....	57
4.2 Analysis of criteria and weights .....	58
4.2.1 <i>Hake deep sea trawl, longline and handline</i> .....	58
4.2.2 <i>Traditional Linefishery</i> .....	59
4.2.3 <i>West Coast Rock Lobster</i> .....	59
4.2.4 <i>Abalone</i> .....	60
4.3 Analysis of the allocation spreadsheets.....	60
4.3.1 <i>Data entry and spreadsheet design</i> .....	60
4.3.2 <i>Consistency of relationship between score and likelihood of getting a right</i> .....	61
4.4 Summary and conclusions .....	62
4.5 Annexure to Chapter 4: Applicant’ scores and rights granted in hake handline, traditional linefish, west coast rock lobster and abalone.....	63
<b>5. Interaction with stakeholders: Improving the allocation system.....</b>	<b>73</b>
5.1 Approach: MCA workshops and action research .....	73
5.2 Identification of criteria, development of value trees, refinement of process. ....	73
5.2.1 <i>Hawston</i> .....	73
5.2.2 <i>Kalk Bay</i> .....	77
5.2.3 <i>Ocean View</i> .....	79
5.3 Comparison of the issues of concern of the three communities .....	82
5.4 Summary and comparison of the scores and weights of the three communities .....	83
5.4.1 <i>Weights of criteria</i> .....	83
5.4.1.1 Overall .....	83
5.4.1.2 “Economic” criteria .....	84
5.4.1.3 “Transformation” criteria.....	84
5.4.1.4 “Equitability” criteria.....	85
5.4.2 <i>Ranking of “performance” levels of criteria: Scoring applicants for each criterion</i> .....	85
5.4.2.1 HDP status.....	86
5.4.2.2 Vessel access .....	86
5.4.2.3 Previous involvement .....	86
5.4.3 <i>Overall ranking of applicants: ‘Holistic’ ranking</i> .....	87
5.4.3.1 Comparison of the ranking obtained from applying the scores and weights to the ‘holistic’ ranking.....	88
5.4.4 <i>Conclusions</i> .....	89
5.4.5 <i>Interactions with Marine and Coastal Management</i> .....	89
5.5 Comparison of fisher and MCM issues and criteria and the development of a combined value tree.....	93
<b>6. Design of a new allocation process .....</b>	<b>97</b>
6.1 Allocation procedures and systems .....	98
6.1.1 <i>Current system</i> .....	98
6.1.2 <i>Proposed system</i> .....	98
6.1.3 <i>Graphical analysis</i> .....	100
6.1.4 <i>Complementary analysis</i> .....	100
6.1.5 <i>Summary of procedural recommendations</i> .....	102
6.2 The allocation procedure in practice .....	102
6.3 Software support.....	107
6.4 Decision support system.....	107
<b>7. Summary and recommendations.....</b>	<b>113</b>
7.1 The potential role of local knowledge in resource management .....	113
7.2 Empowerment of fishers for more successful application for and use of fishing rights.....	113
7.3 Development of simple, transparent and defensible allocation system .....	114
7.3.1 <i>Analysis of previous rights allocation</i> .....	114
7.3.2 <i>Interactions with stakeholders to develop a new rights allocation system</i> .....	114
7.3.3 <i>Development of a new allocation system and prototype DSS</i> .....	115
7.4 Overall recommendations for the allocation process.....	116
7.5 Future research needs .....	116

<b>References</b> .....	<b>119</b>
<b>Appendices</b> .....	<b>125</b>
<b>APPENDIX 1: HAWSTON</b> .....	<b>127</b>
<u>Questionnaire</u> - first Hawston meeting (15/09/2003) .....	127
<u>Post-it session responses</u> - third Hawston meeting, Hawston library (26/11/2004) .....	128
<u>Attendees</u> - first, second and third Hawston meetings .....	130
<b>APPENDIX 2: KALK BAY</b> .....	<b>131</b>
<u>Post-it session responses</u> - first Kalk Bay meeting (23/02/2004) .....	131
<u>Attendees</u> - first Kalk Bay meeting (23/02/2004) .....	132
<b>APPENDIX 3: OCEAN VIEW</b> .....	<b>133</b>
<u>Value tree</u> from post-its: Aims and objectives (Qu 1) and Criteria (Qu 2), first Ocean View meeting (26/04/2004) .....	133
<u>Process recommendations</u> , first Ocean View meeting (26/04/2004) .....	133
<u>Post-it session responses</u> - first Ocean View meeting (26/04/2004) .....	134
<u>Attendees</u> (Ocean View 26/04/2004) .....	137
<b>APPENDIX 4: MARINE and COASTAL MANAGEMENT (MCM)</b> .....	<b>138</b>
<u>Notes</u> - from Stage 3: Scoring systems and value functions (MCM 27/05/2004) .....	138
<u>Post-it session responses</u> - third MCM meeting (27/05/2004) .....	139
<u>Attendees</u> - third MCM meeting (27/05/2004) .....	142
<b>APPENDIX 5: Local Knowledge</b> .....	<b>143</b>
<u>Local knowledge questionnaire</u> .....	143
<u>Local knowledge respondents: Questionnaire 1: Hawston/Hermanus</u> .....	146
<u>Local knowledge responses</u> .....	146

## Figures

Figure 1.1. Map showing the location of the study. Hawston, Kalk Bay and Ocean View are the three communities who participated in the project, while the relevant government department is situated in the centre of Cape Town. ....	2
Figure 2.1. The rights allocation process (from DEAT 2002a) .....	17
Figure 2.2. TAC and the number of quota holders in the deep sea trawl hake industry (data from Japp (2001), except for 2002 (from DEAT 2002c).....	20
Figure 2.3. TAC and numbers of west coast rock lobster rights-holders over the years. Numbers exclude subsistence permits for 1999-2001 (see Table 2.5).....	22
Figure 2.4. Number of abalone quota holders and TAC. Numbers for 1998-2001 include subsistence permit holders. Numbers for 2003/04 exclude appeals.....	26
Figure 2.5. Abalone TAC and quotas held by some (a) processors and (b) limited commercial, full commercial (2001), legal entity (2004) in the Hermanus / Hawston area since 1996. Quota for processors for 2003/04 are estimates (see Table 2.11) and the quota given to OCAD in 1996 was unavailable.....	32
Figure 3.1. A comparison of (a) modern, centralised fisheries management; (b) institutional co-management; and (c) empowering co-management (Raakjær-Nielsen et al., 2004). ....	42
Figure 3.2. Catch data for the west coast rock lobster since 1900. ....	44
Figure 3.3. Summary of the information gleaned regarding seasonal changes in the Hawston/Hermanus area also showing the fishers' proposed fishing season. ....	50
Figure 4.1. Criteria and weighted scores (normalised to sum to 1) for the allocation of rights in the various hake sectors. "Previous"= previous rights-holders, "new"= potential new entrants, CEA=Customs and Excise Act. ....	58
Figure 4.2. Criteria and weighted scores (normalised to sum to 1) for the traditional linefish allocations in 2003.....	59
Figure 4.3. Weighted scores given to west coast rock lobster full and limited commercial applicants in 2001 and in to limited commercial applicants east of Cape Hangklip in 2004. CEA=Customs and Excise Act.....	59
Figure 4.4. Criteria and weighted scores (normalised to sum to 1) allocated to different criteria (or criteria groups) for (a) the 2001-2003 abalone allocation and (b) the 2004-2014 abalone allocation.....	60
Figure 4.5. Total scores to hake handline applicants (2002-2005), whether a right was granted (square), whether the decision was appealed and unsuccessful (lower triangle) and if the appeal were successful (upper triangle) - (there are only two successful appeals). The "extra 17" were granted rights in a separate decision, with no reason given....	64
Figure 4.6. Total scores for traditional linefish full commercial applicants (2003) and whether a right was granted (square). There were apparently no full commercial appeals. MD=material defects, IL=improper lodgements, ER=essential requirements. These latter were not scored, but are included here as indicators for exclusions and to highlight inconsistencies. ....	65
Figure 4.7. Total scores to traditional linefish limited commercial applicants (2003), whether a right was granted (square), whether the decision were appealed and unsuccessful (lower diamond) and if the appeal were successful (upper diamond) (note that appeals were also for quantum). MD=material defects, IL=improper lodgements, ER=essential requirements. Excludes exemptions.....	66
Figure 4.8. Total scores to west coast rock lobster full commercial, previous rights-holder applicants (2002-2005), whether a right was granted (square), whether the decision were appealed and unsuccessful (triangle) and if the appeal were successful (circle). Note that appeals are also for quantum. The applicants on the bottom right were not in the original list of applicants, but in the list of appeals.....	67
Figure 4.9. Total scores to west coast rock lobster full commercial, new entrant applicants(2002-2005), whether a right was granted (square), whether the decision were appealed and unsuccessful (lower triangle) and if the appeal were successful (upper triangle). Appeals are also for quantum. ....	68
Figure 4.10. Total scores for the west coast rock lobster limited commercial rights allocation (2002-2005) <u>Zone C</u> only, whether a right was granted (square) whether the decision was appealed (circle) and whether the appeal were successful (triangle). Applicants to the right of 8891 were excluded because of potential paper quota risk, but others were given a negative score, remained in the process, and in some cases were granted rights (e.g. the cluster between 14054 and 14100.....	68
Figure 4.11. Points allocated for the criteria for the west coast rock lobster limited commercial east of Cape Hangklip, Hermanus area, allocation (2003/2004). Only material defects, improper lodgements and essential requirement failure applicants are not shown. Paper quota risk (PQR) was not given a score, but acted as a veto, usually before any scoring took place, but for those shown here, after scoring. Appeals were unavailable. ....	69
Figure 4.12. Total scores for abalone full scale commercial applicants (2001), rights granted and appeal (one). Two new entrants granted rights are also shown (4019 had the highest new entrant score, 5723 was ranked 28th, but was commented to be considered as a previous rights-holder). 15313 was not listed on the new entrant or previous rights-holder lists. ....	69
Figure 4.13. Total scores for abalone limited scale commercial applicants (2001), rights granted and appeals. Applicants are arranged from minimum to maximum score in zones. Note that appeals may also be for quantum.....	70



Figure 4.14. Total scores for abalone diver applicants (2004), rights granted (square). Applicants are arranged from minimum to maximum score in zones, apart from those excluded for improper lodgements, material defects and essential requirement failures as shown. Appeals were unavailable. ....	71
Figure 4.15. Total scores for abalone legal entity applicants (2004), rights granted (square). Applicants are arranged from minimum to maximum score in zones, apart from those on the left excluded for improper lodgements, material defects and essential requirement failures as shown. Appeals were unavailable. ....	71
Figure 5.1. A post-it session in progress at the third Hawston meeting (photo: Leanne Scott). ....	74
Figure 5.2. Post-it session from the third Hawston workshop after the grouping of like issues (photo: Leanne Scott). ....	74
Figure 5.3. Post-it session from the third Hawston workshop after points were allocated to groups (red spots) (photo: Leanne Scott). ....	75
Figure 5.4. Cognitive map developed from the first two Hawston meetings. ....	75
Figure 5.5. Value tree extracted from inputs at the three Hawston meetings. ....	76
Figure 5.6. Points (converted to weights) allocated by the Hawston workshop to (left) fundamental concerns (Question 1) of fishers in Hawston community and to (right) what the aims of MCM should be (Question 2A). ....	77
Figure 5.7. Cognitive map derived from first Kalk Bay meeting (23 February 2004). ....	78
Figure 5.8. Value tree developed from the first Kalk Bay meeting (23 February 2004). ....	78
Figure 5.9. Cognitive map derived from first Ocean View meeting (26 April 2004). ....	80
Figure 5.10. Value tree developed from the first Ocean View meeting (26 April 2004). ....	80
Figure 5.11. Average weights given to the criteria representing each of the four groups of criteria (Ecosystem health=Compliance, Transformation=HDP status, Economic=Knowledge, skill, Equitability=Previous involvement). ....	84
Figure 5.12. Average weights given to the economic criteria. ....	84
Figure 5.13. Average weights given to the transformation criteria. ....	85
Figure 5.14. Average weights given to the equitability criteria. ....	85
Figure 5.15. Average ranks to HDP status levels (although taking an average of a rank is not valid this does at least give some indication of the trends). ....	86
Figure 5.16. Average ranks to vessel access levels VO=vessel owner, PA=purchase agreement, ChA=charter agreement, CA=catching agreement (the average of ranks indicates trends, but is not strictly a valid operation). ....	86
Figure 5.17. Average ranks to previous involvement levels (although taking an average of a rank is not valid this does at least give some indication of the trends). Slightly different levels had to be used in the two communities (limited commercial rights replaced experimental rights in Ocean View). ....	87
Figure 5.18. Value trees for west coast rock lobster (a) limited commercial, (b) full commercial and (c) east of Cape Hangklip limited commercial allocations extracted from MLRA and MCM documentation. ....	90
Figure 5.19. Value tree developed during and after the third meeting with MCM (27/05/2004). ....	91
Figure 5.20. Weighted scores (calculated from Table 5.8) given during the workshop for the three criteria used in the allocation of west coast rock lobster east of Cape Hangklip compared to the scores used in the actual allocation. ....	92
Figure 5.21. Weights derived for the three criteria used in the east of Cape Hangklip lobster allocation from the Hawston/Hermanus and Ocean View fisher workshops, the MCM workshop, and those actually used in the allocation. ....	96
Figure 6.1. Value tree for the west coast rock lobster east of Cape Hangklip allocation. ....	103
Figure 6.2. Weights from the MCM workshop for the performance criteria for the east of Cape Hangklip allocation. (see also Table 5.8 and Figure 5.20). ....	104
Figure 6.3. Weighted contribution of each criterion for the east of Cape Hangklip allocation (applicants in Table 6.1 are the leftmost twenty). Applicants are ranked in the same order as Figure 6.4 for later comparison; i.e. from highest to lowest in zones in order of total scores without HDP scores. HDP status has been changed from the original for illustrative purposes. For the initial allocation example, those scoring higher than 55 were granted a right. ....	106
Figure 6.4. Results of the goal programming routine run (top) with a goal of 30% HDP and (bottom) with a goal of 80% HDP. ....	106
Figure 6.5. Basic architecture of the DSS and order of proceeding. ....	108

## Tables

Table 2.1. Important events in South African fisheries management. ....	15
Table 2.2. Summary of hake, traditional linefish, west coast rock lobster and abalone for 2001 (data primarily from DEAT 2002a). ....	19
Table 2.3. The number of quota holders in the various hake sectors in the last two allocations and the proportion of TAC allocated (from DEAT (2002b,c) for 2002-2005 and Japp (2001) for 2001). DST = Deep sea trawl. ....	20
Table 2.4. Number of A and B licences issued to boats for various years (data from DEAT 1994 and 1998) and number of limited and full commercial rights-holders in the 2003 allocation (DEAT 2003a). ....	21
Table 2.5. Number of west coast rock lobster rights-holders over the years (data from Hersoug and Holm (2000), Pollock (1986), DEAT 2001a, 2003b, DEAT media releases, Wesgro 2001) ....	23
Table 2.6. Abalone TAC (in tons) over the years (Sources: Sauer et al. 2003a, DEAT 2001b, 2004a. Where sources disagree, the most recent DEAT reference was taken as the authoritative source). ....	24
Table 2.7. Events and numbers of abalone quota holders (from Sauer et al. 2003a, DEAT 2001b, 2003c,d, 2004a, Stuttaford 1996). ....	25
Table 2.8. Levies and application fees for abalone. ....	27
Table 2.9. Licences and rights-holders over recent years in Hawston/Hermanus areas. WCRL=west coast rock lobster. ....	29
Table 2.10 Abalone processors since 2000/01. WCRL=west coast rock lobster. ....	30
Table 2.11. <u>Some</u> abalone quota holder organisations in the Hawston / Hermanus area and their quotas (in kg) since 1996 (sources Sauer et al. 2003a and DEAT 2001b, 2004a). The 2001/02 full commercial west coast rock lobster quotas to these organisations are also shown. LE=legal entity, P=Processor, WCRL=west coast rock lobster. ....	31
Table 2.12. Boat licences and rights-holders over the recent years in Kalk Bay. WCRL=west coast rock lobster. ....	34
Table 2.13. Rights-holders since 2001 in Ocean View (or area). Witsand is the launching site often used by Ocean View fishers. WCRL=west coast rock lobster. ....	35
Table 3.1. Summary of comments for Hawston/Hermanus area regarding female egg-bearing states, female to male composition of catch, undersize to size composition of catch, general condition and on- off-shore movements. ....	48
Table 5.1. Frequency of responses regarding criteria for allocation (n=43) from the first Hawston meeting questionnaire (15/09/2003). ....	73
Table 5.2. Suggestion regarding the allocation process and general approach arising from the Hawston meetings. ....	77
Table 5.3. Suggestion regarding the allocation process boat regulations arising from the first Kalk Bay meeting (23 February 2004). ....	79
Table 5.4. Suggestion regarding the allocation process and general approach arising from the first Ocean View meeting (26 April 2004). ....	81
Table 5.5. Ten hypothetical applicants presented to the participants. ....	87
Table 5.6. Rank orders given by participants to 10 hypothetical applicants. ....	88
Table 5.7. Overall scores and ranks of the ten hypothetical applicants calculated using the weights given in the first exercise and scores derived from the ranks given in the second exercise. ....	88
Table 5.8. Scores and weights from the workshop for the west coast rock lobster east of Cape Hangklip allocation. ....	92
Table 5.9. Comparison of criteria from communities and MCM. LC= limited commercial, FC = full commercial, WCRL = west coast rock lobster, ECH = east of Cape Hangklip. ....	94
Table 6.1. Performance of a selection of the applicants for the east of Cape Hangklip west coast rock lobster allocation using the scores and weights from Table 5.8. Please note that the data are real except that HDP status has been changed for later illustrative purposes. ....	103
Table 6.2. Formulation of the goal programming (Solver) problem in Excel. ....	105

## Boxes

Box 2.1. Summary of the relevant features of the Marine Living Resources Act (RSA 1998). ....	13
Box 6.1. The proposed allocation protocol. ....	97

## Glossary and Acronyms

Black	Used either to explicitly refer to people of African origin or, to mean all people not of European descent (i.e. including coloured and Indian people for example).
Coloured	People of mixed racial origins (e.g. black and white, Malay and white).
Operation Neptune	A joint law enforcement operation, set up specifically to target poaching, between DEAT, the South African Police Services, the National Defence Force and some non-governmental organisations
Paper Quota	A right / quota which is not utilised by the right-holder, but is sold or transferred to someone else in exchange for a short term financial gain, or a “front” which hides the real beneficiaries or which allows an entity to obtain more than one allocation. These are often associated with HDP applicants being fronts for ‘non-transformed’ applicants.
West coast rock lobster	( <i>Jasus lalandii</i> ). Note that rock lobsters (or spiny lobsters) are not ‘true’ lobster in that they do not have their characteristics enlarged claws. Rock lobsters are also sometimes called crayfish, although other reserve for freshwater crayfish.
CEA	Customs and Excise Act
DEAT	Department of Environmental Affairs and Tourism (the department responsible, through its branch of Marine and Coastal Management, for fisheries rights allocation)
MCM	Marine and Coastal Management. The branch of DEAT responsible for fisheries related research, monitoring and enforcement as well as for fisheries rights allocation.
MLRA	Marine Living Resources Act of South Africa, Act No. 18 of 1998.
MPA	Marine Protected Areas
TAC	Total Allowable Catch. The total amount of a certain species, determined by MCM, which can be caught in a particular season.
HDP	Historically Disadvantaged Person. a person who belongs to a group that suffered racial discrimination before 27 April 1994. The term is also sometimes used to include those who suffered gender discrimination.
SME	Small and medium enterprises (in this document taken to encompass SMMEs or small, micro and medium enterprises)



# 1. Introduction and approach

## 1.1 Fisheries, poverty and politics in South Africa

In many developing countries, the government serves as the main apparatus for attaining the goals of growth and development. The South African government faces the additional task of transformation of the economy and society from the apartheid past. Transformation is a term used to mean a change so as to better reflect the demographics of South Africa and to better distribute resources amongst the people of South Africa. Often, in the primary sectors such as mining and fishing, resources are in the hands of a relatively few big companies. These resource-based sectors in South Africa are characterised by poverty-stricken communities with low skills levels (despite the fact that the large companies, at the same time, provide stable employment to many). The goal of transformation in these sectors is not straightforward to achieve, given existing traditional livelihoods, legal issues around existing rights, and the realities of high unemployment levels.

The fishing sector is one of many in the process of being transformed in South Africa and shares many of the characteristics described above, but has its own unique set of challenges. (1) Access to fishing and fishing rights was not, in fact, prohibited or limited by apartheid. However, the economic consequences of apartheid may have limited the degree to which people could take advantage of their rights to invest and prosper and the lack of freedom of movement may have limited the degree to which people could settle in fishing or coastal communities. (2). New legislation together with the dire state of many resources means that access must be limited. Linefishing and netfishing were for example, until recently, open access permit systems with little or no control (3) “Transformation” is interpreted as meaning changes to reflect the demographics of the country rather than a region. The population of South Africa is predominantly “black”, with relatively small populations of “coloured”<sup>1</sup> and “white” people<sup>2</sup>. Black and coloured people are considered as “historically disadvantaged persons” (HDPs) and therefore both groups are considered in transformation goals, but the emphasis is increasingly on reflection of percentage representation of the different groups, rather than simply of HDP status (i.e. more black representation is desired, in order to reflect the higher numbers). However, only in Kwazulu-Natal is there a significant tradition of marine resource use by black people. In the Northern, Western and Eastern Capes, fishing has historically and almost exclusively (apart from small-scale Khoi-San use) been associated with white and coloured people (and therefore only really been of significance since colonisation). Thus, transformation, if taken to its logical conclusion in these latter provinces, would remove rights or access from coloured people in order to increase access of black people.

Fishing, worth about R3 billion in 2000 (Wesgro 2001), accounts for only about 0.5% of gross domestic product, but has drawn more attention than most other sectors (the brief background to fishing given here is expanded in Chapter 1). Our project concentrates on the Western Cape fisheries (which accounts for about 90% of the total South African fisheries value (Wesgro 2001)) and fishing communities. Quite different species, communities and industries dominate fisheries in the Eastern Cape and Kwazulu-Natal. Commercial fishing peaked in the 1960s and 1970s, but stocks have dwindled in many fisheries since then and management has increased in the form of minimum size limits, seasons, gear restrictions, company and individual quotas (starting in the late 1970s).

Up until the very recent past (the early, mid or late 1990s depending on the fishery), there tended to be a relatively small number of relative large fishing companies in the commercial industry and these tended to be white dominated. However, fishing as a whole was not exclusively white. For example, in 1994 (i.e. before the change to democracy), 0.75% of the total allowable catch (TAC) for quota managed fisheries was allocated to HDPs, of

---

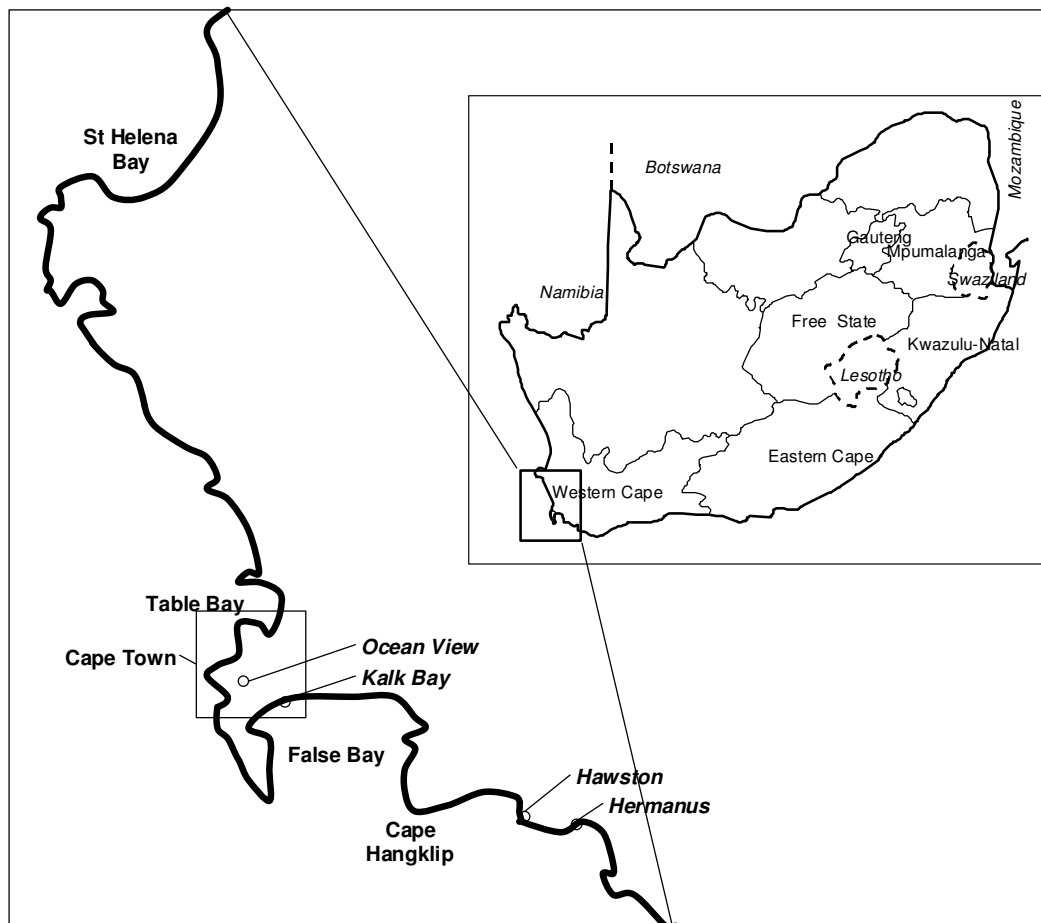
<sup>1</sup> People of mixed racial origins (e.g. black, Malay or Khoisan and white). Although, during the “struggle” years, the term “Black” included anyone not of European descent, in current transformation terms, and for sake of clarity in this document, it is used exclusively to refer to people of purely African origin.

<sup>2</sup> There are also small populations of people of other ethnic origins (e.g. Khoi-San, Indian other Asian groups), but it is not necessary, for the purposes of this document to refer to these explicitly.

the 2700 registered commercial fishing boats, 7% were HDP-owned and of the 4000 fishing licences issued, 6% were to HDPs (Isaacs 1998) (the ‘HDPs’ in these statistics being primarily coloured).

In parallel with this commercial sector development, the small-scale (permit-based) and “informal” (no permit) sectors developed from the 1800s. In the latter sectors (mainly coloured in the Western Cape), fishers were operating mainly in the less capital intensive, more accessible fisheries (e.g. linefishery, west coast rock lobster, abalone, beach seine and gillnets). Many of these fishers have been involved in fishing for generations: grandfathers and great-grandfathers were fishers, operating from villages such as Kalk Bay, Simonstown, Gansbaai and Elandsbaai which have traditionally been associated with fishing (the larger fishing companies also have a long history, sometimes founded in the days of whaling). While some small-scale fishers became rich on the proceeds, others made a pittance and barely survived from season to season. Many continued to fish for a living during the apartheid years, but due to lack of access to education and other training opportunities, particularly lack of access to capital, few “non-whites” could flourish, enter or survive in the fishing industry and the fishing communities were generally places of poverty and high unemployment.

The large companies built up a degree of co-management with the government (Hutton *et al.* 1999) and this, together with the limited number of participants, helped to keep some fisheries reasonably stable (e.g. deep-sea hake). However, some fisheries have faced continued instability due to stock declines caused by environmental changes (e.g. west coast rock lobster, abalone) and/or extreme levels of poaching or overfishing (e.g. west coast rock lobster, abalone, linefish).



**Figure 1.1.** Map showing the location of the study. Hawston, Kalk Bay and Ocean View are the three communities who participated in the project, while the relevant government department is situated in the centre of Cape Town.

In response to plight of the fishing communities, government introduced 'community quotas' for west coast rock lobster and hake in the late 1980s and early 1990s, respectively<sup>3</sup>. The Quota Board, responsible for granting quotas or rights also tried to broaden access to the fisheries around this time. This process accelerated with the coming of democracy in 1994. New fisheries legislation was adopted in 1998 (the Marine Living Resources Act, Act no 18 of 1998), and after some years of chaos a new allocation system in 2001. In the macro-economic context, the transition from the apartheid economy to a transformed economy in South Africa has been characterised by the government's focus on participation in the mainstream economy. This is reflected in the approach to management and transformation of fisheries where different categories of fisher have been defined: full commercial, limited commercial and subsistence. The first category loosely corresponds to the government's commitment to economic growth as envisaged by the GEAR (growth, employment and redistribution) policy and the second to the RDP (reconstruction and development programme) (Isaacs 2003) which had been the earlier emphasis of the post-1994 government. However, even within the limited commercial category, during the 2001 to 2005 allocations, fishers were expected to demonstrate that they were effective businesspeople (e.g. by having adequate marketing plans, showing "business acumen" and financial viability etc.). (Not all sectors of limited commercial had this as a criterion e.g. the gillnet- and beach seine sectors did not). Subsistence permits were briefly allocated to west coast rock lobster and abalone in the Western Cape but the subsistence sector is mainly relevant in the other maritime provinces.

With the coming of democracy and with the changes in policy, there were high levels of expectation of gaining access to fishing rights, but many were disappointed and rightly or wrongly accused government and others of mismanagement and corruption. Levels of poaching of species such as abalone sky-rocketed (because of high demand and prices), poverty in fishing communities seemed to worsen and the communities became split into camps of rights-holder/non-rights-holder or poacher/non-poacher.

The context of this project, therefore, is one of a high degree of change in political and allocation systems in recent years. This has been accompanied by (a) high expectations and high levels of disappointment and mistrust, (b) high levels of overexploitation in some fisheries and consequent plummeting total allowable catches and individual quotas. Therefore, in some cases, poverty worsened because of direct loss of access to food as well as due to loss<sup>4</sup> of fishing rights or access. In some cases this led to criminal behaviour (poaching) and potential worse criminalisation through the links of the poaching trade to gangsters / Triads in the drugs trade. This in turn leads to breakdowns in community structures and stability.

We have thus a juxtaposition of overexploitation of marine resources, poverty, and a lack of skills and community cohesion. In this context, therefore, it is imperative to accompany new policies with adequate support to communities and previously disadvantaged individuals<sup>5</sup> so that they can acquire the skills needed to participate in the economy and deal with or respond to changes in management approach, including the allocation process.

A just and broadly acceptable process for allocating fishing rights, and the empowerment of local peoples to make effective and efficient use of these rights, is thus critical both to the protection of the fish stocks and related ecosystems and to the long run alleviation of poverty in these areas.

---

<sup>3</sup> These were generally failures for various reasons. See Section 2.2.

<sup>4</sup> Loss encompasses a number of different things: (a) Because the new allocation system was introduced for some fisheries where a quota-based system or effort-limitation had not previously existed, people felt that their rights were removed, although technically speaking they did not have rights before, but operated with permits, informally or under 'exemptions', (b) because of changes in policy and system some got rights for a short period of time, but did not qualify in a next allocation round, (c) some felt that they should have a 'human right' to catch fish without having to apply for a right from government, (d) some felt that they were owed restitution due to all the years of apartheid, but this was never a basis of the post-1994 allocation systems.

<sup>5</sup> See glossary for "historically disadvantaged person" and acronym HDP.

## 1.2 Research objectives, approach and methods

Two levels of decision or policy making are relevant to this project. The first refers to decisions by the state, as represented by Marine and Coastal Management (MCM) a branch of the Department of Environmental Affairs and Tourism (DEAT). Their decisions relate to the allocation of fishing rights. Legislation lays down a variety of environmental, socio-economic and political goals that need to be met, and there is concern that a structured and transparent process for achieving these ends needs to be developed. The second level of decision making relates to those in disadvantaged communities who might apply for fishing rights. Rights are (generally) allocated to individuals or registered companies and not to communities. Over the last 10 years with the changes in policy, communities have formed and joined various organisations (ranging from Fishing Forums, various fishing associations through co-operatives to Closed Corporations and Proprietary Limited companies) to either improve their chances of successfully applying for rights, or to improve the within community identification of “bona fide fishers”, or to increase the spread of benefits within communities. These organisations have had varying degrees of success, but, generally speaking, it may be in the interests of members of a communities to co-operate to some degree in rights applications. Furthermore, those allocated rights need to develop strategies for the efficient exploitation of these rights.

With this in mind, the following objectives were identified as part of the original project proposal:

1. To integrate resource economics and decision analysis into a comprehensive systems-oriented approach to rights allocation;
2. To develop transparent procedures and associated decision support systems for the allocation of fishing rights particularly in respect of applicants from formerly disadvantaged fishing communities;
3. To establish mechanisms whereby applicants from such fishing communities may be empowered effectively to compete for fishing rights allocations of adequate size to meet their needs;
4. To develop entrepreneurial skills in these communities to manage the allocations made to them; and
5. To combine these aspects in order to promote sustainable use of fish stocks such that the integrity of their ecosystems are not compromised.

Based on these objectives, three main components of the project can be isolated:

- *Allocation*: improving the approach to allocation of fishing rights
- *Empowerment*: improving the representation of community interests in the allocation process and their ability to successfully apply for and utilise their rights.
- *Resource management*: assessing the use of local knowledge in the refinement of fisheries management approaches (e.g. the timing of fishing seasons). This component also has an empowerment aspect.

At the outset, it was recognized that the achievement of the objectives and the integration of the components would require a broad interdisciplinary approach to the problem, with inputs from the social sciences, environmental economics, decision analysis and information technology. This recognition led to three broad thrusts in undertaking the research, namely:

- Interaction (workshops, informal discussions and questionnaires) with community representatives, to obtain an understanding of their goals and of their perceptions and knowledge of the ecosystems within which they worked;
- Interaction (workshops and informal discussions) with officials from the Marine and Coastal Management (MCM) directorate of the Department of Environmental Affairs and Tourism, in order to gain understanding of national goals, of the manner in which these were interpreted, and of the practical and political problems of implementation;
- Critical evaluation of historical rights allocations, viewed in the light of expressed goals, and the development of new support systems for this process in the future.

Each of these three thrusts is elaborated in a little more detail below.

**Review of the rights allocation process.** Before the commencement of the project, MCM had already instituted formal procedures for evaluating and comparing applicants for fishing rights. These had been recorded in spreadsheets, and subjected to independent audit. The first step in the research was thus to analyze what



had been done, and the degree of congruence with both stated goals and the expressed aims of community representatives.

**Interaction with communities.** At the outset of the project, it was decided to concentrate on a limited number of fishing communities in the Western Cape. Of the three chosen, Hawston is a small community some 120 km from Cape Town, while Kalk Bay and Ocean View are suburbs of Cape Town (although geographically relatively distant from the main metropole) (see map, Figure 1.1). It had initially been hoped that each of the communities (or “study frames”) selected for study would be associated with essentially single fisheries, as this might have simplified the analysis of results. It turned out not to be possible to find suitable single-fishery communities, however, and in fact it emerged that it was precisely the existence of traditional multi-fishery activities that was an important contributor to the problems. A number of fishing sectors are associated with these communities, but the more important ones for these communities are west coast rock lobster, abalone, hake handline (a recently established fishery) and traditional linefishing.

Formal workshops were conducted in each community, involving representatives who had been identified in earlier informal discussions. Time was given to participants to express or table views orally or in written form, after which formal brainstorming sessions, as described on pages 40-42 of Belton and Stewart (2002) (or in more detail by Ackerman and Eden, as Chapter 3 of Rosenhead and Mingers, 2001), were undertaken. These were of a relatively ‘low-tech’ variety, but suited the range of participants’ backgrounds well. Results were summarized in the form of ‘cognitive maps’ (e.g. Eden and Ackerman in Chapter 2 of Rosenhead and Mingers, 2001) and ‘value trees’ where possible for purposes of feedback to the communities and communication to MCM. A value tree is a hierarchical organization of objectives and criteria - see Chapter 5 of this report for practical examples of cognitive maps and value trees derived from the various interactions and Chapter 3 of Belton and Stewart (2002) for background to their formation.

In the case of the first study frame (Hawston), an additional exercise was undertaken in which questionnaires were administered by means of personal interviews, in order to obtain local information on the west coast rock lobster population dynamics, to be compared with conventional scientific results. This is described in more detail in Chapter 1 of the present report.

**Interaction with MCM.** Subsequent to a study of the Marine Living Resources Act (Act No. 18 of 1998), interviews and discussions were held with senior officials of MCM, in order to clarify interpretation and understanding of the legal and practical policy framework implied by the Act. This was followed up by a workshop (much along the lines of those conducted with the community groups) in order to develop a clear structure for management and policy objectives. Within these activities, value trees were developed and fed back to MCM officials for comment and agreement that these do represent the overall goals.

The analysis was conducted within the framework of the tools and principles of *multiple criteria decision analysis (MCDA)* (Belton and Stewart, 2002) or multiple criteria decision *making (MCDM)* using the approach of *action research*. Within the MCDA framework a two-phase approach was adopted. Firstly, implied value judgments inherent in the scoring systems were extracted and checked both for internal consistency, and for consistency with stated goals. Insights from the project led to proposals around the allocation process and recommendations for new procedures using principles of MCDA both to ensure internal and external consistency, and to provide more meaningful user interfaces (for both planners and those conducting reviews). Some of these procedures have been incorporated into a ‘demo’ database and spreadsheet-based decision support system. The action research approach took the form of undertaking MCDA workshops with the various stakeholders who provided their views on values and criteria which were later integrated by the researchers and refined by the participants. Some background to MCDA and action research and the outline of the approach followed are given in Sections 1.3 and 1.4, respectively.

### 1.3 Framework: Multi-criteria decision analysis

Multiple Criteria Decision Analysis is the branch of Management Science or Operational Research that deals with providing structured decision support to decision makers confronting problems in which there is a substantial level of conflict between achievements of different goals or objectives. In Belton and Stewart (2002, p. 2), we defined MCDA as “*an umbrella term to describe a collection of formal approaches which seek to take explicit account of multiple criteria in helping individuals or groups explore decisions that matter*”. There are three key elements inherent in this definition:

- The approaches are *formal*: Although people may often take multicriteria decisions by “seat-of-the-pants” flying, MCDA seeks to provide structured procedures to be followed, to ensure that all concerns are taken into account in an auditable manner.
- There must be a clearly identifiable *multiple criteria* component to the problem, i.e. some form of non-trivial conflict between different points of view, goals or issues that matter.
- The process is one of *exploring* alternative options: There is a recognition that there is not a single “right answer” which can be determined technocratically, but rather a set of difficult choices, usually involving trade-offs between different desirable goals, to which decision makers need to apply their minds in an informed manner.

Certain key elements can be recognized as characterizing or constituting MCDA. These are:

1. The objectives or goals are defined;
2. The distinct criteria used to judge goal achievement are identified explicitly in a problem structuring process;
3. Means of comparing alternative courses of action are developed and made explicit, separately for each criterion defined in the previous step;
4. The evaluations of alternative courses of action in terms of each criterion are aggregated across criteria to identify means by which the best overall satisfaction of goals can be achieved; this usually involves the establishment of some form of relative importance weights, the interpretation of which depends on the particular mode of aggregation used.

Within this general framework defining MCDA, at least three broad schools, or categories of approach have emerged, differing primarily according to the means by which (a) performance in terms of individual criteria are assessed, and (b) the methods of aggregation used. These broad schools are discussed at length in Belton and Stewart (2002) where more detail may be found, but in essence can be described as follows.

- *Value scoring or measurement*: Degree of achievement or level of performance of an alternative in terms of each criterion is assessed by means of a numerical score. The assessments may be based on an absolute scale anchored to two or more reference levels of performance, or may be derived by pairwise comparison of alternatives. The final aggregate evaluation is often (although not necessarily) based on a weighted sum or average of the scores according to each criterion.
- *Goal programming or reference point methods*: Target or aspiration levels are set for each criterion (usually in terms of more-or-less objective measures), so that the degree to which each alternative falls short of the targets or aspirations can be calculated. Aggregation is achieved by defining some form of (weighted) distance measure.
- *Outranking (pairwise comparison) methods*: Alternatives are compared with each other to give measures of relative performance in terms of each criterion. These comparisons are aggregated across criterion in order to identify (a) the degree of evidence favouring one alternative over another, and (b) the potential for preferences to be subject to a veto when there exist criteria for which one is very much worse than another.

MCDA in various forms has been applied to different aspects of fisheries management around the world, including for example, the setting of TACs, the evaluation of management options, and “optimum” fleet design (for a review see Mardle and Pascoe (1999)). Stewart (1988) experimented with various goal programming approaches to compare different TACs. Moloney and Johnston (2002) used a value measurement approach to compare different operational management plans (i.e. algorithms for deciding on TACs). The decision analysis technique of Bayesian networks was used by Peterson and Evans (2003) to evaluate different size limits for a

recreational fishery in order to try to achieve both “angler satisfaction” and ecological objectives. Lamberth and Joubert (in prep) used a value measurement approach to prioritise fish for management attention. Mardle and Pascoe (2002) used goal programming to investigate the trade-offs between long- and short-term objectives in deciding on TACs and fleet size, given, for example, the need for sustainable stock sizes, employment and profits. Soma (2003) shows how including stakeholders in a MCDA process (aimed at finding solutions to the need for reduced exploitation while maintaining basic social needs) helped to reduce conflicts and prepare the stakeholders for change. Using a value measurement MCDA approach and working with stakeholders including fisheries managers, crew, vessel-owners, and fish sellers, objectives for the shrimp fishery of Trinidad and Tobago were identified and criteria for evaluating management options (open access, gear restrictions, limited access etc.) were defined. The different stakeholder groups’ priorities (weights) were assessed and overall preferred options identified. Mardle *et al.* (2004) also compared and aggregated different stakeholder groups’ priorities regarding fisheries management objectives. Leung *et al.* 1998, interacting with various stakeholders in the Hawaii pelagic fishery, developed a set of objectives, elicited priority weights for these and thus evaluated a set of alternatives (restricted vessel size, dual permits, open-access, etc.) aimed at managing the long-lining sector. McDaniels *et al.* (1994) used MCDA and interviews with management and fishers to identify objectives and criteria for comparing and developing co-management strategies for fisheries involving first nations in Canada. This approach helped to foster agreement and understanding between the different groups.

An important feature of MCDA and a feature often missing in fisheries management is that of establishing clear objectives (the first key element above), and, if relevant, linking criteria to these objectives (the second key element). For example, McDaniels *et al.* (1994) state that a key first step is to clarify the fundamental objectives that strategies are supposed to achieve. This is particularly important in resource management contexts that involve many stakeholders and conflicting views about priorities. They go on to say that “Yet, in most organisational contexts, direct focus on objectives as a basis for decisions is rare.”

The **current allocation system** as adopted by MCM in 2001 (see Section 2.2.1, Chapter 4 and Section 6.1.1) can be described as a form of multicriteria analysis. The system is based on policy objectives such as transformation. Criteria are linked to these objectives and applicants’ achievement according to the criteria are scored on, for example, 0-1, 0-3 or 0-5 scales. The applicants are then ranked according to their total score. Weighting is implicit through the variation in the ranges of the criterion scores: a criterion with a range of 0-5 has a higher weight than a criterion with a range of 0-3. This approach is a form of *value scoring* or *value measurement*, specifically a form of weighted summation. The current approach is simple to understand, the data are easy to process and results are easy to present. However, there are flaws (discussed in more detail in Chapter 4 and Section 6.1), including the important one that the link between policy objectives and criteria needs to be made more explicit and organised in a consistent way (such as a value tree).

Based on the analyses in Chapter 4, the interactions in Chapter 5, various refinements for a **new allocation system** are proposed in Chapter 1. In brief, the overall idea of the current approach (i.e. *value scoring*) is maintained while the interactions were designed to elicit the objectives and criteria from the fishers and MCM and this information was used to construct value trees. All criteria are then scored on a 0-100 scale where 100 reflects the best possible and 0 the worst possible performance on a criterion. Weights are linked to policy priorities and are made explicit. The overall score is calculated as the weighted sum of the criterion scores. In addition, a *goal programming* approach is proposed as a complementary analysis which can assist MCM in determining the effects of meeting specific objectives (e.g. percentage of historically disadvantaged people (HDPs<sup>6</sup>) involved in the resource).

Of the three MCDA schools, value scoring methods are probably the simplest and most transparent. They are useful for working with discrete alternatives (such as applicants) and for “workshopping” with stakeholders to define objectives, criteria, scores and weights. Goal programming is often used for “back-room” analyses, and tends to be more appropriate to continuous problems such as engineering design or production scheduling, particularly when all criteria are objectively quantifiable, and is thus less appropriate to selection of applicants for allocation. Outranking gives useful insights for strategic decision making, but involves algorithmic steps which are not very transparent to non-expert users. Thus the value scoring approach was particularly appropriate in the

---

<sup>6</sup> See Glossary

context of fishing rights allocation with multiple stakeholders and a need for simplicity and transparency, while goal programming was appropriate for additional analysis.

## 1.4 Approach: Action research

In Section 1.1 we established the link between poverty and fishing rights in terms of sustainable livelihoods, and put forward the view of judicious allocation of fishing rights as a developmental tool in disadvantaged communities. We have also (Section 1.3) made a case for the suitability of MCDA as a method which is able to accommodate the intrinsically multi-dimensional nature of rights allocation, particularly in the context of concepts such as 'poverty' or 'well being', concepts which underlie the construct of a 'disadvantaged community'.

The scientific approach to research highlights the importance of observable and measurable effects obtained through the medium of repeatable, controlled experimentation. This approach has served humankind well, particularly in relation to natural phenomena, and has led to a wealth of knowledge that has improved our collective quality of life. However, when the object of study is within the social or human sciences then what is broadly referred to as 'the scientific method'<sup>7</sup> has generally been less successful. This can be attributed in part to the notion that "the causal determinants of the social sciences always include human intentions, while those of the natural sciences do not" (Caws 1988, in: Checkland and Scholes 1991, p2). However it may also relate to the tendency of traditional science to highlight those aspects (of complex phenomena) which happen to be measurable. The latter authors also observe (p3) that "In the social sciences repeatable experiments are difficult to achieve and virtually all knowledge gained by social science is heavily meaning-bearing." Thus the so-called positivist paradigm or one that advocates that knowledge can only be reliably advanced through empirical science (based on observation and experimentation only) has been heavily criticised for its inability to effectively investigate social issues.

In real-world, complex, human situations, ill-defined and difficult to measure issues such as goals and values are of fundamental importance. Consequently, successful practice in fields such as social work, planning, education and management "is often attributed to intuition and personal attributes rather than the skilful application of knowledge" (Friedman 2001, p160). What is needed in an enquiry into the social and human sciences is an appreciation of knowledge gained via other mediums such as "experience-based knowledge" or "wisdom-based knowledge".

Thus, the epistemology consistent with the scientific method, objectivism, was felt to be insufficient, at least with respect to knowledge in the social and human sciences. Constructivism, or the view that knowledge is constructed by means of an interaction between the observer and the observed, allows for an interaction with a richer set of knowledge forms than that admitted by 'hard science'. **Action research** has been put forward as a methodology which is consistent with a constructivist epistemology.

As the name suggests, action research combines a commitment to take action (i.e. an interest to affect a change) with a focus on research through theory development and generalisation of the research findings to a context broader than that of the immediate decision arena. It is typically associated with research of a more qualitative nature in the field of social sciences. Greenwood and Levin (1998) refer to the importance in action research of participants and professional researchers being able to jointly define the issues to be examined and co-generate relevant knowledge about these issues. Together the parties take actions and interpret the results of actions based on what they have learnt.

The following list of core features of (good) action research is gathered from a number of different sources, principally Levin and Greenwood (2001) and Eden and Huxham (1996).

---

<sup>7</sup> The components of the Scientific Method can broadly be described as: (1) determination of the operation (2) establishment of pertinent objectives and values (3) determination of suitable measures of effectiveness (4) formulation of the problem relative to the objectives (5) observation and data collection (6) formulation of hypotheses and models (7) observation and experimentation to test the hypotheses (8) analysis of data and verification of hypotheses (8) prediction of results and generalisation of findings (9) recommendations based on findings (see for example Saaty, 1958 and Rivett, 1994, Chapter 2)

- participants and researchers co-generate knowledge through collaborative communicative processes in which all participants' contributions are taken seriously,
- the diversity of experience and capacities within the participants is regarded as an opportunity for enrichment of the research/ action process,
- context-bound and addresses real-life problems,
- the meanings constructed in the inquiry process lead to social action or these reflections on action lead to the construction of new meanings,
- the outcomes of the research may be generalised into more widely applicable tools (methods, models, etc.) which can be shown to be grounded in the theory which supported and was developed through the action research,
- the research proceeds in a systematic manner, re-examining the process and emerging theory at each small step,
- the process of data collection must be replicable or at least able to be explained to others,
- opportunities for triangulation<sup>8</sup> are exploited,
- history and context are taken as critical for interpretation, especially with respect to the range of validity of the results,

### **1.4.1 Evolution of action research**

According to Fals Borda (2001, p27) the origins of participatory action research are found in the 1970s through simultaneous and independent attempts by social scientists to "... move on and take a more definite personal stand regarding the evolution of societies." He describes it as a response to the frustrations brought about by the inability of conventional science to address complex societal problems.

Prior to 1990 participatory action research was largely associated with micro-scale interventions such as small, contained social groupings (co-operatives, NGOs, civic organisations, etc.). However, Gaventa and Cornwall (2001) report that it has been increasingly used by large powerful organisations (e.g. the World Bank commissioned 'Consultations with the Poor' gathered material for the World Development Report of 2000/2001). Participation is increasingly becoming a condition of funding for research in and on poor countries and many governments are making participatory methods a compulsory means of generating knowledge. (e.g. Uganda: Participatory poverty assessment processes; Indonesia: participatory pest management programmes; India: participative action planning; USA and UK: citizens' juries as an example of direct democracy).

Action research is thus clearly not a new approach and the concepts have in fact been evolving for some decades. However, despite this, action research is still regarded as an 'alternative' paradigm. Pasmore (2001, p46) notes that: "The majority of important organisational decisions continue to be made by 'experts', most jobs continue to be designed with too much specialisation, and the fate of most communities continues to be determined by elected officials rather than by the people whose interests politicians purport to represent.

### **1.4.2 Action research: Pros, cons and cautions**

An impetus for the evolution and growing acceptability of action research has likely been the gap between 'action' and 'research' that has been a feature of 'hard science'. Rosenhead (1989) talks about a growing concern over the lack of implementation of traditional research findings and moreover a lack of interest on the part of researchers over whether or not their research is in fact implementable. Even those researchers who acknowledge the need to take the process a step further (and perhaps assist in implementation) do not easily accept that an explicit focus on implementation as part of the research focus might imply a total review of the research process itself. Rosenhead (1989, p14) explains how choosing to rely on technical models alone to make decisions, and excluding 'judgement', results in "complex and opaque models" which reinforce the exclusion of lay participants. "The process of mutual exclusion of analysis and judgement is self-reinforcing. Such techniques guarantee a denuded process of decision making... One can have a complex technology and a minimal social process; or one can have a rich social process of decision making and a correspondingly modest technology."

---

<sup>8</sup> Triangulation is a process of using several different research methods and/or sources of variation to explore an unknown feature of a system or organisation.

Gaventa and Cornwall (2001) discuss the issues around power and knowledge. Critics of conventional research paradigms argue that action research challenges the power inequities created in organisations by monopolies of knowledge and biases that are introduced when so-called ‘independent’ experts speak on behalf of others. In general all schools of action research critique the positivist research approach in that it distances the expert (researcher) from the subjects of the research who actually experience the reality being studied. It also reinforces the notion of passive (and powerless) subjects who are objects of enquiry. There is also the criticism that in regarding knowledge as the domain of experts only certain forms of knowledge acquisition are permitted, i.e. the voices of ‘other knowers’ are not heard. Action research on the other hand acknowledges that knowledge is socially constructed and that it is important that the voices of all participants are heard. Also acknowledged are the validity of feelings and action in the knowledge generation process.

Gaventa and Cornwall (2001) sound a note of caution in assuming that participation per se implies that a more holistic and nuanced knowledge base will be generated. The pressure for *consensus* in participation processes so as to support a claim on ‘the views of the community’ can mean that only the dominant views surface and that one dictatorship of knowledge is replaced with another. The “illusion of inclusion” needs to be thoroughly investigated. Who represents whom and who is missing?

### **1.4.3 Action research within this project**

“In Action Research, the integrity and professional knowledge of the researchers is a key element, but only within the context of a broader set of local knowledge systems and norms in society... Action Research merges professional knowledge with local knowledge in a process of collaborative sense-making.” (Levin and Greenwood, 2001, p105). The quote highlights that the aim of such a complex decision scenario as the allocation of fishing rights is not to find the optimal solution but rather to jointly and collaboratively ‘make some sense’ out of this conflicted, uncertain and contested territory. This kind of research can only meaningfully be done through action research, i.e. within the context of real decisions.

## **1.5 Structure of report**

The next chapter in the report gives background information on rights allocation internationally, introduces the rights allocation process in South Africa, the four fisheries relevant to the project and the three fishing communities with which we worked. Chapters 3 and 5 describe the various community and MCM interactions. First, Section 3.2 discusses the pilot project investigating local knowledge and its potential use in resource management. Section 3.3 describes interactions with the communities relating to skills and training needs in relation to the application for and utilisation of fishing rights. The current allocation system is described in more detail in Chapter 4 (given the introduction in Chapter 1). The interactions with the communities and with MCM which relate to the improvement of the rights allocation process are then described in Chapter 5. The proposed adjustments to the allocation process are explained in Chapter 1 followed by a summary and recommendations in Chapter 1.

Chapters 4, 5 and 1 thus form the bulk and the focus of this project, given the background in Chapter 1.

Appendices 1, 2 and 3 give some details of the Hawston, Kalk Bay and Ocean View MCDA workshops respectively. Appendix 4 describes the workshop with MCM. The local knowledge questionnaire and responses are given in full in Appendix 5.

## 2. Review of fishing rights allocation

This chapter provides the background material for the remainder of the report. First there is a brief outline of rights allocation processes internationally (Section 2.1) and a description of the evolution of the rights allocation process in South Africa (Section 2.2) including the most recent allocation system developed in 2001. This is followed by an introduction to the approach followed by MCM to decide on the TAC/TAE, to four of the fisheries relevant to this study (Section 2.3). The particular criteria used in allocation of rights in each fishery and an analysis of the rights allocations since 2001 is postponed for discussion in Chapter 4. The three communities who participated in this study (Section 2.4) are then briefly described. Finally, in Section 2.5 these elements are summarised which shows the relevance of this study for future rights allocations.

### 2.1 Rights allocation systems and processes internationally

Up until the late 19th century all marine fisheries were essentially open-access and unregulated, with the only regulations being regarding foreign fleets' rights to fish in sovereign waters (Scott 2000a,b). Eventually, as stocks dwindled and competition became fiercer, the need for regulation became apparent to fishers and governments. Essentially the main approaches, more-or-less in order of application have been:

- Regulations regarding the type and timing of effort such as gear control (mesh sizes, vessel types, etc.) and closed seasons
- Regulations regarding the amount of effort such as controlling the overall size of the fishing fleet (the number of vessels) through, for example, "limited licensing" with licences being granted to those who had been previously being fishing,
- Total TAC limits<sup>9</sup>
- Total TAC and effort-type limits (number of hours of fishing, number of traps, vessel size etc.)
- Limited licensing combined with total TAC limits
- Zoning (in terms of territory or target species) in combinations with various of the above
- Community quotas
- Individual (or company or vessel) quotas which limit the catch per quota holder, which might be non-transferable or transferable, permanent or fixed term, for a fixed catch or a percentage of the TAC.

The range of approaches can be broadly grouped into those relying on the state, the market or communities to regulate the fishery (Hersoug and Holm 2000). Many of the attempts at regulation had the effect of creating a race by vessels and operators to catch as much as possible in the limited time, or with the limited gear: the so-called "derby effect". Consequently, where TACs were set, these were sometimes caught in absurdly short periods, with consequent effects on safety, prices and hardships for fishers between seasons. For example, because of its occurrence in tight aggregations, the degree to which the fishery is oversubscribed, and the regulation by total TAC only, the Pacific herring season has apparently sometimes been over in as little as 15 minutes! (University of Guelph, 2004). Another example, for the north Pacific halibut fishery, says that within 3 days of the season opening one fisherman was dead and fifteen had to be rescued after the vessels encountered difficulties (Buck 1995).

The quota system, which has evolved since the late 1970s, was seen as a solution to the problem of the derby effect, of over-capitalisation, of ever-increasing effort and a way, thus, to reduce over-fishing. Countries that

---

<sup>9</sup> The setting of TACs is often based on the "maximum sustainable yield" (MSY) of the stock. The MSY which is based on the notion that fish populations will reproduce at different rates depending on the population size or density. For example, they stocks will increase more rapidly when the stock is less than a particular fraction of the "carrying capacity", but will increase more slowly if the population size is above this fraction. Thus, the aim is to keep the fish stock at approximately the particular fraction modelled for that species and thus to be able to extract the MSY. Because of the extreme consequences of errors in the modelling of MSY other approaches are now being pursued.

started to use a quota system at this time include Iceland, New Zealand and Canada, while South Africa was also using company quotas (for hake) by 1979 the early 1980s for west coast rock lobster.

There are many forms that quota systems can take and these are usually in combination with several of the other approaches mentioned above (e.g. gear and vessel effort restrictions). Depending on the fishery or country, the quota (or right) has some of the characteristics of property (e.g. security, duration, transferability and divisibility of varying degrees) (Scott 2000a,b). In systems with transferability and divisibility, the right holder may sell or rent part or all of his portion of the TAC (on the open market) for whatever period. Along with deciding on the duration of the right and its transferability, implementation of the quota approach for any fishery faces the questions of (Scott 2000a,b): *who should get the initial (and possible subsequent) quotas, how large should the quotas be, and what should they cost.*

In Iceland quotas were associated with individual vessels (Runolfsson and Arnason 2001) while in New Zealand and Canada the quota was associated with a company or enterprise (Connor 2001), which in New Zealand later became individual based, therefore an individual transferable quota or ITQ. Since 1995 Canada has also been using 'community quotas' in some fisheries. In Iceland and New Zealand the quotas began by being non-transferable, but with time they have developed into permanent and transferable rights. The Icelandic system did not charge for quotas (although there is talk now of charging) whereas in New Zealand, the raising of revenue (which would in part be used to buy back excess quota) was one of the aims. Nevertheless, rights were *initially* allocated free of charge, based on catch history and investment (depending on the fishery) (Connor 2001) and were transferable by sale or lease to other operators. All operators required a permit which was granted if they had a minimum amount of quota. "Resource rentals" were paid on all quota held whether caught or not. This was because initially, in New Zealand, quotas were as fixed tonnages and government therefore "entered the market" to buy back excess TAC from quota-holders when the total TAC held exceeded the appropriate TAC. Later these were converted to percentages of the TAC.

In general the system of quotas in some form (whether based on vessel / enterprise / individual and whether fully transferable or not) subject to an overall TAC (and perhaps other restrictions) appears to be the favoured approach internationally and offers many benefits over previous regulation systems. Some feel that the ideal is to increase the property right nature of the quotas, i.e. to make them fully transferable, divisible and heritable and therefore they embrace the use of the ITQ system to its fullest extent. The idea, of course, is that the market will most efficiently distribute the rights. However, more in depth studies of the social and economic consequences of their introduction in different countries and societies is needed. In general, as would be expected, the ITQ system has tended to concentrate quotas in the hands of a smaller number of larger operators who may be entrepreneurs not involved in actual fishing (Bradshaw 2004), although this may be more the case with deep sea (capital intensive) fisheries than inshore fisheries (Ford 2001) because larger concerns can more easily absorb the risk associated with fishing. ITQs may lead to a situation where the value of the right or quota is out of reach of the average crew or fisher, and of more value than their fishing vessel (which may detached from the right) (Bradshaw 2004). Thus, the distributional and equity consequences of ITQs are questionable.

In most countries where quotas have been introduced the primary concern has been with reducing effort, overcapitalisation and overfishing. However, in South Africa, the need was to achieve these objectives (in most fisheries) as well as, generally, to increase access to the fishery (in terms of fishing rights) to those who had previously not been in a position to acquire them either because the apartheid system prevented them from acquiring sufficient capital or expertise to enter the market, or because they were directly prevented from acquiring rights. The next sections outlines the development of the current allocation system in South Africa.

## **2.2 The political and institutional context of the allocation of fishing rights in South Africa**

As in all other fishing nations various measures evolved in South Africa over the years to limit the total catch in order to safeguard future stocks and maintain some stability in the industry. Restrictions on landed mass have been in existence for west coast rock lobster from 1981 and for hake from 1979. After the Diemont Commission in 1986 the new Sea Fisheries Act (SFA) of 1988 made provision for a Quota Board, which was supposed to



remove quota allocation from the political arena and which was established in 1990 (Japp 2001). According to the SFA of 1988, the quotas were allocated according to the Minister's guidelines and quota transfers could be made with the chief director's (of the then Sea Fisheries) approval (SFA, RSA 1988: Section 24, subsections 1-3). Transferability of quotas was therefore accepted, as was transferability of rights of exploitation (subject to the approval of the Minister) which had to be transferred with the associated quota or a portion of the quota (SFA 1988: Section 25, subsection 3). Rights for some fisheries were effectively granted for 10 years for old rights-holders and 5 years for new entrants. The board controlled quotas for hake, sole, pilchard, anchovy, west coast rock lobster, south coast rock lobster, abalone and horse mackerel (Hutton *et al.* 1999). The Quota Board introduced many new entrants between 1990 and 1998 when the new Marine Living Resource Act (MLRA) (Act No. 18 of 1998) replaced the SFA (although democracy only arrived in 1994, the "opening up" of fisheries started before this).

With the establishment of a democracy in South Africa in 1994, the Minister of Environmental Affairs and Tourism initiated the development of a new fisheries policy by establishing the Fisheries Policy Development Committee (FPDC) in late 1994. The FPDC had representatives from the fishing industry and labour (Hersoug and Holm 2000) but deliberately excluded fisheries managers and scientists (Harris *et al.* 2002). One of its task teams was the Technical Task Team on Access Rights which recommended the ITQ system. Recommendations were submitted to the minister in 1996 who nominated a panel to review the issue of access rights. They supported the ITQ proposal but differed from the FPDC in that the review panel recommended a quick transition rather than a phased approach with no sudden removal of rights or quotas. The recommendations could not be implemented under the old Sea Fisheries Act and as there was pressure to produce speedy results the recommendations were written into the White Paper and Bill more-or-less simultaneously (the normal process of waiting for responses to the White Paper was not followed (Hersoug and Holm 2000)). The Bill was introduced to parliament in 1997 where it was assessed by the Portfolio Committee of Environmental Affairs and Tourism. They were wary of the idea of long-term and transferable rights, given the requirement for redistribution. While the White Paper spoke of selling of rights and of rights in perpetuity, the Portfolio Committee finally opted for the renting of rights (not quotas) to persons and companies for a maximum of 15 years (Hersoug and Holm 2000) with transfer subject to the Minister's approval. The issue of "paper quotas" was of great concern during the policy development process and this was one of the reasons for the limits on transferability<sup>10</sup>. The new Act was passed and the MLRA came into effect late in 1998. Box 2.1 summarises some of the pertinent features of the MLRA.

**Box 2.1. Summary of the relevant features of the Marine Living Resources Act (RSA 1998).**

The "objectives and principles" of Chapter 1 of the MLRA can be summarised and grouped as follows:	
Economic objectives:	<ul style="list-style-type: none"> <li>• To achieve optimum utilisation, and</li> <li>• To achieve economic growth</li> </ul>
Social and restructuring objectives:	<ul style="list-style-type: none"> <li>• To utilise marine resources to achieve human resource development, capacity building and to create employment, and</li> <li>• To restructure the fishing industry to address historical imbalances and to achieve equity within all branches of the industry.</li> </ul>
Ecological objectives:	<ul style="list-style-type: none"> <li>• To achieve ecologically sustainable development,</li> <li>• To conserve marine living resources for both present and future generations,</li> <li>• To protect the ecosystem as a whole, including non-exploited species,</li> <li>• To preserve marine biodiversity, and</li> <li>• To minimise marine pollution</li> </ul>
International obligations	<ul style="list-style-type: none"> <li>• To honour international obligations and law.</li> </ul>
Approach	<ul style="list-style-type: none"> <li>• To apply precautionary management approaches, and</li> </ul>

<sup>10</sup> The term 'paper quota' was first used when 'community quotas' were allocated to 'fishing communities' in the early 1990s, but in many cases established fishing companies caught the quota and paid monies to community trusts.

- To achieve broad and accountable participation in decision-making to the extent possible,

In Section 18 (Part 2 of Chapter 3, Management of Marine Living Resources) of the MLRA an objective for the allocation of rights is specifically mentioned, namely that:

*“In granting any right ... the Minister shall ... have particular regard to the need to permit new entrants, particularly those from historically disadvantaged sectors of society”*

In addition the Minister may establish subsistence fishing zones, declare fishing communities and declare their inhabitants (or any other person) to be subsistence fishers (Section 19).

Commercial fishing rights may be leased, divided or otherwise transferred, subject to limits or conditions established by the minister, and to approval on application to the minister. Therefore a right is, although not named as such, a type of individual transferable quota (Section 21). Rights are leased by the state (Section 22) and by the Fisheries Transformation Council (FTC) (Section 31) (but see below regarding the FTC).

The minister is to determine the total allowable catch (TAC) or total applied effort (TAE) and the portions to be allocated to subsistence, recreational, local commercial and foreign fishers. The minister is to establish the Consultative Advisory Forum (CAF) who advise on, among other things, the TAC / E.

In contrast with the SFA of 1988, the MLRA of 1998 placed allocation back in the political arena (Mayekiso *et al.* 2000) with the power to allocate being retained by the minister (Sauer *et al.* 2003b)<sup>11,12</sup>.

Thus, in Hersoug and Holm's (2000) separation into state, market and community approaches, the MLRA opted for the state approach to allocation and redistribution rather than that of the market. They did not seriously consider the community option given the negative experiences of 'community quotas' of hake (in 1993-1995), pilchard (1994) and west coast rock lobster (starting in about 1987) (i.e. all starting before the transition to democracy) (Stuttaford 1996 and Hersoug and Holm 2000). After a survey of the socio-economic conditions in fishing communities, conducted in 1992, 16 (mainly "coloured") fishing communities were identified and Fishermen's Community Trusts established to manage incoming funds. The "quota" given to the communities was fished by established companies and the monies paid to the community who spent it on educational facilities, equipment, etc. (Martin undated). These quotas therefore became known as "paper quotas". The term was later applied to situations where select individuals were benefited, for example, to people who either were fronts for established companies or who acquired quotas with no intention of personally using them, but rather sold them to established companies. Unfortunately, the selection of beneficiaries of the trusts was fraught with difficulties and there was little guidance given to or control over the trusts and mistrust arose within the communities and the system was largely abandoned by 1996 (however certain community trusts appear to still exist from that time and new community organisations, similar to trusts, have been formed and receive rights). However, at least one community trust (the Hermanus Community Trust) which was granted a 10 T abalone quota in 1993/94 continued to receive quotas until at least 1997/1998 (Sauer *et al.* 2003a), applied as a commercial applicant in 2001 but was unsuccessful (DEAT 2001b). Between 1994 and 1998 with the establishment of the MLRA (and after as described next), there was much unhappiness in the fishing industry (about quotas granted or not, about the size of quotas, about the community trusts) and there were sit-ins, near riots, officials locked in their offices, "mass-action" fishing in defiance of regulations, etc. The situations only really began to calm down by about 1999/2000.

<sup>11</sup> Cronies of the old government as well as of the new have apparently been enriched by either the "apolitical" quota board or the new system (Hersoug 2000).

<sup>12</sup> It is a matter of debate to what extent the minister may delegate responsibility for allocation decisions. Currently, the Minister appoints an Advisory Committee after a tender process. The minister still has to be able to demonstrate that he has "applied his mind" and discretionary powers to all decisions (Sauer *et al.* 2003b) and the minister has lost some court cases on this basis (e.g. Cape High Court, 2003).

With the introduction of the MLRA, the Consultative Advisory Forum was established to advise the minister, and the Fisheries Transformation Council (FTC). The FTC's objective was "to facilitate the achievement of fair and equitable access" to rights (Section 31). The minister allocated a portion of the TAC to the FTC, who, in turn, leased rights to "persons from historically disadvantaged sectors of society and to small and medium size enterprises". The FTC was also intended to "assist in the development and capacity building of persons from historically disadvantaged sectors of society and small and medium size enterprises". Other allocations were the responsibility of the Minister (or his delegated authority). This introduced a period of some confusion as aspirant rights-holders could apply to the Minister or to the FTC. After much controversy and some scandal, the FTC was discontinued in 2000.

There was a call for applications under the new MLRA-based system in 1999 and thousands poured in. Prior to 1990 DEAT had processed about 300 allocations annually - with this first call for applications they had to process 11 989 (Kleinschmidt *et al.* 2003). They had not anticipated the administrative enormity of the task and this led to crisis management characterised by long delays in allocations, litigations, a loss of confidence in MCM and more widespread non-compliance in terms of poaching and non-reporting of catches especially in the abalone, rock lobster and hake fisheries (Kleinschmidt *et al.* 2003). Eventually a hold-over of fishing rights was declared in 2000 (for 2001 as the rights were still annual) while MCM prepared for the next season of allocations. There were several issues with the application process: Applicants had to provide a substantial amount of information, 10 copies and several annexures, the application forms were in English (S Lamberth pers. comm.) despite the fact that the majority of fishers (particularly previously disadvantaged) are Afrikaans speaking, there was one form for all sectors (Japp 2001), creating confusion as to which sections were relevant etc. and documentation had to be verified by a Commissioner of Oaths. This has apparently led to a thriving business for lawyers or "consultants" who assisted people in filling in their forms, sometimes for a substantial fee and/or for a substantial portion of the right if the application were successful.

In line with the recognition of subsistence fishers in the MLRA (see above) and in an attempt to alleviate economic hardship in coastal communities, subsistence permits were allocated in the west coast rock lobster and abalone fisheries in 1998/99, 1999/00 and 2000/01. The permits allowed four lobster or abalone a day to be caught and sold. The Subsistence Fisher Task Group was appointed by MCM in 1998 and visited communities and ran workshops in order to develop a new subsistence fishery management system (Harris *et al.* 2002). The SFTG recommended in their report of 2000 that high value fisheries such as west coast rock lobster and abalone were not suitable for subsistence fishing (DEAT 2001a, Cockroft *et al.* 2002) but should rather be exploited by what came to be called "limited commercial" and "full commercial" fishers. Despite this recommendation, the number of west coast rock lobster subsistence permits increased to 1870 for the 2000/01 season (Boyd and Adriaans 2002, see Section 2.3.3) (compared to a few hundred in 1999 and 2000) and subsistence abalone quotas were still being awarded in late 2002 in the Eastern Cape (DEAT press release, 14 October 2002). Subsistence abalone quotas in the Western Cape were granted from 1998 to 2001 but were far fewer in number than those for west coast rock lobster (see Section 2.3.4).

Some key events in fisheries policy and the rights allocation process are highlighted in Table 2.1.

**Table 2.1. Important events in South African fisheries management.**

<b>Year / Period</b>	<b>Legislation, Policy, Event</b>	<b>Sectors recognised</b>
1979 on	Management by quotas begins in some fisheries	
1988	The Sea Fisheries Act	Recreational, Commercial
1990	The Quota Board takes over allocation	
1990-1994	'Community quotas' for hake and lobster with Trusts established (aborted by 1996)	
1994	First democratic government in South Africa. New quota board	
1998	Marine Living Resources Act. Quota Board abolished. Allocation by authority delegated by Minister. Fisheries Transformation Council & Consultative Advisory Forum established	Recreational, Commercial, Subsistence
1999	First allocations according to new act	

Year / Period	Legislation, Policy, Event	Sectors recognised
2000	Fisheries Transformation Council disbanded Subsistence Fisheries Task Group report	Recreational, Full commercial, Limited commercial, Subsistence
1999-2001	“Subsistence quotas” issued for lobster and abalone including in the area east of Cape Hangklip. Litigation, strikes and delays around allocations.	
2001	New allocation system implemented. “Limited commercial” and “full commercial” sectors established after recommendations that lobster and abalone not suitable for “subsistence” sector	
2002	Subsistence abalone quotas still being issued in Eastern Cape.	
2003	First limited commercial lobster allocations east of Cape Hangklip. First Turf-based, long-term (10 year) rights allocated to abalone divers and “legal entities”	
2004	A company disputes the hake quota which they received, but the Minister’s decision is upheld by the Constitutional Court.	

### 2.2.1 The 2001 rights allocation system

As a response to all of this, a new system for allocating fishing rights was introduced in 2001 (Figure 2.1). Specific examples of the criteria and scores used in the allocations are given for hake, linefish, west coast rock lobster and abalone in Sections 4.2.1 to 4.2.4 of Chapter 4. The general criteria to be used in assessing applicants according to this system were:

1. *Degree of transformation.* This was measured by the actual HDP status of the applicant and / or by the percentage of HDP ownership in the enterprise (“black economic empowerment”) and by the degree of HDPs in senior management positions (“employment equity”) and / or by a transformation plan.
2. *Degree of investment and involvement in the industry.* This was measured by the degree of ownership of or access to a vessel, in some cases by whether the applicant had previously held relevant rights, in some cases whether the applicant was involved in relevant processing (although this was sometimes regarded as a negative attribute) and / or by “investment in human resources”.
3. *Compliance* with the MLRA, Customs and Excise and other relevant legislation.

There were several important features to this new approach:

- The application fee jumped from R100 to R6000 for ‘full commercial’ applications and to R500 for ‘limited commercial’ applications. This was ostensibly to ‘eliminate “chancers”’ and to pay for the adjudication and verification of the applications (DEAT 2002a). The application fees were non-refundable. Not part of the allocation process, but relevant in terms of fishers’ and governments’ budgets, is that fishers pay a levy per ton of fish that they catch or land. In 2003 the levies ranged, from R 13 / T for horse mackerel to R 6 062 / T for abalone. Traditional linefish are levied per year (RSA 2003).
- The rights were to be allocated for more than a year (four to five years for the first series of allocations and then up to 15 years in accordance with the MLRA for the next allocation, due in 2005).
- The *general* criteria (mentioned above) which would be used to evaluate the applicants were published with the rights application forms. Specific criteria and weights and the way people were to be scored were only developed after all applications were received and were different for different fisheries and for new entrants and previous rights-holders.
- A “Rights Verification Unit” was formed which was intended to verify that the information supplied by the applicants was accurate by cross-checking, visiting communities or whatever other means available.
- Applicants have the right to appeal if their application is unsuccessful or if they want a larger quota.
- An Advisory Committee of six members of the legal and accounting profession was appointed.

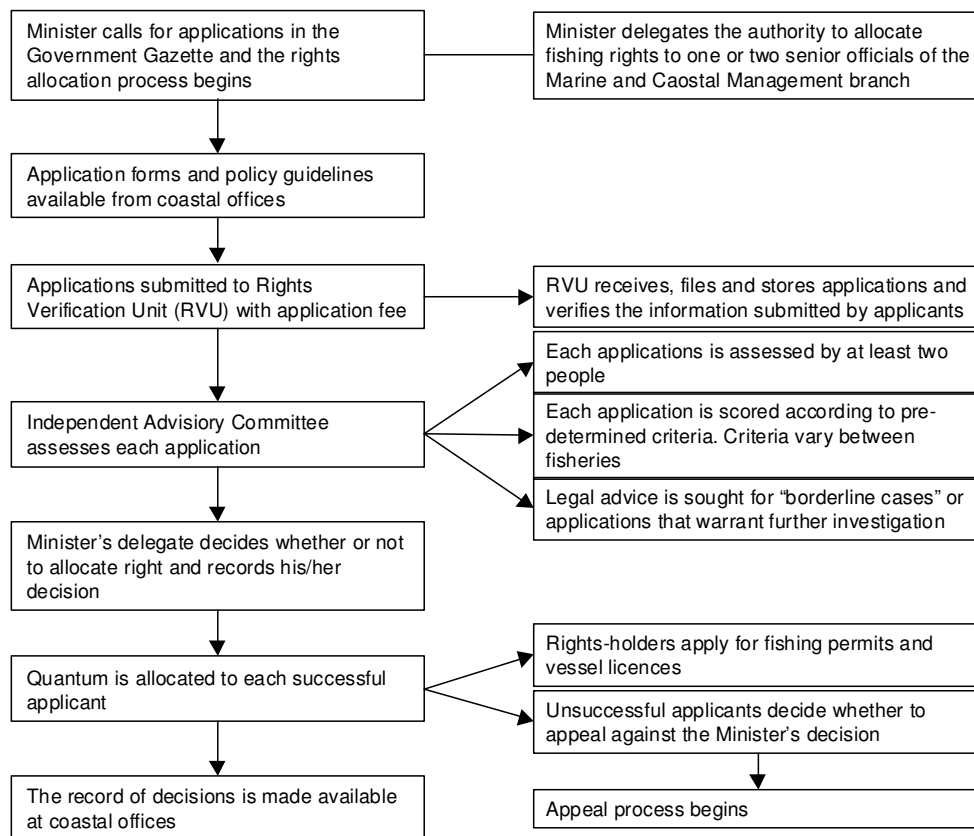


Figure 2.1. The rights allocation process (from DEAT 2002a)

MCM has still been subject to litigation subsequent to the introduction of this new system. However, recently the allocation system survived a challenge in the Constitutional Court. This was by a 1999 entrant into the hake deep sea trawl industry who felt that their 2002-2005 quota was too small (Weekend Argus, March 13, 2004) (they had previously won the case in the Cape High Court in 2002 and lost in the Supreme Court of Appeal before bringing the matter to the Constitutional Court).

There were two main consequences of the increase in application fees. The “full commercial” application fee was too high for many (who could nevertheless apply under the “limited commercial” sector). Many of them, therefore, and on advice from MCM, formed Closed Corporations (CCs)<sup>1314</sup> in order to be able to jointly afford the fee for a “full commercial” right. The amount allocated to these CCs, however, was not based on the number of members and consequently their quotas were sometimes uneconomical. Others borrowed the application and lawyers fees from “loan sharks” and consequently, if the application was unsuccessful, found themselves in a significantly worse financial position than before. The same problem as before also arose in that consultants were gaining portions of people’s rights. A quote from someone from Hawston (Appendix 1) captures the main issue regarding the application fees: “In 2001 the minister came with a strange request that everyone must make a financial contribution but not everyone will get quotas”.

Throughout the entire period from the time of the old Quota Board (1990) until now, one of the major features of the allocation process has been (a) of new entrants being “fronts” for established companies (HDP persons marketing their status), or (b) of companies including HDPs in name only, who never received any benefit from their shares or (c) of new quota holders selling or renting their shares to established companies either because they were unviable or because that was the original intention (therefore (a)). There are a considerable number of “joint venture” schemes some of which also boil down to (a), (b) or (c). In addition, poverty stricken fishers have apparently been paid by Cape Flats gangs to apply for quotas which they then are obliged sell back to the gangs

<sup>13</sup> CCs were formed because, for example, associations are not legally natural persons.

<sup>14</sup> CCs are now not allowed to apply for linefish as they hid fronts / paper quotas.

(Kinnes 2000). Applicants who sold or leased their rights were known as “paper quotas” and certain types of joint ventures as “cardboard quotas”. This is an issue of concern to MCM, because a person who personally holds and exercises a right and therefore invests in the industry should produce benefits to the community whereas the selling or renting of a right will largely benefit the individual (there are stories of lavish lifestyles resulting from quota sales (Hersoug and Holm 2000)). The issue is obviously of concern to communities as potential local benefits accrue elsewhere. Despite the general, strong antipathy towards the “paper quota” concept some “paper quota holders” have put theirs to good use by using the proceeds of the sale / rent of their quotas to invest in vessels (DEAT 2002a)<sup>15</sup>. Of interest is the fact that the transferability of rights under the MLRA is only possible with the approval of the Minister, this provision being maintained precisely in order to limit the possibility of “paper quotas”. Yet, despite being illegal these are apparently very widespread.

A number of fisheries are currently administered under the new allocation system of 2001, including (fisheries discussed in more detail later are in bold):

- |                             |                                    |
|-----------------------------|------------------------------------|
| 1. <b>Abalone</b>           | 9. Hake deep-sea trawl             |
| 2. Hake and sole inshore    | 10. Hake longline                  |
| 3. <b>Hake handline</b>     | 11. Horse Mackerel                 |
| 4. Prawn                    | 12. Pelagic fishery                |
| 5. Shark longline           | 13. Squid                          |
| 6. South coast rock lobster | 14. <b>West coast rock lobster</b> |
| 7. Tuna pole and longline   | 15. Gill net                       |
| 8. Beach seine              | 16. <b>Traditional linefish</b>    |

### 2.2.2 *Determining the TAC/TAE, the share of different sectors and allocation of the TAC/TAE*

In general, a scientific Working Group (appointed by the research director of MCM) make recommendations to CAF (appointed by the minister) who then advise the minister on the TAC (or TAE). To minimise the time and haggling involved in setting the TACs, during the 1990s, the trend was to move to “operational management procedures” (OMPs) for the more commercially important species. An OMP is a decision-making process based on a formula for transforming a pre-specified set of data into a TAC, where the formula is suitably tested for robustness under uncertainty (Johnston and Butterworth 2004). By the mid-1990s OMPs were in use for the hake deep sea trawl fishery (*Merluccius* spp.), the purse seine fishery for sardine (*Sardinops sagax*) and anchovy (*Engraulis capensis*) and was introduced for west coast rock lobster in 1997.

In the case of west coast rock lobster, three data sources are used: catch rates from industry, a fisheries independent monitoring survey and annual assessments of somatic growth rate (Johnston and Butterworth 2004). The OMP responds to trends in the above three measures with increases or decreases in TAC under constraints placed on interannual variability in TAC and with stock rebuilding objectives. The chosen west coast rock lobster OMP was implemented in 1997 for the following three years and then re-evaluated in 2000 and in 2003. One of the changes to the latter two evaluations was that the TAC included the recreational component. The use of the OMP procedure has apparently resulted in a significant reduction in time spent on negotiations and arguments over the TAC recommendations (Johnston and Butterworth 2004). For the abalone fishery, a working group of scientists, DEAT and industry assembles structured diving survey data, commercial fishery data, recreational and poaching data and analyses these to determine the TAC (Tarr undated).

The total TAC/ TAE is then split into the various sectors (“full commercial”, “limited commercial”, recreational, deep sea trawl, inshore etc.). This split is based on a combination of the previous catch history and the type and number of applications which came in during the 2001/02 season as well as on “the need to balance the sustainability of the industry while enhancing the capacity of historically disadvantaged communities to establish commercially viable businesses” (DEAT 2001a).

<sup>15</sup> A quote from a spokesman for Humansdorp community factory workers in DEAT (2002a): ‘We were fortunate in that we acted as “paper quota” holders for a period and then utilised the proceeds from our permits to invest in a vessel. Only once we had some assets did the bank want to lend us money’.

## 2.3 The resource management context: Notes on four South African fisheries

Some background is given for four fishery sectors in the next sections: these are hake (specifically hake handline), traditional linefish, west coast rock lobster and abalone. Of these, the fishery employing the most people is the traditional linefishery, followed by the west coast rock lobster fishery (Sauer *et al.* 2003b). These fisheries were chosen because they are relevant to all three communities with which we worked, particularly as they are fisheries which are reasonably accessible to poorer fishers, as they do not require high capital equipment. Another fishery of particular relevance to poor fisher communities is that of “small nets” (i.e. gill nets and beach seine nets). However, this fishery is of more importance on the west coast and is not a particularly important part of the three communities. The hake handline industry is relatively new, and is described below in the context of the entire hake industry which is divided into four sectors. Some of the main features of these four fisheries are summarised in Table 2.2.

**Table 2.2.** Summary of hake, traditional linefish, west coast rock lobster and abalone for 2001 (data primarily from DEAT 2002a).

Fish	Hake - deep-sea trawl	Inshore: Hake & Sole	Hake longline	Hake handline	Traditional linefish	West Coast Rock Lobster	Abalone
Species	<i>Merluccius paradoxus</i>	<i>M. capensis</i> , <i>Austroglossus pectoralis</i>	<i>M. capensis</i>	<i>M. capensis</i>	~ 20 important species	<i>Jasus lalandii</i>	<i>Haliotis midae</i>
Season						Oct-Apr/Nov-Jun/ Jul-Sep (depends on zone)	Nov-Jul
Employees	Sea-going Land-based						
	1 880 3 910	370 800	900		~ 3450	1 300 3 000	400 450
Income per fisher	R 63 000 / sea-going	R 35 000 / sea-going	R 38 500			R 26 500	R 18 000 - R 26 000
Price (R / kg )						R 180/kg	R 200/kg
Industry value (annual R millions)	R 1 400	R 100	R 130			R 200	R 70
Vessels engaged	61	30	56		~ 450	290	100
Vessel value (R millions)	R 750		R 750			R 130	R 25
Levies R/ton whole mass	R 165	Hake: R 156 Sole: R 251		R 123	Paid annually: range from R118 if ≤ 2 T to R4 114 if > 30T	R 3 409	R 6 062

### 2.3.1 Hake

Hake (*Merluccius spp.*) is South Africa’s most important fishery in terms of wholesale value (more than 80% of the total value of all fisheries) (Japp 2001). The fishery is complex as it involves:

- off-shore or deep sea trawling (targeting the deep-water hake *M. paradoxus*) operating since 1900,
- inshore trawling which is associated with the sole fishery (i.e. hake and sole are caught from the same boats and rights are allocated together),
- a relatively recently developed long-line fishery which was formally introduced in 1998 (after an aborted experimental kingklip longline fishery from 1988 to 1989 and an experimental hake longline fishery from 1994 to 1997) and
- a handline hake fishery which was previously part of the general linefish sector, but has more recently (2002) been handled separately after a crisis was declared in the linefish sector in 2000 because of severe depletion of stocks.

The latter three sectors target *M. capensis* the shallow-water species (Japp 2001). As responses to declines in catches, the minimum mesh size was increased in 1975 and a 200 mile fishing zone was established in 1977. From 1979, the fishery was managed by means of annual company allocated quotas (Mayekiso *et al.* 2000), a TAC, limitation on the total number of vessels and closed fishing areas. The off-shore sector is the largest of the sectors and was dominated by a few large companies up until 1986 (Figure 2.2). The Quota Board introduced 20 new entrants by the time of the new political dispensation in 1994, and an additional 24 have since been included (Figure 2.2). However, 60% of the total hake TAC still remains with the original four companies (from 1978) and

71% of the deep sea TAC. Altogether there are currently 298 players with rights in the hake fishery (Table 2.3). New entrants receive quotas which are apparently not viable unless they pool resources. Alternatively they sell their quotas (a 343 T quota in 1998 being worth about R652 000 if sold (Hutton *et al.* 1999).

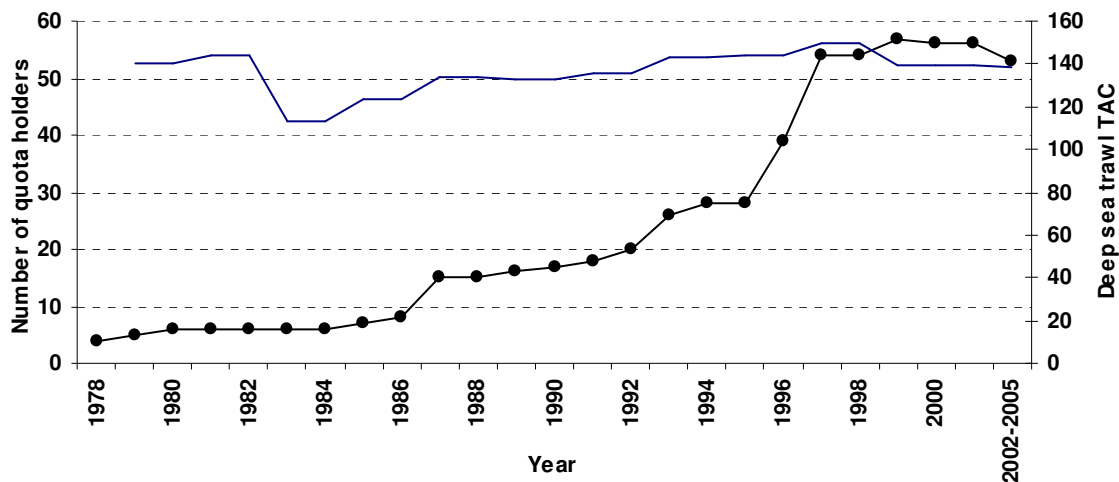


Figure 2.2. TAC and the number of quota holders in the deep sea trawl hake industry (data from Japp (2001), except for 2002 (from DEAT 2002c).

Table 2.3. The number of quota holders in the various hake sectors in the last two allocations and the proportion of TAC allocated (from DEAT (2002b,c) for 2002-2005 and Japp (2001) for 2001). DST = Deep sea trawl

2001	Sector TAC	% of overall TAC	# quota holders	% of quota holders	2002-2005	Sector TAC	% of overall TAC	# quota holders	% of quota holders
DeepSeaTrawl	138 495	89.94	56	15.2	DeepSeaTrawl	136 544	83.18	53	17.8
Inshore	10 165	6.60	13	3.5	Inshore	10 165	6.19	17	5.7
Longline	10 800	7.01	100*	27.1	Longline previous rights-holder	5 250	3.20	42	14.1
Handline	5 500	3.57	200*	54.2	Longline new entrants	6 670	4.06	98	32.9
OVERALL TAC	164 960		369		Handline	5 520	3.36	88	29.5
Agreement with Mozambique	1 000								
Four biggest companies in DST	102 308	61.63							
					Four biggest companies in DST	97 777	59.6		

\* Approximate numbers.

### 2.3.2 Linefish

Management of the linefish industry, which comprises about 20 important species<sup>16</sup>, was limited prior to 1985 until which time it was a more or less open access fishery. Management measures were limited to minimum size limits for some species introduced in the 1940s and closed seasons for two species. In 1985, a more comprehensive approach was initiated which capped effort levels at 1984 levels, introduced closed seasons, bag and minimum size limits. In addition, in an attempt to limit entry into the linefishing industry, A and B licences were introduced for commercial and small-scale commercial fishers respectively and this remained in place until after the passing of the MLRA (Table 2.4). There were about 2310 handline (A and B) licensed boats in 1996 (Stuttaford 1996). Linefish permits were transferable and, because of relatively low returns, up to a third of permits (primarily those of new entrants trying to enter the fishery) changed hands each year from 1986 to 1997 (Sauer *et al.* 2003a).

<sup>16</sup> There are approximately 200 species of which 90 are regarded as important, but about 20 species make up the bulk of the catch.



The failure of the management approach as indicated by falling catches, led to the development of a new “Linefish Management Protocol” (LMP) in 1999 which included clearly defined goals and required more scientific stock assessments. The LMP was introduced because it was impractical to develop OMPs for a divers and multispecies fishery. A crisis was declared in the linefishery in December 2000, with the aim of, with the subsequent allocations, drastically reducing effort in the linefishery. As part of the new approach, the linefishery has been split into three sectors: “traditional linefish”, tuna pole and line and hake handline. The new allocation system was applied to hake handline and tuna in 2002 (with rights allocated through to 2005) and to the “traditional linefish” sector in 2003. Until 2003 traditional linefishers continued to operate under “exemptions”. The aim of the new approach was to reduce the effort from the reported 2 500 vessels active (Sauer *et al.* 2003a) in 2000/01 to about 450 vessels and 3450 crew (MCM media release, July 2003), particularly given that the high turnover in permits indicated that about 30% of the fleet was latent effort, many B-licences belonged to “part-timers” and that a number of fishers had now acquired rights in the tuna pole and hake handline fisheries.

In the 2003 traditional linefish allocation, there were, therefore, only 543 limited commercial applications and 198 full commercial applications. Of these, 250 limited commercial rights (with 1064 crew) were granted and 126 full commercial rights (with 1084 crew). In the appeals a further 37 limited commercial rights were granted (with 155 crew) (Table 2.4). For the traditional linefishery, which is effort controlled rather than quota controlled, limited commercial is defined by the number of crew allowed on the vessel (a maximum of 5 including the skipper and/or rights-holder) while full commercial may have larger crews.

In some fishing villages (e.g. Arniston, Struisbaai, Gansbaai) it was found that the rights allocation had adversely affected the communities, because only one or two people owned all the vessels, only one vessel was to be used per right, and because their crew had not applied independently for rights. Therefore a decision was taken to grant exemptions to those bona fide fishers who had access to suitable vessels. This exercise resulted in 965 fishers being granted exemptions. This number, if regarded as crew rather than rights-holders, would bring the total crew (3348) up to the stated goal of 3450.

A very important aspect of the new approach and the split of linefish into three sectors, is that holders of traditional linefish rights may not hold rights in other sectors, or put the other way, fishers with rights of access to other fisheries may not hold traditional linefish rights. The intention is that traditional linefish rights should be reserved for those who are dependent on linefishing for more than 75% of their income. However, in the past it was often the case that people with rights in other sectors such as west coast rock lobster and abalone would use the linefish permit so as to be active for the whole year. MCM’s intention is, apparently, to encourage a situation where rights are distributed amongst a crew: e.g. one has a rock lobster right, one has a linefish right, etc. In other words, someone with a linefish right might crew for someone with a west coast rock lobster right and vice versa.

**Table 2.4.** Number of A and B licences issued to boats for various years (data from DEAT 1994 and 1998) and number of limited and full commercial rights-holders in the 2003 allocation (DEAT 2003a).

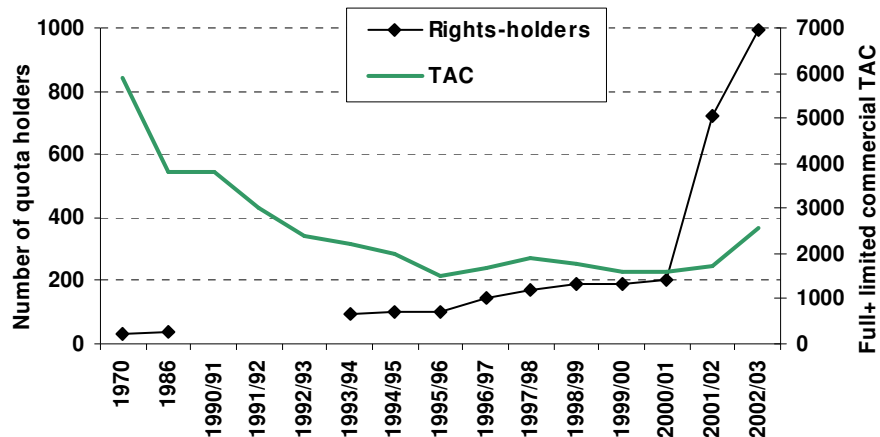
Number of licences	1992/93	1993/94	1996/97	1997/98	Number of rights-holders	2003
A-licences	502	470	388	410	Full commercial	126 (1084 crew)
B-licences	2645	2544	2275	2275	Limited commercial	287 (1064 crew)
					Exemptions	965

### 2.3.3 West coast rock lobster

West coast rock lobster (*Jasus lalandii*, known locally also as crayfish and in Afrikaans as kreef) has been commercially exploited since the late 1800s. A minimum size limit of 89 mm carapace length was introduced in 1933, a tail mass production quota in 1946. A whole mass quota was introduced in 1980/81 together with management by zonal TACs (Pollock 1986) (which became defined as four fishing zones each divided into two fishing areas) and closed season and protection of berried females and soft-shelled lobsters were also introduced. After the dramatic declines in catches in the late 1960s the catch stabilised until 1989 when a reduction in somatic growth rates again reduced catches due to reduced recruitment into the legal size class. The minimum size limit was reduced to 80 mm in 1991 and continues at this size to date (apart from a brief decrease to 75 mm in 1993-

94). In 1994, quota holders were for the first time allowed to export themselves rather than through the central marketing organisations. In 1997 an operational management procedure was introduced for the west coast rock lobster sector (see Section 2.2.2 for a description of how this works for west coast rock lobster).

In the late 1980s there were 39 quota holders harvesting about 4000 T (Sauer *et al.* 2003a) (although this translated into roughly 239 inboard vessels and 1000 dinghies Pollock 1986). After the 2002-2005 allocation there were 720 quota holders harvesting about 2126 T in the traditional four zones (Figure 2.3 and Table 2.5). In addition, since 2003/04, there have been an additional 274 rights-holders (before appeals) harvesting 230 T in the newly opened up Area 12 of Zone E (east of Cape Hangklip). Thus the numbers of quota holders have increase dramatically over the last few years. The east of Cape Hangklip sector was opened after an experimental fishery which was run with local fishers from 1999-2001.



**Figure 2.3.** TAC and numbers of west coast rock lobster rights-holders over the years. Numbers exclude subsistence permits for 1999-2001 (see Table 2.5).

In the 2002-2005 allocation, 88% of the TAC went to full commercial applicants and of that 33% went to eight quota holders and 8.6% to new entrants. The west coast rock lobster industry considers three categories of quota holders (Sauer *et al.* 2003a) small (<10 T), medium (10-40 T) and large (>40 T). In this categorisation there are currently (including 2002-2005 full and limited commercial and the east of Cape Hangklip allocation), 8 large quota holders (holding just over 23% of the TAC), 17 medium quota holders and 937 small quota holders (DEAT 2001a and 2003b). This can be compared to the situation in 2000/01 when there were 9 large quota holders (with 40% of the TAC), 18 medium and 199 small (Sauer *et al.* 2003a).

Subsistence permits were allocated for the years 1999/00 and 2000/01 (Sauer *et al.* 2003a). Although, initially there were “only a couple of hundred” (Boyd and Adriaans 2002) permits granted, in 2001 there were 1870 and in fact prior to the completion of the allocation exercise, “exemptions” were granted to 3 600 fishers to harvest four lobster per day. Catches from the subsistence sector were estimated to be only 7% of the total catch (Boyd *et al.* 2000).

The recreational take was estimated at 379 T in 1995/96 (Griffiths and Prochazka 1999) and 500 T in 1996/97 (30% of the commercial catch) (Sauer *et al.* 2003a). The recreational TAC was reduced to 174 T for 2000/01, with reduced seasons, and weekends-only fishing being the tool used to attempt to achieve this reduction. However, in 2004, due to an uproar from the recreational lobster sector and small businesses associated with fishing and tourism the season was reopened.

There is significant poaching of west coast rock lobster by recreational fishers taking more than their bag limit of four a day, by commercial operators taking more than their quota and by other poachers. For example, a group of fishers apparently harvested 732 T of west coast rock lobster when they were only entitled to 72 T and sold the catch by an existing arrangement to a large company (Focus 2002).

**Table 2.5.** Number of west coast rock lobster rights-holders over the years (data from Hersoug and Holm (2000), Pollock (1986), DEAT 2001a, 2003b, DEAT media releases, Wesgro 2001)

Year	Number of participants			FC + LC TAC (T)	East of Hangklip participants	East of Hangklip TAC (T)	Subsistence (includes East of Hangklip)	Recreational TAC T	Overall TAC (T)
	Full Commercial (FC) Total	Entrants	Exits						
1970	34								
1986	38								
1990/91					3 790				
1992/93					2 400				
1993/94	93	+46	-2		2 200				
1994/95	99	+7	-2		2 000				
1995/96	104	+8	-3		1 500				
1996/97	145	+43	-2		1 680			500	
1997/98	173	+36	-8		1 920			340	
1998/99	192	+22	-3		1 780			258	1920
1999/00	187	+14	-19		1 613	25*	25*	Couple of 100	2156
2000/01	200				1614	23*	23*	Couple of 100	2 018
2001/02		+62	-28		1514 + 218	25*		0	2 126
2002/03	234 <sup>1</sup>			486 <sup>2</sup>					2 333
2003/04						274 <sup>3</sup>	230		
2004/05									
New allocations									

\* Experimental fishery for three years, TAC not included in Overall TAC.

1. Including appeals
2. Including appeals and Witsands applicants
3. Excluding appeals

Sauer *et al.* (2003a) estimated that the minimum viable quota for a deckboat (“chukkie”) or an outboard dinghy was between 1 and 1.5 T in 2000. This was *given* that the boat were attached also to an A linefish licence, but fishers may no longer hold linefish rights if they have access to any other rights. Sauer *et al.* (2003a) also note that the costs of fishing vary dramatically between zones (ranging from R50/kg in Zone A to R6/kg at Cape Point) and that a number of rights-holders might share a vessel, thus also reducing costs.

### 2.3.4 Abalone

Please note that there are further details regarding the abalone industry in Section 2.4.1.

The commercial fishery for abalone (*Haliotis midae*, known locally as perlemoen) started in 1949 in Gansbaai. A commercial production quota was introduced in 1968 which became a whole mass TAC in 1983 (Sauer *et al.* 2003a). The commercial harvest peaked in 1965 at 2 800 T. Since 1986, the commercial TAC has been divided among seven fishing zones between Cape Columbine (south-west of St Helena Bay) and Quoin Point (about 30km west of Cape Agulhas). The TAC has been progressively reduced over the last few years, from around 600 T in the early 1990s to 282 T for the 2004 season (Table 2.6). There is a minimum size of 138 mm and 114 mm shell length and breadth respectively and the season runs from 1 November to 31 July. Fishers go out in small boats and dinghies and divers work in <10m depths in calm waters only. The crew is limited to five, regardless of vessel size and usually consists of four: the diver, boat operator and two boat assistants (one of whom may be an assistant diver). Since 1968 restrictions have been placed on total production, and this was followed by restrictions on total catch, registration of divers and numbers of processors. Prior to 1982 only the processing factories received abalone quotas or rights directly. The Abalone Divers Association was formed around this time, and they were given the rights, confiscated by the authorities, of one of the processing companies (Sauer *et al.* 2003a). Divers were granted their own rights from 1984 onwards but their harvest had to be delivered to specified factories (Sauer *et al.* 2003a) (this restriction remains in place for divers, but not, apparently, for “legal entities”). Divers’ rights were transferable but first option to buy had to be given to the Abalone Divers Association. In 1995 three of the abalone diver organisations combined to form the Overberg Commercial Abalone Divers Association (Overberg being the municipal area including Hawston and Hermanus).

A subsistence fishery was recognised and allocations made in 1998/99, 1999/00 and 2000/01, allowing fishers to catch and sell four abalone a day. Based on the advice of the SFTG, the subsistence sector (in the Western Cape) was closed in 2001 (with 2000/01 being seen as a transitional allocation). The following year the allocations were based on a split between “full commercial” and “limited commercial” sectors. However, further subsistence permits were issued in the Eastern Cape in 2002 (DEAT press release, 14 October 2002).

**Table 2.6.** Abalone TAC (in tons) over the years (Sources: Sauer et al. 2003a, DEAT 2001b, 2004a. Where sources disagree, the most recent DEAT reference was taken as the authoritative source).

Year	TAC	Zone C (Hawston / Hermanus area)
1965	2 800	
1983	660	
1986	640	160
1990/91	595	170
1994/95	615	130
1995/96	615	130
1996/97	550	65
1997/98	530	30
1998/99	515	15
1999/00	500	5
2000/01	496	0
2001/02	475	
2002/03	431.5	
2003/04	282	

Recreational permits have been required since 1983 (Tarr undated). The recreational catch peaked at an estimated 548 T (89% of the commercial catch) in 1993/94. A reduced recreational season length was only introduced in 1997/98 and, with further reductions in season length and hours of catching, the recreational catch was reduced to an estimated 110 T by 2001/2002 (Tarr undated). Recreational fishers were allowed a bag limit of five a day in 1990/91 which was reduced to four a day in 1999/00 and to three a day in 2000/01. Eventually, with the new abalone policy and the recent allocation in 2003, the recreational abalone sector was closed until further notice (DEAT 2003c).

Poaching, particularly in Zone C (Hermanus and Hawston areas), has increased enormously in the last 15 years (see also Section 2.4.1). It is estimated that more than 1000 T was poached in 2002 which was double the legal TAC of 430 T for that year (DEAT media release Aug 2003). Besides the huge catch, poachers also often take undersize individuals thereby further threatening the resource (as the abalone do not get a chance to reproduce).

Stocks have declined over the last 15 years due to increased poaching and recreational catches. This has contributed to recruitment failure because of the sheer numbers caught, because up to 90% of poached abalone are undersized and because of the increased west coast rock lobster population east of Cape Hangklip (see Section 2.3.3 and 3.2). Zones A to D used to contribute about 90% of the TAC, but for the above reasons, Zone C had to be closed to the fishery for the 2000/01 season (Sauer *et al.* 2003a).

As with other fisheries, DEAT has tried to “open up” and transform the fishery since 1994 while trying to maintain stability in the industry and reduce poaching. For the years from 1998 to 2003 there were about 47 large companies (with about seven of those being processors) (Table 2.7). From 1998 to 2001 just over 200 subsistence permits were also granted. In the 2001 allocation, MCM allocated full commercial rights to 40 companies (DEAT 2001b) and limited commercial rights to 239 individuals or small companies (66 of these on appeal). The number of limited commercial rights therefore corresponds roughly to the number of subsistence quotas previously (Table 2.7). However, only about 150 of the limited commercial applicants were previous subsistence quota holders (or filled in the appropriate part of the application form), and of those, about 130 were granted rights (DEAT 2001b). Full and limited commercial rights were allocated for two years. The amount allocated to full commercial applicants ranged from 55 T to 2.25 T, with only 10 companies being granted quotas greater than 5 T. Limited

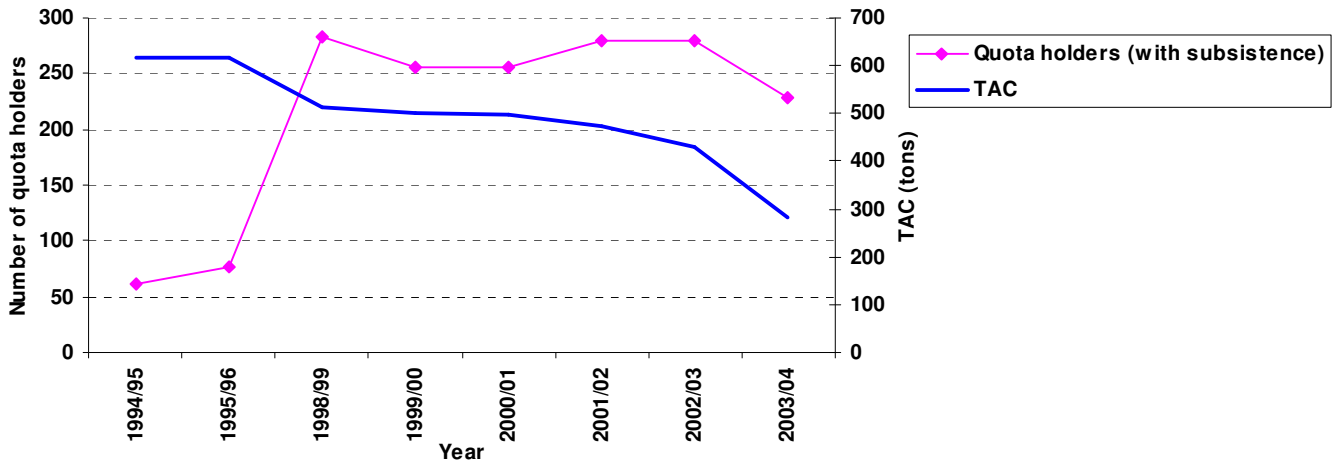
commercial applicants were all granted 430 kg quotas except for 16 of the appellants who were granted 200 kg. Ten of the 40 full commercial rights were allocated to processing companies (DEAT 2003d).

In order to try to deal with declining stocks and ever-increasing poaching, a new management approach was adopted in 2003 according to which abalone rights are allocated to entities in specific secondary zones within the original seven primary zones (a so-called Turf basis) (DEAT 2003c). Rights are now allocated to three categories: individual divers, “legal entities” and processing factories. The first two were given 10 year rights, while processors were given three year rights, by the end of which time they are expected to have restructured so as to be viable independently of having their own quota. As part of the new approach, the recreational abalone fishery was closed in 2003 in order to reduce the overall harvest and to help enforcement. “Operation Neptune” - a joint law enforcement operation between DEAT, the South African Police Services, the National Defence Force and some non-governmental organisations, which has had a chequered stop-start history - was restarted in August 2000 and there have been many and significant arrests. In addition, a dedicated environmental court was opened in Hermanus in February 2003 (another opened in Port Elizabeth a year later, and a third is being mooted). The Hermanus court deals with poaching related cases and has brought the conviction rate up from 10% to 70% and improved the speed at which cases are dealt with. However, poaching seems to continue unabated. For example, at least R24 mill worth of abalone was confiscated between May and August 2003 (Cape Times August 2003).

**Table 2.7. Events and numbers of abalone quota holders (from Sauer et al. 2003a, DEAT 2001b, 2003c,d, 2004a, Stuttaford 1996).**

	Abalone processors		% TAC	Diver history and numbers		Vessels
1949	Start of commercial fishery					
1964				104		
1965	14			112		
1968	6					
1970				68		
1982	1 factory's rights given to the Abalone Divers Association					
1984	Divers granted fixed % of TAC, to deliver to factories.					
1989/90	4			47		
1991/92	~ 6			About 50. Divers allowed to employ assistants		
1992/93				5 new divers, 11 rights-holders employing assistants		
1993/94	6			10 T community quota granted for first time		
1994/95	6			55		
1995/96	16			58 divers. 10 new rights-holders. 3 divers groups join to form Overberg Commercial Abalone Divers Association		
1996/97				6 new rights-holders. 62 rights-holders, 26 employ assistants		
<b>FIRST MLRA-BASED ALLOCATION</b>						
	Companies			Subsistence		
	Processors	Other				
1998/99	7	40		236		
1999/00	7	40		208		
2000/01	7	40		(76 divers+46 assistant divers)	208	~100
<b>NEW ALLOCATION SYSTEM 2001</b>						
	Full commercial rights-holders			Limited Commercial rights-holders		
	Processors	% TAC	Other % TAC	% TAC		% TAC
2001/02	10		30	77.6%	239	22.4%
2002/03	10		30	77.6%	239	22.4%
<b>NEW ABALONE POLICY 2003</b>						
	Processors	% TAC		“Legal Entities”	% TAC	Divers % TAC
2003/04	5 *	34.6%		24 *	6.8%	200 *
	3 year rights, to be discontinued			10 year rights		10 year rights

\* before appeals



**Figure 2.4.** Number of abalone quota holders and TAC. Numbers for 1998-2001 include subsistence permit holders. Numbers for 2003/04 exclude appeals.

The new policy for the 2004 allocation resulted in only five processors being granted quotas. These are valid for three years by which time they will have to be viable independent of having their own quota. Twenty-four legal entities and 200 individual divers were granted rights for 10 years. (The number of successful appeals was not available at the time of writing). The processors were granted a total of 97.5 T, legal entities 19 T and divers 107 T (the remainder of the 282 T TAC being kept aside for possible successful appeals). Individual divers were granted either 400 kg or 600 kg depending on whether they had access to a west coast rock lobster right (in which case they got the lesser amount). Legal entities were granted between 400 kg and 3930 kg depending on access to other rights and their previous allocation.

In 2001, the full commercial rights-holders (including processors) got 77.6% of the total TAC, while the limited commercial rights-holders, roughly corresponding to the previous “subsistence” permit holders got 22.4%. There were apparently 10 processors at this time, but for comparative purposes, we just look at the five processors who were subsequently also given rights in 2004 (Table 2.10): they received 47% of the TAC in 2001 and 34.6% in 2004 (the latter before appeals). Of the small TAC of 282 T for 2004, therefore, the processing factories received 34.6%, the divers 37.9% and the “legal entities” only 6.8%. These percentages are before the 20% of TAC reserved for appeals has been distributed. It is not clear what will happen to the processor’s quota when their rights fall away in three years’ time.

For the 2003/04 abalone allocation, one of the essential requirements was listed as being that the applicant did not hold rights for any other sector apart from west coast rock lobster. However, it is not clear whether this ruling was actually applied (apart from for linefish). For example, one successful legal entity applicant apparently also held a hake handline right. Most vessels involved in abalone used to also have a linefish B licence, so as to be able to continue with other fishing when the abalone season closed (Sauer *et al.* 2003a). This essential requirement therefore means that applicants have to choose between a high-valued sector which has a short season and a year-around, relatively low-value sector.

Sauer *et al.* (2003a) found that there had been a 30% increase in the number of vessels involved in the abalone fishery over the five years preceding their report (i.e. between about 1997-2001) and that, therefore, the industry was overcapitalised. The trend was in part as result of new entrants being pressured to obtain vessels so as not to be seen as paper quota holders. The boats being introduced also tend to be larger than they used to be. In fact, while Sauer *et al.* (2003a) report that the average boat involved in abalone fishing is 4-6 m in size, the new abalone policy stipulates a minimum size of 8 m, further exacerbating this trend. Abalone boats were also often used in other sectors (e.g. west coast rock lobster, linefish) (Sauer *et al.* 2003a) but abalone rights-holder may no longer also hold linefish rights, thus there is a chance that boats will no longer be fully utilised.

Levies (payments per landed ton) and application fees have increased enormously over the last 10 years (Table 2.8). The estimated minimum viable quota (i.e. to break even) for a typical abalone-harvesting vessel in 2000 was about 1 446 kg (Sauer *et al.* 2003a). With the R1 200/T increase in levies since then the minimum viable vessel quota must now be substantially higher. The average yearly income per fisher was estimated at between R18 000 and R30 000 (earned in the nine month season) in 2000/01 (Sauer *et al.* 2003a). Exporters were getting about R200 / kg at that time. Earnings per kilogram for divers and assistants are discussed in Section 2.4.1.

**Table 2.8.** Levies and application fees for abalone.

	1997	1999/2000	2000/01	2001/02	2003
Application fee	?	?	R 100	R 6 000 (full commercial) R 500 (limited commercial)	R 6 700
Levies per ton	R170	R 1 305	R 4 800		R 6 062

## 2.4 The social context of South African fisheries: Notes on three communities

Three communities, two within the Cape Town municipal area (Kalk Bay and Ocean View) and one 120 km away (Hawston) participated in the workshops described in Chapter 5. The south coast of the Western Cape Province, west of Cape Hangklip as well as fishing communities in the rest of the province are predominantly Afrikaans speaking with 66 percent of the population having Afrikaans as their home language. The economy consists mainly of retail, agriculture and manufacturing. There are high levels of unemployment in these communities, although generally unemployment levels in the Western Cape are low (16.9<sup>17</sup>% Stats SA, March 2004) compared to the average for the whole country (around 27.8% Stats SA, March 2004). In general, education levels are not very high and due to unemployment, poverty and the social consequences of apartheid, problems such as substance abuse are common. People in fishing communities have few job opportunities in the formal sector and the fishing industry is one of the larger employers. The Human Science Research Council found that there were three communities in the Western Cape which were more than 50% dependent on fishing. Changes in the allocation system and its consequences are therefore keenly felt in these vulnerable communities.

As a response to the changing approaches to allocations, fishers and fisher communities have tried to organise themselves correspondingly. During the FPDC process and the short period when subsistence quotas were allocated, Fishing Fora were established (now defunct), and with the new allocation system, fishers have applied as individuals or as members of CCs, company or sometimes as part of a 'joint venture' with an established company. For example, in the City of Cape Town region, the Western Cape Fishermen's Association was formed (about 460 members) in 2001, with subgroups in the various areas. For example, Ocean View had 45 members split into 9 groups. The senior partner (usually a vessel owner) applied for the right and gained 40% of the income while the remaining four members shared the remaining 60% (noting that the vessel owner is responsible for the significant fuel and vessel maintenance costs). Members had to meet certain requirements: for example, they had to have 10-15 years of experience and no record of poaching (Isaacs 2004). Thus in this case, the communities themselves ensured that members were 'bona fide fishers'.

However, despite the attempts at self-organisation the communities generally remain poor and bitter divisions seem to have developed. The previous section showed that in the fisheries of concern access has broadened and many more have formal fishing rights than they did in the past. However, in some cases, such as linefishing numbers have been reduced and the traditional link between linefishing and either abalone and west coast rock lobster has been lost. In addition, the TAC in abalone has been drastically reduced with corresponding necessary reductions in the individual quotas. Inevitably, because of the increase in numbers of rights-holders in both abalone and west coast rock lobster, the individual "slice of the pie" has become smaller (although the TAC for west coast rock lobster has gradually been increasing, and so this effect is less extreme in this case). Some further details of Hawston, Kalk Bay and Ocean View communities and their access to fishing rights are described below.

<sup>17</sup> According to the "strict" definition of unemployment. According to the "expanded" definition which does not require active job seeking by the unemployed the figure is 41.2%.

### 2.4.1 Hawston town and fisher community

By the 1850s Hawston (named after Mr Haw from Caledon) was in existence as a fishing village at Herriesbaai (next to which the current harbour was built) near Mudge Point. It is thus included in the area called “east of Cape Hangklip” for the purposes of the recent west coast rock lobster allocation and is part of the Overberg district council area and the Overstrand municipality. It is an entirely “coloured” and mostly Afrikaans speaking community of about 5700 people. Most of the employed work in the fishing, service and construction industry. There are very low levels of employment (about 10%) and low levels of formal education. There are 1000 learners in the primary school and 770 learners in the secondary school. There is one primary health clinic, several NGOs and welfare organisations and eight religious groupings. Violence, gangsterism and substance abuse have increased over the last decade and have become synonymous with the area once known as “koskas” for its vegetable gardens and famous recipes and well remembered for Sonesta the holiday resort which fell into disrepair in the 1990s.

Hermanus (situated at Walker Bay, 10 km south-east of Hawston) is an affluent holiday / tourist town famous for whale-watching etc. Hermanus and Hawston have had a close connection to the fishing industry for many years. There were perlemoen and seaweed processing factories in Hermanus from the early 1950s (Jakobus Swart, Hawston fisher, pers comm.). Many of the older Hawston residents have been involved with fishing (as fishers in various capacities, or as fish processors in factories) for 40 years or more. Many residents were involved with several sectors of the fishing industry, sometimes on a seasonal basis, and with linefishing to supply food for the table and to make a living between the seasons of other sectors.

Since 1994, the changes in policy and changes in who were successful in their rights applications have led to suspicion, jealousy and mistrust in the community. In conjunction with this, the high levels of abalone poaching in this area have resulted in the town attracting a very bad reputation which is shared by innocent and guilty alike and even though some of the “kingpins” come from other villages (e.g. Gansbaai). Poaching started in the 1980s but was “completely out of hand” (P Stacey pers comm) by 1995. The poaching “industry” apparently now has connections, locally, to notorious Cape Flats gangs (such the “The Firm” (Kinnes 2000)) and, internationally, to Chinese triads (Hauck and Sweijd 1998). This has resulted in shoot-outs in the streets between rivals with consequent deaths, violent confrontation between poachers and police and a feeling in the community that they are unfairly targeted by the police.



Hawston harbour showing a Caspir (troop carrier) as part of Operation Neptune. (photo: Ron Janssen).



In 1993/4 there were 113 vessels registered in the Hawston/Hermanus area and this number increased to 128 by 1997/98 (Table 2.9) (DEAT 1994 and 1998). In the 2003 linefish allocations there were 13 limited commercial linefishing rights granted to applicants from the Hermanus/Hawston area plus 14 exemptions (9 from Hawston). In the east of Cape Hangklip west coast rock lobster allocation in 2003 there were 164 rights granted in the Hermanus/Hawston area (for 500 kg each), 84% of whom were to HDPs. In 2003/04 at least 77 divers from Hawston were granted rights for abalone (55% for quotas of 600kg) and 12 legal entities from Hawston/Hermanus (with quotas ranging from 400 to 1040 kg), at least 5 of these being from Hawston (DEAT 2004a) (Table 2.9).

**Table 2.9.** Licences and rights-holders over recent years in Hawston/Hermanus areas. WCRL=west coast rock lobster.

	Licenced boats		Rights holders since 2001		
	1993/1994	1997/1998	Years	Number	
<u>Linefish</u> A licence	2	1	<u>Linefish</u> full commercial	2003/04	?
<u>Linefish</u> B licence	100	81	<u>Linefish</u> limited commercial	2003/04	13
			<u>Linefish</u> exemptions	2003/04	14
Pelagic	1	1			
Other	10	45			
			WCRL full commercial	2002-2005	n/a
			WCRL limited commercial	2002-2005	164
			Abalone legal entities	2003/04	12
			Abalone divers	2003/04	121
			Other rights (hake, pelagic, etc.)		
<b>Total boats in harbour</b>	<b>113</b>	<b>128</b>			

Other than linefishing, which is a “staple” of many coastal communities, the most important factor in the Hawston community is abalone because of the length of the association with the abalone industry and the extent to which events in the last decade have shaped and scarred the small community. Therefore, the notes on abalone in Section 2.3.4 are particularly relevant to the Hawston community and further details are added here, together with some mention of other fishing sectors.

One may consider there to be four relevant “abalone groups” in Hawston/Hermanus: the abalone processing factories, the commercial divers, the boat assistants and the poachers. Historically, there were three important abalone processing factories in Hermanus, namely Tuna Marine, Walker Bay Cannery and Sea Plant Products (Table 2.10). In the past, the abalone processing factories were granted the quotas and contracted divers, primarily from Hermanus and Hawston to fill the quotas. Later, divers were allowed to receive their own quotas and made arrangements with particular factories. The five processors granted rights for 2004-2007 are all in the Hermanus / Hawston area (Table 2.10).

Various grievances over a number of issues have arisen in Hawston during the last ten years. The perceptions exist that:

- processing companies have employed assistant divers rather than commercial divers as they were able to pay them a reduced rate,
- the amount paid per kilogram to the divers by the processors has not kept pace with increased export prices,
- processors paid white divers a higher price for their catches than what they paid coloured divers, and
- white divers were exempt from certain restrictions (e.g. the amount they could harvest for personal use).

**Table 2.10** Abalone processors since 2000/01. WCRL=west coast rock lobster

	2000/01		2001-2003			2004-2007	2004-2014	2002-2005
	Processors Total=7	Rights- holder	Processors Total = 10	Full Commercial	Limited	Processors Total = 5	Legal Entity	WCRL
Combined Abalone Processors (Bato Star: holding company: SACTWU), <b>Hermanus</b>	Y <sup>1</sup>		Y <sup>2</sup>	Y <sup>3</sup>		Y <sup>5</sup>		6402
Sea Plant Products (Marine Products: holding company Foodcorp (Pty) Ltd.), <b>Hermanus</b>	Y <sup>1</sup>		Y <sup>2</sup>	Y <sup>3</sup>		Y <sup>5</sup>		52223
Tuna Marine (Oceana), <b>Hermanus</b>	Y <sup>1</sup>		Y <sup>2</sup>	Y <sup>3</sup>		Y <sup>5</sup>		
Walker Bay Cannery (Irvin and Johnson), <b>Hermanus</b>	Y <sup>1</sup>		Y <sup>2</sup>	Y <sup>3</sup>		Y <sup>5</sup>		
Ictus Fisheries, <b>Gansbaai</b>	Y <sup>1</sup>			N <sup>9</sup>	N <sup>9</sup>		N <sup>8</sup>	
Zwemini Fishing (Pty) Ltd	Y <sup>1</sup>			Y <sup>3</sup>			N <sup>8, 9</sup> and *	
Komicx Products (Pty) Ltd, Kommetjie	Y <sup>1</sup>		Y <sup>2</sup>	Y <sup>3</sup>			N <sup>8</sup>	5225
Overberg Commercial Abalone Divers Association, <b>Hermanus</b>		Y <sup>1</sup>	N <sup>3</sup> →Y <sup>2 4</sup>	Y <sup>3</sup>		Y <sup>5</sup>		
Cape Fish Processors (Pty) Ltd		Y <sup>1</sup>	Y <sup>2</sup>	Y <sup>3</sup>			N <sup>8</sup>	
Blue Continent Products Ltd (Blue Continent Group: Oceana), Cape Town	N <sup>6</sup>	N <sup>6</sup>	Y <sup>2</sup>	N <sup>7</sup>	N <sup>7</sup>		N <sup>8</sup>	
Dried Ocean Products CC, Port Elizabeth	N <sup>6</sup>	N <sup>6</sup>	Y <sup>2</sup>	N <sup>7</sup>	N <sup>7</sup>		N <sup>8</sup>	
Scenematic 16 (Pty) Ltd	N <sup>6</sup>	N <sup>6</sup>	Y <sup>2</sup>	N <sup>7</sup>	N <sup>7</sup>		N <sup>*</sup>	
<b>Total</b>	<b>7</b>		<b>10</b>			<b>5</b>		

Notes for Table 2.10.

1. Source: Sauer *et al.* 2003a.
  2. Source: DEAT 2003d. This document mentions these 10 processors although 5 of them are not listed in Sauer *et al.*'s 2003a list of 2000/01 processors and three that are in this list are not given in the Draft Abalone Policy.
  3. Source: DEAT 2001b.
  4. At the time of the 2001 allocation, OCAD was not a processor, its catches were delivered to Walker Bay Cannery. Therefore, between 2001 and 2003 OCAD was granted processor rights.
  5. Source: DEAT 2003e. It is not known whether previous processors can appeal.
  6. Not mentioned as a rights-holder or processor in Sauer *et al.* 2003a. Perhaps operating under different names.
  7. Not found as applicant in DEAT 2001b. Perhaps operating under different names.
  8. Not found as applicant in DEAT 2004a. Perhaps operating under different names.
  9. Not mentioned as an applicant in DEAT 2001b but mentioned as the company which would do processing, marketing in the application of Hentiq 1676 (a new full commercial applicant) and of Microzone Trading 529 CC (a new limited commercial applicant). Neither of these two companies were granted rights in 2001.
- \* Not found in DEAT 2004a, however, Hentiq 1676 which "holds 40% in Scenematic 16" was given a legal entity right. Hentiq 1676 applied for but was not granted a right in 2001 (as a new entrant) and therefore should not have been eligible for a legal entity allocation in 2004.

More serious than all of these perceptions is the perception that recent quota cuts within the Hawston community have been because factories have received increased quotas, rather than because of the depleted state of the resource (Table 2.11 and Figure 2.5 show that this is not true).

While these grievances have been developing, the various divers' organisations have disagreed among themselves on policies relating to commercial divers, assistant divers, boat assistants, approaches to marketing and whether or not to embrace former or current poachers.

In the 2003/04 abalone allocation, 77 **commercial divers** resident in Hawston received rights with 55% of these receiving 600kg and the rest 400 kg. All divers are (since 1984, Sauer *et al.* 2003a) legally obliged to sell their catch to one of the specified processing factories. The Overberg Commercial Abalone Divers Association (OCAD) was formed in 1995 when three divers associations joined (Sauer *et al.* 2003a) and it has received quotas since then. By the time of the 2001/02 allocation this organisation, now a company, received 13.5% of the TAC (DEAT 2001b) and consisted of approximately 47 HDP and 12 white divers. At that time, OCAD contracted the shareholders as divers and then the catch was delivered to Walker Bay Cannery (DEAT 2001b). Since then, OCAD has become a processor and is therefore able to export directly. In the 2003/04 allocation they were one of only five processors given their own quota (Table 2.10). Processors other than these five must now rely on buying the catch of "legal entities" and divers, as will OCAD when their harvesting rights expire in three years

time. Assuming that the total processor TAC was distributed between the five 2004 processors in the same proportions as in the 2001 allocation, OCAD would have received only 6.8% of the total 2004 TAC as compared to 13.5% in 2001. OCAD was also granted a 2000 kg full commercial west coast rock lobster quota for the 2002-2005 allocation (it is not clear where this was to be harvested as, at that time, there was no commercial fishery east of Cape Hangklip, but full commercial entities were entitled to harvest west coast rock lobster at any location).

**Boat assistants** (who assist on the boat with diving equipment, compressors, nets, pipes etc.), of whom there are about 130, were badly paid and as a result of intense lobbying were granted a small quota each (about 85kg) in 1996 to be dived by the commercial divers. The Southern Boat Assistants Company, formed at this time, has received quotas since 1996 including the 2004 allocation. Unfortunately, tensions have arisen between “new” and “old” boat assistants and between registered and non-registered boat assistants. Apparently, OCAD is going to export the Southern Boat Assistants Company’s quota. The Southern Boat Assistants Company does not appear to hold west coast rock lobster rights, although individual members may have applied and been granted rights. Also, apparently because of tensions with OCAD, the Hawston Abalone Divers Association was formed. This has, like OCAD, been receiving quota since 1995/96 and received a quota as a “legal entity” in the 2004 allocation (Table 2.11). The Hawston Abalone Divers Association was granted a 2000 kg west coast rock lobster right in 2002 and individual members may have applied and been granted rights in the 2004 east of Cape Hangklip allocation. Another important organisation in Hawston is the Hawston Fishing Company (Hawston Vissersmaatskappy) which was formed by **previous poachers**. Currently, 184 families, 22 divers, 54 skippers and 19 drivers are involved and they spend money on bursaries and job creation and have launched a boat-based whale watching initiative (HFC website). They have also received quotas since 1995/96 (Table 2.11), but were not granted rights in 2004 (although individual divers may have applied for and received rights). They received a 2000 kg west coast rock lobster right in 2002 and individual members may have applied for and been granted rights in the 2004 east of Cape Hangklip allocation. There are several other companies associated with fishing (including abalone and west coast rock lobster) in Hawston some of which are mentioned in Table 2.11.

**Table 2.11.** *Some abalone quota holder organisations in the Hawston / Hermanus area and their quotas (in kg) since 1996 (sources Sauer et al. 2003a and DEAT 2001b, 2004a). The 2001/02 full commercial west coast rock lobster quotas to these organisations are also shown. LE=legal entity, P=Processor, WCRL=west coast rock lobster.*

	1996/97	1999/00	2000/01	2001/02	2001/02 WCRL	2003/04
Arrowline Fourteen CC	?	2 000	1 484	2 250	2000	0 <sup>1</sup>
Hawston Abalone Divers Association	2 632	4 000	2 968	2 964	2000	600 (LE)
Hawston Fishers Co. / Hawston Vissersmaatskappy	13 158	9 614	7 134	6 320	2000	- <sup>3</sup>
Hermanus Community Trust	12 500	3 000	2 2226	0	-	0
Mudge Point Fishing CC	?	3 000	2 226	2 250	2000	600 (LE)
Raaff Fisheries	-	-	-	430 <sup>2</sup>	2000	400 (LE)
Southern Boat Assistants Company	6 579	13 086	9 708	8 498	-	3930 (LE)
Overberg Commercial Abalone Divers Association	?	87 290	64 770	55 037	2000	~27 600 (P)*
Sea Plant Products (Marine Products: Foodcorp)	140 942(P)	75 678(P)	56 154(P)	47 972(P)	52 223 <sup>5</sup>	~24 000(P)*
Tuna Marine (Oceana)	137 347(P)	73 752(P)	54 724(P)	46 874(P)	- <sup>4</sup>	~23 500(P)*
Walker Bay Cannery (Irvin and Johnson)	104 461(P)	55 857(P)	41 446(P)	35 130(P)	- <sup>4</sup>	~17 600(P)*

\*assuming processor TAC apportioned as in 2001

? unknown

1. Legal entity application rejected because “improperly lodged” (no deposit slip) and because “no investment in a suitable vessel”
2. New limited commercial entrant
3. Does not appear in DEAT 2004a as legal entity applicant. Individual members may have applied as divers.
4. Buying WCRL for processing from various sources and joint ventures.
5. Granted to Foodcorp, not Sea Plant in Hermanus.

It is clear from Table 2.11 and Figure 2.5 that, even if:

- (a) DEAT’s approach had not changed several times over the last decade (e.g. encouraging the formation of large CCs then small CCs and then, in 2004, granting the bulk of the TAC to individual divers),
- (b) there was clarity at DEAT and within the community about what constituted a “new entrant”: i.e. is it someone who had never previously had a right or who had never previously been involved in fishing,
- (c) the allocation decisions made were completely consistent with the published policies (which, on perusal of the various spreadsheets, they were not),

the Hawston community would still be facing severe financial difficulties at this time. As shown in Figure 2.5 the total amount of abalone legally harvested in the area (as shown by the TAC and the quotas) has plummeted since 1996. As a result of points (a) to (c) and of the cuts in quota, the “lucky few” who retain rights in the abalone fishery are viewed with suspicion by the rest of the community and accusations of corruption abound.

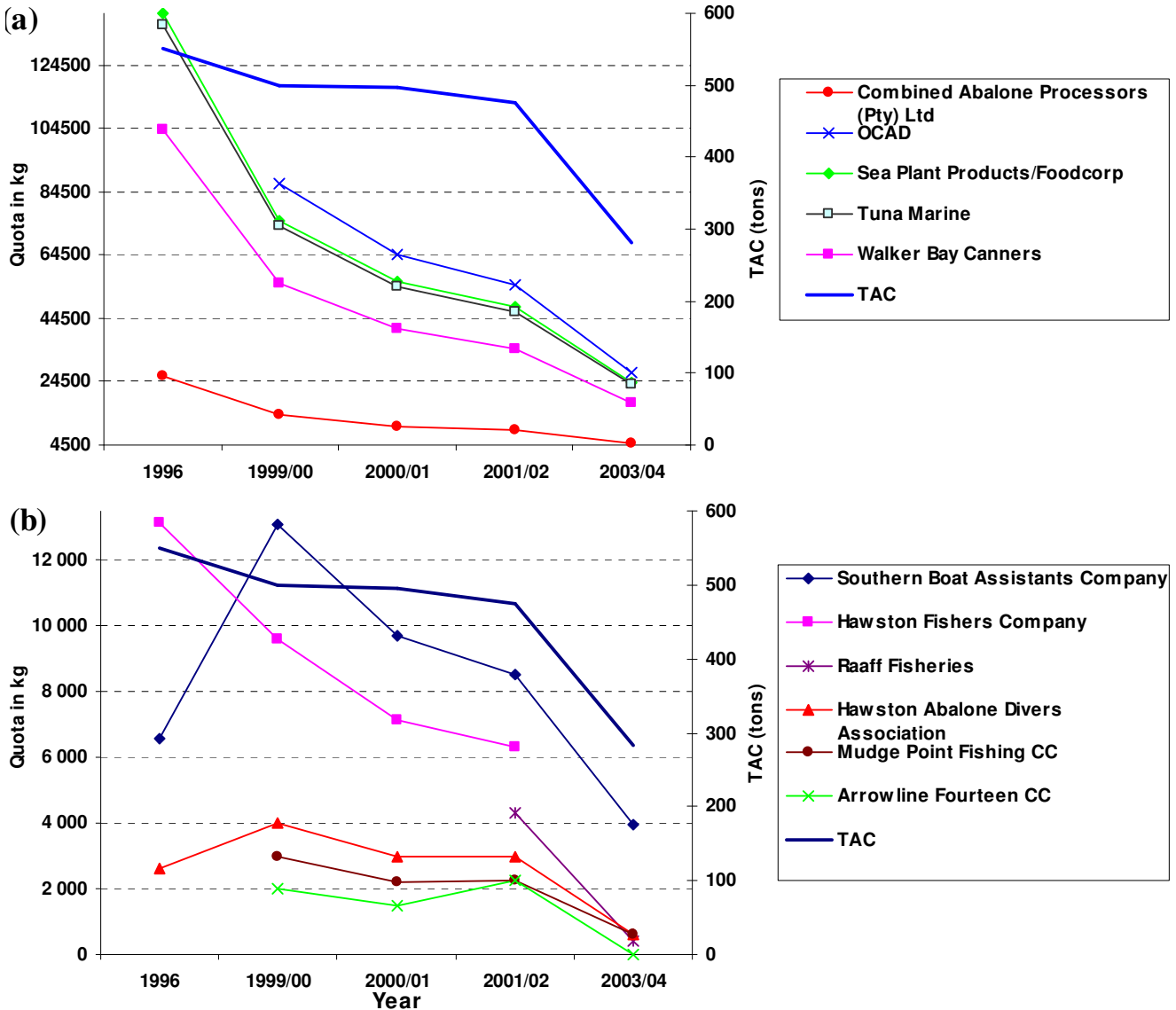


Figure 2.5. Abalone TAC and quotas held by some (a) processors and (b) limited commercial, full commercial (2001), legal entity (2004) in the Hermanus / Hawston area since 1996. Quota for processors for 2003/04 are estimates (see Table 2.11) and the quota given to OCAD in 1996 was unavailable.

During 2000-2001, divers received R12 to R20/kg of abalone, depending to which rights-holder s/he was contracted (Sauer *et al.* 2003a). For example, the divers associated with OCAD or SA Commercial Fisherman Corp. (Pty) Ltd (SACFC), received R20/kg when diving the quota for their association, but only R13 to R17/kg when fishing the quota for a processing rights-holder. However, for every 1kg a SACFC diver delivered to Tuna Marine, s/he was contracted to fish 1.5 kg of Tuna Marine’s quota. In contrast, OCAD divers contracted to fish for Walker Bay Cannery (at R17/kg) were granted an extra 60-65% of the delivery weight to catch for Walker Bay

Canners. As a further complication, some rights-holders, not part of OCAD or SACFC, had similar agreements with the processors (but with the ratio increased to 1:2) (Sauer *et al.* 2003a). In 2001, divers were being paid R20/kg by OCAD (DEAT 2004a), whereas Sauer *et al.* (2003a) claim that OCAD divers received R30/kg in the mid-1990s. The drop in price by 2000 (in Sauer *et al.* 2003a) and 2003 (in DEAT 2004a) is not explained. Paul (2000) suggests that the changes in diver organisations and allocation policies over the last few years have had a detrimental effect on divers as they have “lost their collective bargaining power”, and this may explain the reduction in price. Sauer *et al.* (2003a) found that the price per kg received by the diver was divided between the diver (~R8/kg), the skipper (~R3/kg) and two boat assistants (R2/kg each). The diver’s ~R8/kg covers his time, running and maintenance costs of the vessel, and the purchase of diving equipment such as wetsuits and compressors (Sauer *et al.* 2003a).

#### 2.4.2 Kalk Bay village and fisher community

Kalk Bay was established in the 17<sup>th</sup> century when lime (kalk) was extracted using kilns from seashells in the area. A military base was established in the late 18<sup>th</sup> century and in the 19<sup>th</sup> century it developed as a fishing village and whaling station. A vessel from the Philippines was shipwrecked in the 1840s and many of the sailors settled in Kalk Bay. These were joined by deserters from other ships, freed East Indian slaves and Malaysian settlers. People from the other side of the peninsula (Wynberg, Cape Town) established holiday or weekend houses in Kalk Bay and with the coming of the railway (in 1883) (Walker 1999), many more people settled. In 1913 when the breakwater and harbour construction began there were 47 fishing boats (rowing sailing combination boats) which gave employment to 236 men. When construction ended (1919), 16 motor boats were registered for fishing and six of the others were converted to motor. Kalk Bay - Muizenberg municipality was joined with others to form the City of Greater Cape Town in 1913 (Walker 1999).



Kalk Bay harbour. (Photo: Ron Janssen).

Kalk Bay has always been a fishing village. With the change of government and the attempts at new allocation systems to broaden access to fishing, divisions have become more evident between the wealthier boat-owners and rights-holders on the one hand and their crews on the other. Divisions have always been there to some extent, with the wealthier skippers and boat-owners generally living in the “village” and the poorer fisherfolk on “die land” (Walker 1999) where the fishermen’s flats were later built. However, the divisions now relate to people’s views about allocation policy and how they have been affected by them. To this have been added the elements of suspicion and mistrust. Some of the wealthier boat-owners and skippers are referred to as “gatekeepers” and the perception is that they block the free flow of information between fishers and MCM, that they unfairly in some way have rights while the ordinary fishers remain poor, working hard for a pittance with no chance of getting their

own rights. Boat-owners on the other hand feel that they are now expected to “sign over” portions of their hard-earned assets (in the form of rights and boats) to their crew (rather than passing them on to their children) in order to retain their rights.

In 1993/94 there were 69 boats registered in Kalk Bay harbour with a combination of west coast rock lobster, hake, linefish and other rights (see Table 2.12). By 1997/98 this had increased to 76 (DEAT 1994 and 1998). In 2003, with the first linefish allocation since the new ruling that holders of other rights may not also have traditional linefish rights, at least two full commercial rights, six limited commercial rights and 19 exemptions were granted to Kalk Bay harbour users. In addition, 31 limited commercial west coast rock lobster rights-holders were allocated in the 2002-2005 allocation to fishers using Kalk Bay as their landing site (although only about seven boats appear to be involved), and at least five full commercial west coast rock lobster rights-holders are Kalk Bay based companies (Table 2.12).

**Table 2.12.** Boat licences and rights-holders over the recent years in Kalk Bay. WCRL=west coast rock lobster.

	Licensed boats		Rights holders since 2001		
	1993/1994	1997/1998	Years	Number	
<u>Linefish</u> A licence	41	33	<u>Linefish</u> full commercial	2003/04	At least 2
<u>Linefish</u> B licence	23	24	<u>Linefish</u> limited commercial	2003/04	6
			<u>Linefish</u> exemptions	2003/04	19
Pelagic	1	11			
Other	4	8			
			WCRL full commercial	2002-2005	At least 5
			WCRL limited commercial	2002-2005	31
			Other rights (hake, pelagic, etc.)		unknown
Total boats in harbour	69	76			

### 2.4.3 Ocean View village and fisher community

“Coloured” residents of Simonstown (a long established village similar to Kalk Bay, a further 10 km south, which now houses the South African naval base) were forcibly removed in 1968 and settled in Ocean View. Many of Simonstown residents had been fishers and were now living in a settlement which was not adjacent to the sea (despite its name). Some of these fishers had links to the Kalk Bay fishing community and their access to the fishing industry continued via this route, while others used Witsands slipway to launch their boats (about 170 fishers operate from this slipway (Echo October 7 2004). Similar to other communities established during the apartheid era when people were forcibly moved to ghetto-like facilities elsewhere, the Ocean View community (population about 35 000 (Isaacs 2004)) has had its share of social problems since then. In general, there are high levels of unemployment (about 46% (Isaacs 2004)) and substance abuse and relatively low education levels. Fishing has played an important role in the livelihoods of the Ocean View community, with many using recreational permits to supplement their income (although recreational catches are not supposed to be sold), while others have access to commercial rights of various kinds. Between seasons or as another source of income, many work in the building industry (Isaacs 1998).

West coast rock lobster is one of the more important fishing sectors to the community of Ocean View as it requires very little equipment or skill. About 60% of fishers sell their catch locally, and in 1998 80% were earning less than R80 a day, and for 70% of them this amounted to more than 50% of the family income (Isaacs 1998). In the 2002-2005 west coast rock lobster at least 80 tons was allocated to the Witsand area (which includes Ocean View) as limited commercial rights (Table 2.13) and additional to full commercial rights-holders. There are also linefish rights-holders, linefish exemption-holders and abalone rights-holders in the area (Table 2.13).

**Table 2.13.** Rights-holders since 2001 in Ocean View (or area). Witsand is the launching site often used by Ocean View fishers. WCRL=west coast rock lobster.

	Rights holders since 2001	
	Years	Number
<u>Linefish</u> full commercial	2003/04	?
<u>Linefish</u> limited commercial	2003/04	12 (Witsand)
<u>Linefish</u> exemptions	2003/04	52 (Witsand)
WCRL full commercial	2002-2005	? (at least 3)
WCRL limited commercial	2002-2005	99 (Witsand) (+12 appeals)
Abalone legal entities	2003/04	? (7 in Zone G)
Abalone divers	2003/04	6 (600 kg each)
Other rights (hake, pelagic, etc.)		?



Witsand near Ocean View. (Photo: Ron Janssen).

## 2.5 Summary and conclusions

While facing all the usual problems of fisheries management throughout the world (increasing effort and dwindling stocks), the South African government of 1994 also faced the task of “redressing the imbalances of the past” when lack of access to capital and other rights limited the extent to which HDPs could become involved in fishing. The actual method used to try to meet transformation and other goals and the allocations resulting (since 2001) are assessed in Chapter 5, while some of the implications for the fisheries and communities of concern were discussed in Sections 2.3 and 2.4. Although in the Western Cape many ‘coloured’ people, had been involved with fishing for generations, few were involved in the more lucrative fisheries. Most were either involved in ‘informal fishing’ as owners of relatively small vessels or as crew, caught other peoples quota, were paid as skippers or labour, rather than catching their own. As quotas were progressively introduced since the late 1970s, fishers became marginalised as they often could not gain legal access and so fished informally or illegally. The efforts of

DEAT since 1994 have not been particularly successful in achieving either the protection of stocks or meeting the aspirations of the previously disadvantaged even though the number of quota holders has increased dramatically since 1990 (with the introduction of the Quota Board) and since 1994 with the new political dispensation (see for example, Figure 2.2 and Figure 2.3). While the opening up of the industry gave many HDPs rights in various fisheries, many still feel unhappy and dispossessed. This is due in part to the ad hoc manner in which the process of transformation was undertaken. For example:

- In the early 1990s there was a limited and unsuccessful introduction of ‘community quotas’ which left much disillusionment.
- There were recommendations from MCM to form CCs or co-operative which, however, did not get quotas which related to the size of the group. Some groups were advised to apply for full commercial rights but the limited commercial sector would have been more appropriate for them. This left communities with a feeling that they were being misinformed.
- For three years “subsistence quotas” were granted for west coast rock lobster and abalone. Subsistence rights in west coast rock lobster were discontinued in 2001 in accordance with the recommendations of the SFTG and instead people could apply for “limited commercial” rights. However the number of rights-holder who were accommodated dropped (necessarily) from 1870 “subsistence” quota holders in 2000/2001 to 486 limited commercial quota holders in 2002/2005. The initial allocation of subsistence rights gave people a feeling of entitlement which was already a feature of many of South African administrative headaches at the time, and left them feeling dispossessed when the rights were changed and many applicants were inevitably unsuccessful.
- The FTC responsible for allocations to the formerly disadvantaged was formed and then disbanded leading to further confusion.
- With the initial “opening up” of the industry the view was taken that *all* South Africans had the right to participate in the fishery and this meant that traditional fishers could lose their rights to an entrepreneur who had not previously been involved in fishing. With the new system of 2001, points were allocated for previous involvement in the industry and, for some fisheries, dependence on the resource and proof of being a “bona fide fisher” were required conditions. However, despite the formation of the Rights Verification Unit, in **every** community there are complaints that “retired teachers” and “weekend fishers” had obtained rights, while real fishers had not. The “hotline” established in order for people to report such cases was felt to be ineffective.
- The larger commercial companies argued that their rights should be minimally reduced in order to keep the industry stable and some litigated to avoid quota cuts, while some new companies litigated as they felt their quotas were not big enough.
- The linefishery was split in 2000 into various sectors, including hake handline and ‘traditional linefishing’. Access to the latter sector, a mainstay of many fishers in poorer communities, become conditional in 2003 on having access to no other sectors, meaning that the traditional combination of handlining and west coast rock lobster or abalone was no longer allowed.
- Misinformation by MCM to fishers or misunderstanding by fishers occurred, such as that a particular group should apply for full rather than limited commercial rights, or that a fishers should apply only for a right to one fishery as they might jeopardise their chances if they applied for more than one.

The “chopping and changing” of the rules since 1994, although meant with good intention, has meant that the average fisher has had to jump through several different hoops to try to comply and then may still find that the approach has changed after he has submitted his application. The system seems to have stabilised somewhat in 2003, although interpretations and scoring systems remain rather fluid. For example, the actual scores allocated to different criteria, as a matter of policy, are not known until after the applications have all been received and the profile of applicants analysed. However, the new minister of Environmental Affairs and Tourism promised in August 2004 that the actual scores would be made known beforehand in the next allocation.

However, the damage has essentially been done in terms of the social disruptions and the unhappiness of the traditional fishers. Those who may have “wrongly” been granted rights in 2001/2002, have now established the credentials necessary for the next application (in 2005). They have four or five years of experience and are



previous rights-holders and may have invested in gear, vessels and human resources. Those who were not granted a right have perhaps only an additional few years as a crew member to add to their application form.

On the other hand, it also seems clear that the general approach adopted (of limited entry quotas) was the only justifiable approach to take in order to both maintain stability and sustainability of the industry while redistributing rights in order to increase equity (Hersoug and Holm 2000). A TAC and quota controlled access system, seems the only approach possible, in *this* context<sup>18</sup>, for attempting to limit overfishing and so ensuring environmental and economic sustainability. There are numerous criticisms of the economic, social and environmental consequences of ITQs as a particular form of limited entry, but a full review or critique of the ITQ system is beyond the scope of this project. Even so, there are fishers who regard the whole idea of “a quota system” and of ITQs as immoral and feel that they have a natural right to catch fish and should not have “to go as beggars” to MCM to apply for a fishing right (Andy Johnston pers. comm. Fishing Imbizo, 17 Aug 2004). At the same time, the “co-management” concept is often mooted, in South Africa and elsewhere, as a more appropriate management approach, and indeed, the Turf based system now adopted for abalone management in South Africa, is attempting to instil a feeling of ownership of the resource in order to improve the possibility of co-management of the resource. However, attempts at instituting co-management arrangements in other fisheries in South Africa have, for the most part, not been particularly successful (see e.g. Hauck and Sowman 2003).

It would appear that the next allocation in 2005 cannot redress these issues without creating similar problems of entitlement and dispossession. It is also abundantly clear from experience around the world that no system for the allocation of limited resources can possibly satisfy everybody. It is therefore of paramount importance that in preparation for the 2005 allocations MCM should undertake an *in depth* assessment and evaluation of the effects of the first medium term allocation on fishing communities and in terms of MCM’s goals of transformation, stability and sustainability.

With this information they then need to carefully develop goals or objectives for the new allocation, bearing in mind that these are intended to be longer term and bearing in mind subsequent allocations. This needs to be followed by a careful selection of criteria (measures) which can be used to evaluate the applicants’ contribution to those goals. A methodical, systematic and transparent process of then evaluating or scoring applicants is also needed. These steps are essentially what the methods of MCDA are intended to support. DEAT and MCM are currently developing their policies for the new round of allocations in 2005.

The following chapter discusses a pilot local knowledge survey and the implications of the better use of local knowledge for both fisher empowerment and co-management. It also describes interactions Hawston community members to better understand skills and training needs. The theme of allocations is returned to in Chapter 5 where the recent allocations are analysed and critiqued and in Chapter 1 where MCDA-based interactions with the three communities and with MCM were used to try to improve the approach to allocation.

---

<sup>18</sup> In the Western Cape for the fisheries and communities described in this report.



### **3. Interaction with fishers: Local knowledge and training as tools for empowerment and fisheries management**

The aim of both fishery managers (MCM in this case) and fishers should ideally coincide in that both groups would want to have a sustainable fishery (i.e. a fishery that would provide a long-term income, while maintaining ecosystem integrity). However, political expediency and general mismanagement on the one hand, and short-sightedness and greed on the other hand would tend to limit the extent to which this happy coincidence would arise. In fact, most of these factors would tend to lead to over-exploitation as the relevant minister could gain short-term popularity by granting more and/or larger quotas, while fishers can gain short-term profits by over-fishing (through catching more than their quota or poaching). The long-term consequences are, of course, that the stocks may not recover from overfishing and, on a broader scale, ecosystems become more 'brittle', inevitably leading to reduced quotas and profits and consequently poorer and/or fewer fishers.

Given the ideal of sustainability, which may be portrayed as the joint achievement of three goals: maximising environmental quality, maximising economic benefit and maximising social benefit, the question is: what can be done to improve the chances of achieving it. The aim of this chapter is to identify issues, associated with these three objectives, which need to be addressed to improve sustainability, and to suggest some ways of addressing them. As will be seen, the distinctions among these three goals are not always very clear.

Some aspects of sustainability as it relates to fisheries are highlighted in the next section. Then in Section 3.2 an investigation into local knowledge and its potential contributions to sustainability is described followed, by an investigation into the skills and training needs of fishing communities in Section 3.3. Conclusions are given in Section 3.4.

#### **3.1 Aspects of sustainability**

Sustainable development is portrayed in terms of three components (environment, economy and society) and may be operationalised as the simultaneous achievement of three goals: maximising environmental quality, maximising economic benefit and maximising social benefit. To illustrate, the Convention on Biological Diversity aims for conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits from the use of genetic resources. This section provides an overview of the literature regarding fisheries management from the point of view of sustainable development. It is argued that sustainable fisheries management would comprise: viable and sustainable resource stocks subject to sustainable use by sustainable fishing communities. The notion of sustainability originates, to some degree, from fisheries management and its attempts to identify a maximum sustainable yield – the largest catch which could be taken from a fish stock year after year without compromising either the stock or future catches<sup>19</sup>. Early theory on population dynamics was combined with relatively simple economics to produce “bioeconomic” models. These models still form the basis, although often much elaborated, for present-day fisheries management.

##### **3.1.1 Environment – sustainable resource stocks**

The environmental perspective for sustainable fisheries is largely focused on disentangling the interrelationships among fishing pressure, environmental variability and breeding success. These interrelationships are still poorly understood (Schiermeier 2002). The drive for this understanding comes from stock collapses that have profound consequences, obviously for the stocks, but also for fishers, regional and national economies, other species and industries dependent on these other species. Scientists have argued that too heavy fishing pressure – overfishing – poses a threat to many fished stocks. Overfishing stems primarily from the desire of fishers to maximise their profits, usually equated with maximising catch. It also stems from the open access nature of marine resources, as well as improved technology and fishing efficiency. Attention has more recently come to focus on the damage that fishing gear can cause to ecosystems and to the effects of fishing on non-target species. Fisheries scientists

---

<sup>19</sup> Because of the extreme consequences of errors in the modelling of MSY other approaches are now being pursued.

have argued for three basic components to management (Schiermeier 2002): setting lower catch quotas, reducing the size of fishing fleets, and using less harmful gear.

Because the ‘burden of proof’ that overfishing is occurring, or that it is the cause of stock declines, lies with fisheries scientists, management actions have tended to be taken after, instead of before, stock declines (Repetto 2001; Schiermeier 2002; Pauly *et al.* 2002). Reducing fishing capacity is difficult to achieve when many subsidies exist to support either modernisation of fleets or expansion of their activities (Pauly *et al.* 2002, 2003). Even decommissioning subsidies can have contrary effects, with the eventual subsidies serving as collateral for loans to modernise vessels, or facilitating a switch in pressure to species for which quotas have not yet been set (Pauly *et al.* 2002). Constraints on gear have been implemented, particularly where it was shown to have adverse impacts on other species (e.g. marlin and dolphins as by-catch of tuna long-line fishing – Pikitch *et al.* 2004) or on benthic ecosystems (e.g. benthic trawls which may be likened to clear-felling of marine ‘forests’ – Schiermeier, 2002). However, again, constraints tend to be imposed only once the damage has been done. Also, technological advances in locating and catching fish vastly surpass constraints in the use of fishing gear (Pauly *et al.* 2002).

Currently there is growing interest in a more ecosystems approach to fisheries management, as fisheries biologists explore the wider ramifications of fishing and overfishing (e.g. Jackson *et al.* 2001; Pauly *et al.* 2002 & 2003). For example, Pauly *et al.* (1998) showed that the average trophic level of the global catch is declining – termed ‘fishing down the food web’. The mechanisms by which top predators influence lower trophic levels, and may even promote populations of their prey, are being lost. This has raised concerns that fishing is breaking down the web of interactions among components of marine ecosystems. Shortening and simplification of food webs could explain the vulnerability of stocks to environmental variability (Pauly *et al.* 2002).

Three new suggestions for improved fisheries management have emerged from the environmental ‘third’ of the sustainability triangle. The first is to replace current single species stock assessment with Ecosystem-Based Fisheries Management (EBFM - Pikitch *et al.* 2004). EBFM aims to sustain healthy marine ecosystems by avoiding ecosystem degradation, reducing the risk of irreversible change to natural assemblages of species and ecosystem processes, obtaining and maintaining long term socio-economic benefits, and generating knowledge of ecosystem processes to understand the likely consequences of human activities.

The second argues for the use of networks of marine reserves to protect populations of commercial species, the idea being that the offspring of these protected populations will recruit to commercial stocks. The offspring of protected populations are expected to recruit to commercial stocks. Reserves have been proposed to provide greater fishery yields when effort is high (Quinn *et al.* 1994; Holland and Brazee 1996; Sladek-Nowlis and Roberts 1999), to prevent overfishing in the presence of parameter uncertainty (Botsford *et al.* 1997; Lauck *et al.* 1998), and to reduce variability in catch (Sladek-Nowlis and Roberts 1999). However, the implementation of reserves has been slowed by concerns that they will reduce fishery yields. Theoretical studies have shown that management of fisheries through reserves versus effort control could produce identical yields under a reasonable set of simplifying assumptions corresponding to a broad range of biological conditions (Hastings and Botsford 1999). These authors argue further that marine reserves should be the preferred management approach for populations with sedentary adults (invertebrates and reef fishes).

The third overlaps with the social component of the sustainability triangle. Scientists need to involve fishers in their work, and to break down the ‘us-and-them’ attitude that helps to foster the current gulf between science and policy (Schiermeier 2002). Various partnership and co-management<sup>20</sup> arrangements are being set up to involve fishers more in the management of their fish stocks while at the same time helping scientists obtain crucial data on where and when fish are found. For example, the Study Fleet Project is a pilot project that partners commercial fishermen with NOAA Fisheries personnel to develop and implement state-of-the-art electronic data reporting devices and software for use aboard groundfish fishing vessels in the north-eastern USA. Fishermen are assisting in the design of these data collection systems. These collaborative efforts will result in information that could be used by both fishermen and managers (Anon. 2003).

---

<sup>20</sup> Co-management in this document does not refer to community management, but rather to joint management by a national or regional responsible authority and fishers.

### **3.1.2 Economics – sustainable resource use**

There have been various contributions from economics to current fisheries management. Users of a common resource with no constraints on use may be caught in an inevitable process that leads to its destruction (e.g. Hardin's (1968, 1994) notion of the "tragedy of the commons"). Hardin's proposed solution was "either socialism or the privatism of free enterprise", and led western economists to address the issue of property rights. In fisheries, where fishers extract from a common unbound resource pool, no-one had property rights. This situation has changed for many fisheries. ITQs, which increase the property rights nature of fisheries access, were one of the solutions proposed to the problems of oversubscribed fisheries (see also Section 2.1). Despite this, in all but a few cases, the economic costs of overfishing are not internalised in fisher (or government) transactions (an exception being the "buy-back" of quota in New Zealand during the initial introduction of ITQs). Together with other market failures (e.g. subsidies) and the unbounded nature of the resource, the consequence is that there are few or no economic constraints to overfishing.

Reducing or containing vessel numbers to the minimum necessary to maximise the economic rent from a fishery is a key objective of individual transferable quota (ITQ) systems (Moloney and Pearse 1979). ITQs involve the allocation of rights to portions of the Total Allowable Catch or TAC to eligible participants in a fishery. Individual quotas are transferable among license holders by sale or lease. Proponents of such systems argue that they promote conservative harvesting by assuring quota holders of a share of any increase in future harvests achieved through stock rebuilding. Such systems promote efficiency by allowing quota holders flexibility in the timing and manner of harvesting their share to reduce costs or to increase product value. Proponents also contend that ITQ systems reduce excessive effort by providing a compensated exit strategy for license holders in overcrowded fisheries, and stimulate technological progress by increasing the returns to license holders of investments in research or improved fishing technology. The comparison by Repetto (2001) of management of the sea scallop fishery by Canada (using ITQs) and USA generally supported these arguments.

However ITQ also has its opponents, who argue that such systems lead to monopolization of the resource through consolidation, force out small operators, encourage discard of by-catch and high-grading of the resource to maximize the value of quota, and exacerbate problems of enforcement (e.g. Jennings 1999; Bradshaw 2004b). Opinion on the merits of rights-based management regimes in general, and ITQs in particular, is divided among fishermen, fisheries managers, politicians, academics, and environmentalists. Economists generally favour the adoption of such systems for their promise of greater efficiency and stronger conservation incentives but other social scientists decry the potential disruption of fishing communities by market processes and the attrition of fishing jobs and livelihoods (Repetto, 2001).

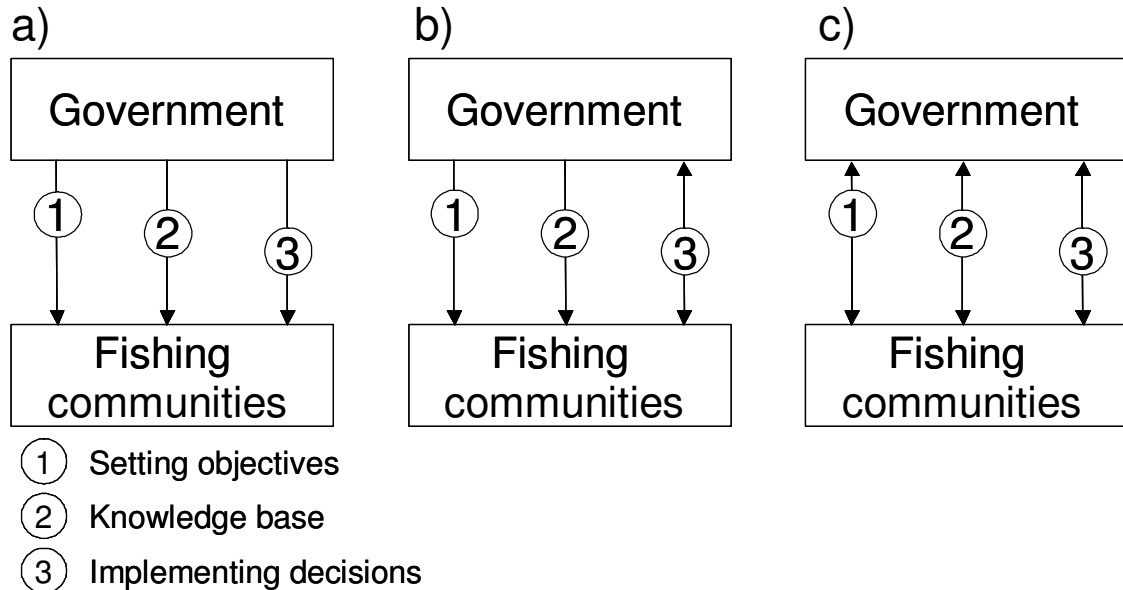
The second prong in the management of common property resources is to create incentives for users to invest in the resource instead of overexploiting it. The prediction that resource users are led inevitably to destroy a common resource is based on a model that assumes that all individuals are selfish maximisers of short-term results. This model is strongly supported by empirical data from open, competitive markets in industrial societies (e.g. Plott 1986; McCabe *et al.* 1990), but not all fisheries operate this way. Predictions based on this model are not supported by field research or in laboratory experiments in which individuals face a public good problem and are able to communicate, sanction one another, or make new rules (e.g. Orbell *et al.* 1988; Ostrom 1998; Kagel and Roth 1995). Social scientists claim that fishers are not simply strategic, atomistic players. They are born, raised and live in local communities; are enmeshed in cultural and social systems that give meaning to their lives and directions for their behaviour. Their fishing practices are guided by values, norms and knowledge that are shared within their community. The Tragedy of the Commons may be a consequence of normative confusion which occurs when social ties are weak and moral standards unclear (McCay and Jentoft 1998; Jentoft 2000). Overfishing may be more a symptom of community failure, than market failure.

### **3.1.3 Society – sustainable users**

Many fisheries biologists and economists recognise the need to include fishers and fisher communities in fisheries management. As argued by Jentoft (2000), viable fisheries need viable fishing communities as well as viable stocks. This section examines the relatively recent notion of co-management which is expected to improve the efficacy of fisheries management, because the acceptance of management measures is assumed to be higher when users have been involved in the decision-making process (Raakjær-Nielsen *et al.*, 2004). It is often mooted as

“the” approach to ensuring sustainable use of a resource. Numerous cases are cited in the literature, but not all of these are successful (e.g. Hauck and Sowman 2003). There is therefore a need to identify the conditions under which particular kinds or components of co-management arrangements would work.

Co-management can broadly be defined as an arrangement where management responsibility is shared between the government and fishers. It can be viewed as a set of institutional and organisational arrangements (rights and rules), which define the cooperation among the fisheries administration and relevant fishing communities (Raakjær-Nielsen and Vedsmand 1999; Raakjær-Nielsen *et al.* 2004). Raakjær-Nielsen *et al.* (2004) argue that the governance of fisheries comprises three elements: “(1) setting management objectives; (2) defining and providing the knowledge base for management; and (3) ensuring implementation of management decisions”. Figure 3.1 compares the current usual model of fisheries management (a) with two forms of co-management.



**Figure 3.1.** A comparison of (a) modern, centralised fisheries management; (b) institutional co-management; and (c) empowering co-management (Raakjær-Nielsen *et al.*, 2004).

Many attempts to implement co-management have been limited to creating a two-way interaction for the implementation of decisions, termed institutional co-management by Raakjær-Nielsen *et al.* (2004) These authors argue that institutional co-management differs little from modern management, and that its efficacy has, in most cases, not been much better. The incentives for co-operation are primarily on the side of government, with fishers realising that they continue to be recipients of instructions (Hara and Raakjær-Nielsen 2003). Expectations of genuine participation and empowerment led to considerable disappointment and frustration among fishers, as well as poor achievement of management objectives.

The empowering co-management approach involves a learning process for all parties and takes an adaptive approach to management. Raakjær-Nielsen *et al.* (2004) argue that it will require: a rethink of the logic for management and subsequently a change in the knowledge base for management; a major restructuring of the institutional and organisational arrangements supporting management; a substantial change in attitudes from both governments and fishing communities towards their role in such arrangements; aspiration from fishing communities and government to proceed along this avenue; and, capacity building at several levels both within government and fishing communities.

There are two other aspects to the society “third” of the sustainability triangle that work in the opposite direction to that of co-management above, and are relevant to this study. The one is the effect on fishers and their communities of fisheries management decisions. Whereas a fishing community made up of second, third and fourth generation fishers is likely to have established some system of shared values, a community where the designated fishers change from year to year (or allocation to allocation) and/or where the numbers are reduced

over time is likely to become less and less cohesive and functional (Jentoft 2000). The other is the effect of environmental degradation (e.g. a decrease in fish stocks) on communities which inevitably leads to poverty.

The “ideal” situation for co-management occurs where all three arrows in Figure 3.1 have bi-directional flows. In other words where communities are involved in setting objectives, in defining the knowledge base and in implementation. Achieving this ideal could mean that fisheries are better and sustainably managed – in terms of resource stock, resource use *and* the continuity and cohesiveness of fishing communities.

## **3.2 Interaction with fishers: The value of local knowledge (west coast rock lobster) in management and empowerment**

### **3.2.1 Introduction**

This section of the project, therefore, deals with exploring the potential value and contribution of local ecological knowledge to the second arrow of Raakjær-Nielsen *et al.* (2004): defining the knowledge base (see Figure 3.1). Local ecological knowledge (hereafter referred to as local knowledge) is often relatively site specific and may be a mixture of “lore”, practical and scientific knowledge (Scholz *et al.* 2004). There are a number of different avenues in which local knowledge can contribute to management of fisheries. These include, for example (Johannes 1992):

- Knowledge about the timing and location of fishes’ movements. This information can be useful for stock assessments for certain types of fish where visual surveys might augment other data. Knowledge about such movements, which may be associated with breeding, may also contribute to the regulation of fishing pressure at certain times of the year or to the identification of appropriate fishing zones. This information may also be useful for identifying appropriate sites for marine protected areas.
- Knowledge about local vulnerable species and habitats (in space and time). This information can be for identifying appropriate fishing zones and seasons and for identifying appropriate sites for marine protected areas.

This part of the project was approached as a pilot study both in terms of the number of interviews that could be undertaken and in terms of the depth and breadth of subject matter that could be investigated. We limited ourselves to interviewing fisher representatives regarding certain aspects of west coast rock lobster biology and management. Below, the management and status of the west coast rock lobster resource is briefly recapped. This is followed by a review of west coast rock lobster biology. The methods are then described followed by an assessment of the results.

### **3.2.2 Management and history of the west coast rock lobster fishery**

Various details regarding current management of the west coast rock lobster fishery were outlined in previous sections and are not repeated here. Section 2.2.2 described the operational management plan (OMP) for setting the TAC which is disaggregated on a zonal basis. Section 2.3.3 gave a brief history of the fishery and recent rights allocations and showed the decline in catches over the last decade (Figure 2.3). This is augmented by the longer time-series of catch data in Figure 3.2. This brings into perspective the recent ‘gains’ in west coast rock lobster management! In essence, while the TAC has stabilised since the late 1980s ‘crash’, caused in part by a reduced somatic growth rate, the very slight increase in the last two years is hardly noticeable in comparison to historic peaks in the 1950s.

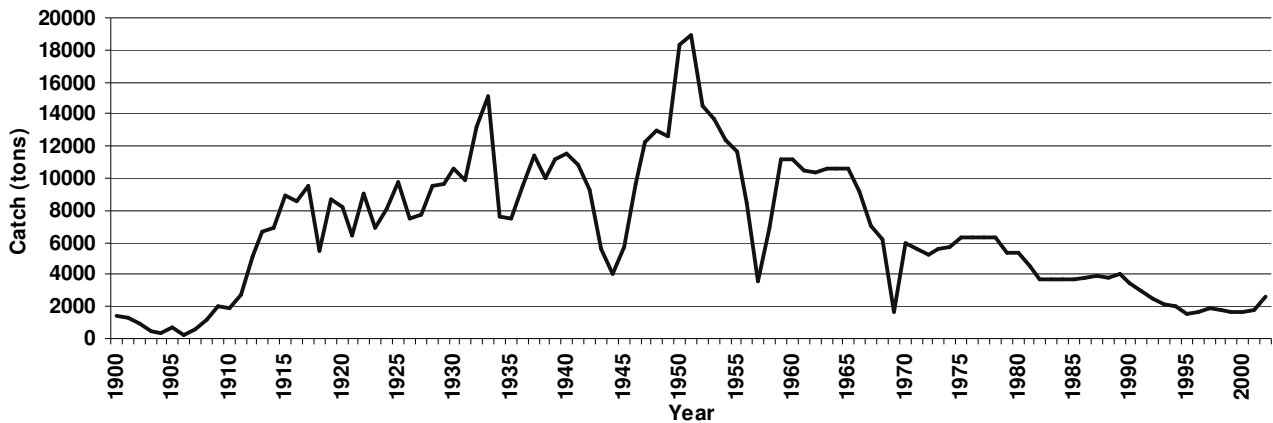


Figure 3.2. Catch data for the west coast rock lobster since 1900.

Rights-holders fall into two categories: full commercial and limited commercial. These are partially distinguished in terms of their gear (full commercials tend to have larger boats and to use traps rather than ringnets) and in terms of where they can fish (full commercials tend to fish further out to sea or in deeper water). In addition, recreational fishers may purchase a permit to collect four lobsters a day during the recreational fishing season (they tend to operate very close to the shore). The catches of all three of these sectors are now included in the TAC determined by the OMP (but not in Figure 3.2).

Rights are granted to individuals or companies, and were previously granted on an annual basis. In the 2001 allocation they were granted until 2005. In the 2005 allocation rights may be granted for up to 15 years, but the decision on the length of future rights has not yet been taken. The rights are only transferable with the permission of the Minister (but rights are currently sold or leased illegally in the form of paper quotas).

The criteria used in the 2001 (general) and 2003 (east of Cape Hangklip) allocations could be grouped under three objectives:

1. transformation of sector (through greater representation by HDPs and broader access);
2. increasing economic growth (through maintaining stability in the industry by rewarding investment or history in the industry);
3. improving management (through rewarding compliance with relevant laws, e.g. MLRA, Customs and Excise, Internal Revenue)

Details and problems associated with the recent allocations are discussed in Chapters 4 and 5. Of particular note for the west coast rock lobster fishery is that lobster rights exclude fishers from holding linefishing rights, and that access to another right (e.g. abalone) may reduce the likelihood of being granted a west coast rock lobster right or the size of the quota.

### 3.2.3 West coast rock lobster biology

The following information has been collated from a number of sources which all relate to the lobster population *west* of Cape Hangklip. Results of the experimental fishery east of Cape Hangklip are referred to, where relevant in the discussion of the survey results (Section 3.2.6).

Usually the puerulus larvae (size about 8 to 10 mm carapace length (CL) (Grobler and Njaula, 2001)) settle in depths of less than 10 m during December to April after several larval stages at sea over a period of probably more than a year (Pollock 1986). Juveniles moult several times during a year and grow to about 60 mm CL size about four years after settling (Pollock 1986). Adults moult only once a year. Females reach maturity at about 66 mm CL about five years after settling (Pollock 1986). Males reach 89 mm CL (the pre-1992 legal size limit) after about seven to 11 years and females after more than about 20 years.

The male moulting season in the south-western Cape is from October to December and the female moulting season from April to June (Pollock 1989). It is earlier the further west and north one goes (Pollock 1986).



Copulation takes place soon after the female moult while the female is still soft. During moult, individuals prefer less crowded conditions and the population in a fishing area may spread out more (Heydorn 1969). Lobsters do not feed when moulting as the mouthparts are also soft (Heydorn 1969) and so they are not usually caught in traps during this time. Inshore - offshore movements are associated with moult and breeding and oxygen levels in certain areas (Pollock 1986). Males seem to be generally deeper offshore, but may migrate inshore during / just after moult for protection from bottom swell and /or for breeding and, in the western-northern, areas to avoid water low in oxygen. In the western / northern distribution this may also be related to the higher oxygen levels needed during the berry phase. The female is in berry (carrying eggs) for five to six months, from around May/June until about October / November (Heydorn 1969 - working at Robben Island). Peak hatching (October, November) may coincide with the onset of upwelling. The larva from west- and south-western shores are carried into the south Atlantic gyre, possibly circulating to South America and back. It is not yet known what the fate is of the larvae from the eastern end of the distribution. Although egg-production continues to increase with age, 94% of egg production is by females of less than 90 mm CL because there are so few large females. The incidence of male moulting during the moulting season will apparently decrease with decreases in water temperature and increase with increases in temperature (Heydorn 1969).

Lobsters live in rocky areas that provide them with shelter from waves and predators, and they are often associated with kelp and mussel beds (mussels being their preferred food). Juveniles tend to occupy shallower areas closer in shore while adults occupy deeper areas further offshore (generally <70m, but they have been found at greater depths at certain deep water fishing grounds (e.g. in Hout Bay and off Cape Hangklip), with little overlap in their distributions. A well researched comparison is that of the Cape Town harbour wall, which has a largely juvenile population with smaller individuals higher up the wall and larger individuals deeper on the wall as well as on nearby natural habitat (e.g. Hazell *et al.* 2002). Where studied (e.g. Robben Island) lobster seem to choose areas sheltered from NW, W and SW swells / wind (Heydorn 1969). During bottom swell periods the lobsters seek shelter by crowding into crevices. In underwater crevices or caves the larger individuals stay at the back of the shelter with smaller ones in the front (Heydorn 1969). In favourable conditions they spread out and may be found on sandy or muddy patches (Heydorn 1969). Although certain authors refute the possibility of "mass migrations" because of lobsters' rapid tiring during swimming, this phenomenon has been reported for other lobster species and the inshore - offshore movement would suggest that fairly big scale movements are possible (they may walk on the bottom rather than swimming). Adults have few natural predators and these include the cape fur seal, octopus, dogsharks, hagfish, red roman and musselcracker, but these would normally prey on small juveniles (Pollock 1989). Larvae are preyed on by Longfin Tuna (Heydorn 1969).

Lobsters' preferred food is mussel but they also eat sea urchins, starfish, gastropods and occasionally kelp. They also eat juvenile abalone. An important indirect effect on abalone is through predation on sea urchin, which normally provide shelter for juvenile abalone. The increase in lobster population east of Cape Hangklip has decreased the sea urchin densities and consequently decreased abalone populations because of lack of suitably protected habitat for settling (e.g. Mayfield and Branch 2000). The composition of lobster diet depends on availability but reduced somatic growth rates since the late 1980s may be associated with lower mussel biomass (Pollock 1989).

Lobsters are regarded as a cold water species, occurring in temperatures ranging from 9°C to 16°C (Pollock 1989). Decreases in catch (due to changes in catchability not availability) have been associated with cooler waters and increases in equator-ward wind stress (Pollock and Shannon 1987). On the other hand, increased moult mortality is associated with higher temperature, but particularly with reduced oxygen levels (Hazell *et al.* 2002). Their north-western distribution seems to be strongly limited by oxygen levels (Pollock 1989).

Two important (and as yet unexplained) factors in recent west coast rock lobster biology are:

- There was a large decline in somatic growth rate in the late 1980s which had consequences for recruitment to the exploitable population and resulted in successive reductions in TAC and a reduced size limit (from 89 mm to 75 mm CL)
- There has been an increase in the population east of Cape Hangklip, which always had west coast rock lobster present, but in low numbers. This has meant that in 2003 for the first time a commercial fishery was opened up in this area.

### 3.2.4 *Good news and bad news for fishers and west coast rock lobster*

There are two clear positive features in the current management and biology of west coast rock lobster: the slight recovery in stocks as reflected by the recent increases in TAC, and the expansion of the population into the area east of Cape Hangklip. This has allowed a commercial fishery to operate since 2003, after an experimental fishery was conducted jointly by MCM and fishers in the area for three years. However, the latter point has an associated negative effect. This area formerly supported a lucrative abalone fishery. Poaching, coordinated by highly-organised crime syndicates, is estimated to exceed the legal TAC (possibly by orders of magnitude). The population of abalone has decreased dramatically in recent years, resulting in dramatically reduced TACs. The link between overfishing and the abalone decline is complicated by the west coast rock lobster. The lobsters feed on sea urchins, and sea urchins provide shelter and protection for small abalone. Lobsters have severely reduced the sea urchin population and through the interaction with abalone, their increase in numbers is adding pressure to an already depleted abalone stock.

There are a number of other negative features relating to west coast rock lobster management:

- There are deteriorating relations between fishers and MCM.
- There are concerns from the community regarding the sustainability of fishing communities because:
  - The size of the quotas allocated does not provide a viable income to the rights-holder and his crew and because restriction to a seasonal sector (given the lack of access to linefishing) does not allow year-round activity and employment. This also impacts on gear, with boats lying in harbours for extended periods. Of course, rights-holders in one fishery can crew for rights-holders in another fishery, thus extending their period of activity;
  - It appears that non-fishers are sometimes allocated rights while “bona fide fishers” lose their traditional way of life and source of income;

### 3.2.5 *Survey method*

Two rounds of interviews were conducted. An initial round with fishers in Hawston was followed by a round where certain issues were followed-up with some of the same interviewees. The sorts of knowledge revealed by Hawston fishers were tested through interviews with fishers in another area (Kalk Bay/Ocean View).

Questionnaires designed for the first and second round of interviews encompassed questions regarding:

1. known gaps in scientific knowledge: habitat and spatial distribution of stocks, recruitment and life history; ecosystem effects (species interactions), damage and by-catch of gear, role of marine protected areas (MPAs).
2. current rights held, fishing history, type of fishing operation
3. attitudes to management: need for quotas, temporal and spatial constraints to fishing
4. views on how fishers' knowledge could help management

The first round questionnaire is attached as Appendix 5 together with the responses.

The questionnaire formed the basis for semi-structured interviews with the fishers. Results of the first questionnaire were analysed to design the more detailed ‘follow-up’ and ‘confirmation’ questionnaire.

Initial contact with the interviewees for the first round of interviews in Hawston was made through J Mathee, a member of the project team, who comes from the area and had ‘local knowledge’ of the various fishers in the community. The first round of interviews, with 11 respondents, was conducted at the local school which was in close proximity to most interviewees and, where necessary, transport was arranged. In the second round of interviews (Hawston, Kalk Bay and Ocean View), interviewees were met at restaurants closest to their home or harbour. This minimised any costs to them of being involved in the study (as the cost of travel to meetings is a serious problem - Scholz *et al.* 2004 - particularly in ‘over-researched’ communities who are continually being ‘consulted’). Of the fishers in Hawston, six had limited commercial rights, while the others either had recreational permits or worked for other rights-holders. Three of the limited commercial rights-holders had been involved in the experimental fishery. The Hawston follow-up used three of the limited commercial fishers (two of whom had been involved in the experimental fishery). The interviewees in Kalk Bay were full commercial fishers.

Interviewees had the option to remain completely anonymous, but most were happy to have their names revealed. Even so, no particular answer is associated with a particular interviewee. The team also felt that it was important that they should be acknowledged for their time and contributions, and the fishers seemed to appreciate this.

### 3.2.6 Results

Results are presented for the three aspects used above to discuss sustainability.

#### 3.2.6.1 Environmental

##### *Habitat, spatial distribution, recruitment and life cycle*

Fishers were asked a range of questions aimed at elucidating where – locations and habitats – west coast rock lobster could be found, and whether this distribution changed over months and years. They were also asked about the proportions of undersized to sized lobster, the proportion of male to female lobsters, and whether these proportions varied during the year or with weather conditions. Fishers generally confirmed current scientific knowledge with respect to:

1. West coast rock lobster are generally found on reefs, usually in association with kelp beds;
2. West coast rock lobster are found in rocky areas from about 5 m to 50 m depth as well as in areas deeper than 70 m associated with reefs;
3. West coast rock lobster are usually distributed with small individuals inshore and larger offshore;
4. West coast rock lobster move in- and offshore at different times of the year associated with breeding and moulting;
5. The further south, the later in the year that various stages in life cycle (e.g. gravid females) are found or movement patterns occur.

Fishers also provided new information:

1. For the fishery east of Cape Hangklip, many gravid females are found in November and December, i.e. in the months when the lobster fishery is first open (a summary of comments regarding season is given in Table 3.1 and shown graphically in Figure 3.3). This information is consistent with the results of the experimental fishery in the area (Schoeman and van Zyl 1999). The lobster season is intended to lessen the chance of gravid females and moulting individuals from being caught. The information provided by the fishers suggests that the season should be staged, opening later the further south and east one moves (Figure 3.3). Fishers from Kalk Bay confirmed that they would start the fishing season in areas further west in order to avoid soft / gravid individuals and gradually move south as lobster in these areas moved out of the moult cycle. Currently, in the north-west (Zone A only) the season starts on 15 October and on 1 November in **all** other zones.
2. Large lobster were found in relatively large quantities on a large muddy area within False Bay, about equidistant between Cape Point and Cape Hangklip and stretching to Whittle Rock. Although lobster have been found in muddy patches before (e.g. Heydorn 1969 found juveniles who were, however, not more than 15 feet from Cape Town harbour wall) the distance from rocky shelter, the quantity of lobster, and the reliability of catching them there was surprising. The authors suggest that this may be because (a) the environment may be reasonably quiet with good feeding opportunities, (b) the lobster can relatively easily move to adjacent reef and rocky shelters, and (c) as they are large individuals they are relatively safe from predation.
3. There appear to be small-scale movements and variations that make it difficult to make general statements about seasonal offshore - onshore movements and separation of sexes. Some of these examples suggest that lobsters react quickly to environmental cues. Examples are:
  - (i) This year (2004), lobsters were not found in an area near Gansbaai where they had previously been found. The respondent thought that they may have moved off-shore to avoid an area where large quantities of fish had been dumped by vessels, causing a temporarily unfavourable environment for the lobster,
  - (ii) Although the general trend is for smaller lobster inshore and larger offshore, there are exceptions to this tendency. A population of large individuals found at Die Gang near Hermanus, in November-

December (2003), appeared to have moved offshore by February (Die Gang is close inshore, 3-8 m, and is a quiet, kelp environment), and  
 (iii) In the deep water Area 8 (50-60 m) there was a good proportion of individuals of catchable size in one week, but the next week there were many small individuals (a suggestion was that the young had been attracted to the area by the bait from the previous days).

**Table 3.1.** Summary of comments for Hawston/Hermanus area regarding female egg-bearing states, female to male composition of catch, undersize to size composition of catch, general condition and on- off-shore movements.

	Females gravid?	Female : Male (% composition)		Undersize : Size	Condition	In-shore/Off-shore movement
Sep	Start to see gravid females	1% (in 30-35 m, Females in 5-10 m at this stage)				
Oct	Yes				Moulting	
Nov	Yes	30%	1 in 15 or 20	Average size is smaller than Feb	Soft	
Dec	Yes (less)			More undersize than Feb	Soft	Deeper water?
Jan	Yes			More undersize than Feb		Deeper water?
Feb	A few	20%	Fewer females	70:30 % size better than Dec	Better/Hard.	Deeper water?
Mar	No			60:40 (70% of undersize are female)	Hard.	
Apr	No			"	Hard.	
May	No			"	Hard.	Females inshore?
Jun	No		1 in 30	Area 8 (deep) one week all big, next week all small.	Peak	Females inshore?
Jul					Peak	Females inshore?
Aug					Peak	Moving into shallow water. Females inshore?
	Females inshore. Keep fishery > 300 m offshore then will avoid females. Recreationals work closer inshore, they get the females			December more small ones, and a few big ones. Average size smaller but variable than Mar, Apr, May when average size is bigger and more consistent. Smaller ones tend to be inshore, larger offshore (exceptions, e.g. die Gang). Smaller crayfish have increased in number over the last few years.		Move inshore when water is warmer to breed and feed after moult.

The fishing technique does not necessarily lend itself to answers regarding size distributions and, to a certain extent, sexual composition. The fishers tend to move to a new location when they are catching too high proportions of undersized individuals, soft individuals or gravid females. One interviewee suggested that if a trap brought up, say 15-20%, undersized lobster or gravid females, then the operation would move elsewhere. However, fishers from Hawston seemed more willing or able to answer this question. The authors suggest that this may be due to their association with the experimental fishery and/or that they were somewhat younger and therefore more likely to be actively involved (the two Kalk Bay fishers had not been to sea for two years).

Responses indicated that the catch is predominantly male, usually more than 80% although the proportion changes over the year. This conforms to the scientific view that the sexes are relatively segregated outside of the breeding season. One interviewee suggested that in November about 1 in 15 or 20 lobsters caught is female, all of which are small, soft-shelled or in berry, whereas in June, 1 in 30 is female, hard-shelled, much larger and not gravid.

All fishers confirmed that there was no point in fishing for west coast rock lobster in rough weather, notably seas and swells generated by SE and NW winds. This was largely due to concerns for safety of crew and equipment but also because they know that lobsters will not "climb in" in rough weather, presumably because they seek cover in crevices from the resulting bottom swell. The decline in catchability with rough weather is confirmed in the scientific literature. One full commercial respondent suggested that weather was probably less of an issue for full commercials as they are operating in larger vessels and in deeper water that was less dangerous.

### *Ecosystem effects*

Fishers were asked about species interactions, damage and by-catch of gear, and the role of MPAs.

Only a few other species are caught in nets and traps,. Many are predators of west coast rock lobster, for example, octopus and small sharks. The by-catch is usually thrown back or used as bait, or occasionally taken home. Species interaction questions were only asked in the first round (Hawston) surveys and 9 of the 11 respondents commented on the interaction between west coast rock lobster and abalone, confirming the current scientific view that lobster prey on sea urchins, thereby reducing the cover provided to juvenile abalone and adversely affecting abalone stocks.

The view was generally held that ringnets or traps did little damage to either catch or habitat, although some suggested that the damage from traps was likely to be slightly higher (one reason offered was that, should the trap cable break, the lobster cannot escape and therefore die, whereas they can escape from ringnets). They felt that ringnets were more likely to be damaged by the reef than the other way around. They acknowledged that lobster may lose a leg as a result of being caught, but did not consider that this might affect mortality or growth. The main damage to the lobster, reported by several fishers, occurs when the net or trap is overfull. The lobster furthest from the bait may begin to eat those further in. This source of damage will occur when there are many lobster, and/or when gear is left for longer periods.

The notion that marine protected areas could support west coast rock lobster stocks was generally accepted, although sometimes only following the explanation that a reserve could support a breeding population whose young would then recruit to areas available to fishers. However two exceptions or qualifications were offered. Firstly, that MPAs are created in particular areas because of multiple and possibly confused objectives. Conservation objectives are not always in line with fisheries objectives, and may even be in conflict. One interviewee suggested that the closure of Robben Island for some years had not resulted in a marked increase in lobster population. Secondly, some advocated the closure of areas to fishing on a rotational basis (say for 10 to 20 years). They felt that the repopulated closed areas should, after sufficient time, be made available to exploitation, otherwise the lobster would “just grow old” and, in effect, be “wasted”.

#### **3.2.6.2 Economic**

Non-recreational fishers complained that the quota system compromises their ability to earn a viable income, and to employ crew and offer them good employment conditions. There are two aspects to this complaint. The first is that the size of the quotas granted is too small (a result of the TAC being divided over too many fishers). The west coast rock lobster quotas are caught very quickly. Limited commercial rights-holders with 200 to 1500 kg quotas may take, at most, a few days to fill their quotas, while full commercials with up to 90 ton quotas, take a couple of weeks. This gives no continuous employment opportunity for crew and leaves equipment, such as boats, inoperative for 10-11 months of the year. The second is that west coast rock lobster is a seasonal fishery, and most fishers previously supplemented their income with linefishing (formerly A or B permits). Access to linefishing and the consequent income and year-round activity is not possible under the new regulations if fishers have other rights (although, clearly, the west coast rock lobster right-holder may crew for a right-holder in another fishery, including linefishing, outside of west coast rock lobster season).

The limited commercials, in particular, argued that 500 kg quotas, with no access to supplementary income via line-fish, provided an insufficient income. This conforms to estimates by Sauer *et al.* (2003a) of a minimum viable quota (for a small boat) being between 1 and 1.5 T (in 2000) *conditional* that the boat was attached also to an A linefish licence. MCM presumably knew of these economic constraints before allocating quotas but chose, nevertheless, to spread the benefits wider and to rely on self-organisation by the fishers to remain active throughout the year by crewing for those with other rights.

#### **3.2.6.3 Social**

According to the interviewees, non-fishers have been awarded rights. Numerous examples were cited (as happened in all the interactions with fishers during this project). Some of these rights-holders had not taken their rights at all or had asked others to harvest their catches for them. When asked what information fishers could provide managers, almost all interviewees responded with “we can tell them who the bona fide fishers are”.

While there is no doubt that fishers can identify fishers, and that this information can be corroborated to ensure that this is not an attempt to monopolise, the matter is no longer simple given the past allocation of rights, even though rights have been removed in cases where inappropriate allocations were made. However, those who manage to retain their rights until the next allocation, have some claim now as legitimate fishers. Full commercial fishers argued strongly that quotas should be allocated to boats, and complained that quotas were allocated to crewmembers without boats.

### 3.2.7 Discussion and Conclusion

There are positive conclusions to be drawn from this survey in terms of the contribution of local knowledge to improved sustainability of the west coast rock lobster resource. The positive aspects are discussed under the same three headings as before. There are also some “words of warning”.

#### Environment

Although results were somewhat mixed, the overall impression is of knowledgeable fishers, well able to assess and articulate different aspects of west coast rock lobster biology and management. It is unsurprising that they know the habitats and conditions that favour the catching of healthy, large lobster. They would not be good fishermen if they could not. However, they were also able to offer local insights that were not available to scientists and could improve management.

Primary among these were refinements in terms of the timing of various life cycle stages and lobster movements. This information could provide MCM with a better means to protect gravid females and soft individuals through better timing the catching season (Figure 3.3), therefore offering better chances of good recruitment. A specific suggestion was offered as to how the timing could be determined annually. The suggestion was that near the beginning of the expected season in a particular area, observation surveys were undertaken jointly by MCM and some fishers to determine the condition of the lobsters. If a certain proportion were still gravid, then the opening of the season would be delayed. A flexible season might be difficult for managers, because the season needs to be gazetted each year, as well as for fishers as they need to plan their marketing and fishing strategies. Two different suggestions were made about how the seasons for recreational and commercial fishers could be managed. One was that they should be relatively distinct (recreational fishers should retain their right to fish over the main holiday period in December and full and limited commercial rights-holders would use the new refined season timing). The other suggestion was that, to have better control, all seasons within an area should be the same.

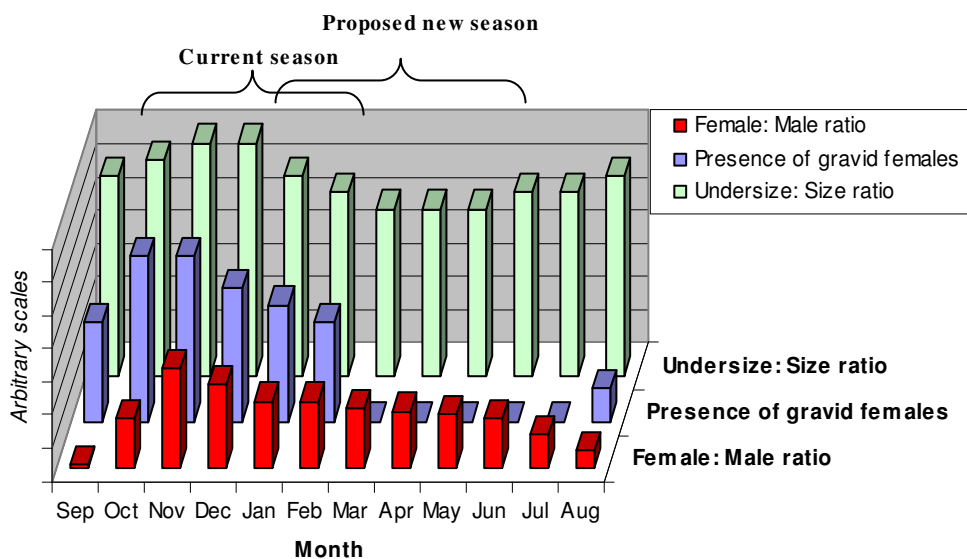


Figure 3.3. Summary of the information gleaned regarding seasonal changes in the Hawston/Hermanus area also showing the fishers' proposed fishing season.

### *Economic*

The intimate knowledge of the fishers regarding multi-fishery interactions and minimum viable quotas could be used by MCM to improve decisions on quota sizes and on the relationships between access rights in different fisheries. Although the rule that people with other rights should not have linefishing rights was intended to broaden access to the benefits of marine resources, perhaps a different approach could be found which would satisfy both this objective and that of providing fishers with a liveable income. This also has obvious implications for the social part of sustainability.

### *Social*

It was clear that those who had been involved in the experimental fishery had been empowered by the experience. They felt that they had contributed to the research, that their contributions were reasonably valued and that they had learnt new things. Experimental fisheries would seem to be an appropriate vehicle for introducing some aspect of co-management into fisheries management. Clearly experimental fisheries are only possible with new fisheries, but the proposal that MCM and fishers jointly conduct pre-season surveys to assess stock condition, could accomplish a similar result.

All of these aspects of local knowledge would contribute to creating a bi-directional arrow between managers and fishers (in terms of Raakjær-Nielsen *et al.*'s (2004) view of co-management) in terms of "defining and providing the knowledge base for management" of the resource. They would also contribute to the bi-directional nature of the third aspect of management: implementation.

The words of warning concern the fact that many of the fishers alluded to feeling "used" by scientists and other researchers. Some were quite vociferous about this point. They felt that, in some cases, they (a) were not acknowledged for their help (e.g. as scientists acknowledge other colleagues in their reports), (b) once their knowledge had been given and assimilated, their inputs were no longer respected or wanted, and (c) the same people who had learned from them then imposed rules on them (sometimes, they felt, without a good scientific basis). Processes have to be found such that the feeling of being used is avoided and that co-management empowers fishers and does not take the form of using them as "monitors".

Finally, fishing communities are no longer relatively cohesive units. Possible factors behind this include a younger generation "too lazy" (as suggested by some respondents) to undertake the arduous and risky task of fishing, as well as MCM's recent policies. Current third and fourth generation fishers may not "spawn" another generation of fishers because the tradition of "father to son" does not enter MCM's criteria for evaluating fishers. The inevitable result of this is that local knowledge and any existing norms of local resource protection of resources will disappear. Not only does this have negative implications for sustainable management, it also leaves society as a whole, the poorer. Making use of and respecting such knowledge can contribute to its sustainability.

## **3.3 Interaction with communities: Skills and training needs for empowerment of fishers**

In many fishing communities and that of Hawston in particular, there are high levels of unemployment and the traditional employment sector of fishing has shrunk over the last few years due to overexploitation of resources and consequent quota cuts (see previous Chapter). A frequent complaint from the fishers since the new allocation system was introduced in 2001 was that the application forms were extremely complicated. Some fishers who certainly can be classified as "bona fide fishers" are illiterate and others, though literate, have a limited education. Thus, filling in the application forms was often beyond them, and they had to pay "consultants" to assist them. In addition, applicants had to provide "business plans" and in some cases demonstrate that they were "financially viable" and had sufficient "business acumen" etc. This was beyond the capabilities of many fishers and again they had to resort to consultants to assist. Besides this, with the new emphasis on fishers as businesspeople, fishers had to think about their activities in a different way. Many lacked the necessary skills to adequately budget, particularly given the highly seasonal nature of many fishing sectors, especially those which are more accessible to the traditional fishers of the Western Cape. The lack of skills and education also mean that fishers have little chance of entering the formal job market in other capacities. Coupled with this, is the context of a frequently changing rights allocation process over the last 15 years, and reduced TACs in precisely the fishing

sectors most relevant to these communities. These factors together mean that fishers whose livelihoods were already relatively precarious and vulnerable have become even more so, and have had little or no government or MCM support for coping with the manifold changes in resource availability and management approach.

With this in mind, the Hawston community was chosen for further interactions geared towards empowerment. The intention of the interventions was to find solutions from within the community to the challenges faced, given the reality of more limited access and reduced fishing quotas. The three additional interactions were:

- Workshops with Grade 11 school students,
- Informal discussions with community organisations, and
- The dedication of one “post-it” session (see explanation Section 5) of the MCDA workshop to this issue.

### **3.3.1 Hawston grade 11 students**

Young people entering the job market when leaving school feel particularly disempowered, disillusioned and without hope, given the issues mentioned above. During the 1990s in South Africa the belief was that education and skills training would address rising unemployment among young people. However, it was apparent that very few participants in technical training programmes ended up in the formal sector after their training. Reasons cited for this were that the formal economy was in decline and there were consequently fewer jobs and that the skills needed were different from those with which the young people left school. Many young people went through secondary school and other training programmes without acquiring the technical or functional skills which would allow them to access or create new opportunities for themselves.

The legacy of the apartheid educational system together with the social context of poverty, substance abuse and crime which was common for many young people, meant that even with well-intentioned policies and programmes, few young people were able to access the opportunities available to them and were ill-equipped to learn effectively. It was clear that even if there was a massive increase in job opportunities, young people would not be likely to benefit. Enabling them required more than literacy and numeracy, but also (a) addressing issues of self-esteem and self-worth, (b) re-establishing the network of relationships with family and community, (c) development of decision-making and conflict management skills and (d) the development of entrepreneurial skills.

It was in the context of the failure of youth training programmes that the YIELD (Youth Initiative for Entrepreneurial and Leadership Development) model was developed<sup>21</sup>. The first pilot project of YIELD was implemented in 1994 and subsequently in various rural and fishing communities. YIELD uses a system of co-operative learning and mentoring which is seen as a viable model of equipping and engaging young people from impoverished communities. The programme is geared towards addressing unemployment and poverty of school leavers by unlocking their entrepreneurial and leadership potential.

Only the first phase of the YIELD programme, the Entrepreneurial Programme, was undertaken at the Hawston Secondary School. It was facilitated by three YIELD team-members (Abayome Buys, Carmen de Vries and Lincoln Pilane). Forty Grade 11 students, many from impoverished backgrounds, were involved, selected on the basis of their school subjects (i.e. if they had accounting or economics as subjects). The aims were to: encourage creative thinking about alternatives to fishing and to teach them how to develop business plans including cashflows. The handling of cashflows is particularly relevant to the fishing business given the often seasonal nature of fishing income.

During day one the agenda for the three days was explained and discussed with the students, as well as the benefits and privilege of being a part of the programme. The students then discussed their backgrounds, their families’ degrees of dependency on fishing and came up with ideas about other businesses. They were then introduced to the basic concepts of developing a business plan. During day two the previous day’s activities were summarised. The remainder of the day was spent developing their business plan (on an individual basis) with the

---

<sup>21</sup> YIELD was developed by Prof. Linda de Vries of the University of the Western Cape (Faculty of Economic and Management Sciences) and the YIELD team consists of students under the leadership of Prof. de Vries.



help of the facilitators. The business ideas included internet cafés, bed and breakfasts and touring. During day three specific problems with the business plans were further discussed and more detailed aspects explained. Subsequently, the business plans were marked and the students will be presented with certificates. The intention is also that attempts will be made to find funding for the implementation of the best business idea and plan.

Insights from these workshop are combined in the general conclusions in Section 3.3.4.

### 3.3.2 *Informal discussions*

Informal discussions were held with representatives of the Hawston Seafarms Foundation and the Overberg Community Trust. The discussions were intended to identify skills and training needs and potential business opportunities. The two organisations involved are described below, but the identified opportunities and needs are discussed together with those arising from the MCDA “post-it sessions” in the next section.

The Hawston Seafarms Foundation is a Section 21 (not for profit) organisation representing a number of Hawston’s community organisations including woman’s groups, church groups, old-age homes and schools. In 2004 they the provincial government sold them a 40 hectare piece of land and they have acquired further funding from the Development Bank of South Africa and WesGro<sup>22</sup> (Creamer 2004). This land is intended for, amongst other things, an abalone mariculture project. Global Oceans (Pty) Ltd, the technical partner in this initiative, has already established several other farms, and this will be their first involvement with a “community farm”. It is intended that HSF will create job opportunities, encourage small-scale enterprise development. In this way, the dependency on fishing rights can be reduced. South African abalone farms already produce more than double the commercial TAC annually. Although this is a capital intensive and high technology approach, with appropriate funding and technology partners it is seen to be an ideal opportunity for Hawston. Abalone farming apparently produces one direct job for each 2T of abalone produced and several indirectly through associated industries such as seaweed production (for abalone food) (Creamer 2004). There are also associated environmental impacts and mariculture rights still need to be applied for. Naturally, the construction activities for the abalone farm and other initiatives will also mean there will be a number of construction related jobs. Hawston has a broad base of construction skills available and, in fact, people often take up both the fishing and construction trades as both are strongly seasonal. Another strong emphasis is on encouraging tourism to Hawston in general and to the HSF in particular.

The Overberg Community Trust is a community based organisation with members across the Overberg region including from the towns of Caledon, Hawston, Gansbaai, Elim, Bredasdorp, Middleton and Botrivier. The trust holds shares in various enterprises, including for example, the Caledon Casino, and uses dividends to support organisations such as the Genadendal Brass band, local church groups, schools, craft and other organisations as well as to develop job creation programmes and encourage small-business development (Creamer 2000).

### 3.3.3 *MCDA “post-it” session*

As part of the investigation into the allocation system, a number of workshop was held with the Hawston community, one of which (on 26 November 2003) included three “post-it sessions” (see Section 5.2.1 for a description), where the participants responded to a series of questions. Two of these questions were designed to identify community and individual objectives in relation to fishing rights and their ideas regarding appropriate criteria and processes for rights allocation. The third question was aimed at identifying what facilities and training they felt were needed. The results are included in Section 3.3.4.

### 3.3.4 *Conclusions and recommendations*

There are various opportunities available in the Hawston community and the Hawston area, many of which can build on the skills and knowledge within the community which derive from the fishing background:

- **Fishing:** A number of opportunities in the fishing industry will remain for fishers in the Hawston community. However, those who do not currently hold rights are unlikely to obtain them in the future except by acquiring shares in existing companies or CCs or through buying rights from those who have decided to move out of the

---

<sup>22</sup> WESGRO is the official trade and investment promotion agency for the Western Cape Province.

fishing industry. Both of these options will require capital which most will be unlikely to obtain. For those who cannot acquire capital and who wish to remain fishers, the only opportunity will be as crew.

- **Other fishing-related activities:** Other than directly being fishers there will also remain opportunities in processing, marketing, abalone farming, seaweed farming, etc. In this regard, there are probably opportunities for innovative businessmen.
- **Tourism** There have been very few tourism initiatives in Hawston thus far. Any initiative has to first overcome the negative image of the town before attracting sufficient numbers to make any real difference to the community. The wealth of local natural resource knowledge currently existing in the community (see Section 3.2) could be an invaluable contributor to any tourism initiatives (for example as boat- and shore-based whale watching guides, recreational lobster and abalone harvesting guides, recreational line-fisher guides). The existing culinary expertise could be used in small restaurants bed and breakfasts etc. (Hawston used to be famous for its local recipes). Other skills needed for the hospitality sector could be provided in training programmes and these could specifically target young people. The Hawston Fishing Company, started by previous poachers, has shown the way by investing money in a boat which is used for boat-based whale watching (the coastline near Hermanus and Hawston is famous for its whale watching).

However, anyone wishing either remain in the fishing industry and to successfully apply for and utilise fishing rights or to be involved in some part of a tourism initiative will need to acquire or improve their business skills.

One of the aims of government with its GEAR (growth, employment and redistribution) programme has been to encourage small and medium enterprises (SMEs) and this has been one of the philosophies underpinning the changes in the rights allocation process over the last five years or so. This means that fishers are expected in one way or another to become businessmen. One approach that has been actively encouraged by MCM for some sectors has been the formation, by groups of fishers, of closed corporations. However, this encouragement has not been accompanied with any form of support (e.g. in the form of supporting legal costs) nor training in business skills, nor advice on the differences, costs and benefits of closed corporations, registered companies etc. The legal costs of the formation of closed corporations and assistance with quota applications has become a considerable burden to communities. One of the urgent training and support requirements, therefore is that of (a) legal support and advice, (b) business skills training and (c) assistance with the completion of rights applications. Without these, MCM cannot achieve its goals of transformation and economic growth, or not in a way which benefits traditional, poor and poorly educated fishers. Young people, in particular, need to be part of the search for a solution within impoverished communities and, given the reality of overexploited fish stocks and reduced TACs, there needs to be greater emphasis on reducing their future dependency on obtaining quotas. Therefore, there is clearly a need for mentoring in business and technical skills and to exposure to livelihood ideas which are not dependent on fishing.

Arising from the contributions of the students on the YIELD programme, from the informal discussions and MCDA post-it session, the following needs and opportunities can be identified:

Computing in the form of computing skills training, access to computers, access to the internet. Computing skills and access will have a number of potential benefits: better computing skills will improve chances of employment, while access to the internet will improve access to information (including that relating to allocations, regulations etc.). Internet access will also increase exposure to other ideas for careers. For example, an internet terminal at the local library, or the opening up of an internet café could partially address this need. The latter, at the same time, would provide an additional social activity in the community and be a business opportunity for a Hawston entrepreneur.

Training programmes in business skills (budgeting, developing business plans), basic legal knowledge, the basics of resource exploitation (overexploitation, harvesting strategies etc.)

MCM, NGO, or other governmental support programmes (based for example at a community centre or at the library) providing basic legal advice (advantages of different organisation formats such as CCs, proprietary limited, etc. and support for filling in of fishing rights application forms.

There are a number of training programmes aimed at fishers which have been developed and are being run, particularly under the auspices of the Department of Labour, Transport Sector Education and Training Authority (Maritime Chamber). The YIELD programme has contributed to the development of these programmes. The focus is on providing entrepreneurial, legal and life skills training within poor fishing and rural communities. The target groups are young adult students, fishers and boat owners who are currently unemployed or self-employed in small and medium enterprises (SMEs). The level of approach is determined by the level of education of each target group or community (e.g. whether basic literacy needs to be first addressed or whether the programme can go straight to other modules). The programme has been developed so that participants with no economic or other advanced qualification can understand and implement it in practice. However, the content is such that those with higher education levels also find it useful. During this project, about 200 people from the Hawston community expressed an interest in being involved with the training programme and indicated a preference for the modules relating to Life Skills, Basic Legislation and Business Skills.

Some fisher training courses have included modules on sustainable resource use (sustainable yield, harvesting, and population growth concepts), but the content and depth of the material is not known. While it is clear (as seen in Section 3.2) that the fishers have good knowledge of the habitats and habits of their species, there remains a lack of knowledge (or acknowledgement at least) of the relationship between current harvesting rates and future quota sizes, and therefore such courses are essential. The course could include, for example, computer games where the student plays with harvesting different amounts of the resource (and perhaps at different seasons and locations) for a number of years and can see the effects of the different harvesting strategies on the resource size and on their future income.

### **3.4 Summary and conclusions: Empowerment and co-management**

In the first part of this report, aspects of sustainable management were discussed (Section 3.1). In Section 3.2 a pilot survey to assess the potential contributions of local knowledge to sustainability (Section 3.2.6) and the mechanisms by which these might be implemented (Section 3.2.7). Section 3.3 described how skills and training needs were identified and how these could better be met.

Nielsen *et al.* (2004) offer the view of three components to management: setting objectives, developing a knowledge base and implementation. If co-management is the way of future fisheries management all of these components will have to be in place. Chapters 5 and 1 will deal with the first component: setting objectives as part of the MCDA process for rights allocation. The appropriate and acknowledged use of local knowledge (the second component) has implications for improved management and sustainability of the resource (e.g. through more appropriate seasons) and empowerment of the fishers involved, and provides a positive feedback to implementation (component three). Use of their knowledge regarding quota sizes and interlinkages between fisheries could have benefits in terms of poverty reduction, maintenance of social cohesion and of existing norms regarding resource protection. Improved knowledge skills will also have benefits in terms of empowerment, poverty reduction and economic efficiency.



## 4. The current allocation system

### 4.1 Description of the allocation process

In 2001, in response to the chaos that had existed for some time, MCM adopted a new rights allocation system. According to the MLRA the allocation of rights is the responsibility of the Minister. He is assisted by staff of MCM who are in turn assisted by two independent bodies, the Rights Verification Unit (RVU) and an Advisory Committee (AC) (DEAT 2002a). A consortium of the auditing firm Deloitte and Touche and Sithole AB&T Chartered Accountants formed the RVU. The RVU was supposed to receive, file and store all the applications, generate data concerning the numbers and types of applicants, verify information supplied by the applicants and investigate specific cases as requested by the Minister. The AC comprised a team of about 20 people (from a consortium formed by the Resolve Group and Nkonki Sizwe Ntsaluba, an auditing firm), none of whom have an interest in the fishing industry. At least two members of the Advisory Committee (AC), provided with the criteria and guidelines developed for each fishery, then assessed each applicant (DEAT 2002a). The AC presented their recommendations to MCM and the recommendations of the DDG were presented to the Minister.

The system was (and still is) therefore based on giving scores to applicants according to a number of criteria (see also Sections 2.2 and 2.3). Before scoring, the applications were checked to see that they had been 'properly lodged' (i.e. not late, properly paid, submitted on the proper application form, accompanied by a certified copy) and that there were no 'material defects' (i.e. the applicant had signed, the signature was attested to by a commissioner of oaths and only one application had been submitted).

Depending on the fishery concerned there were a number of "essential requirements". These varied between fisheries and included, for example:

1. Having access to an appropriate vessel and use of the appropriate gear or method. This applied to all fisheries.
2. Residence in the appropriate fishing zone: This applied for the 2003/04 abalone legal entities and divers allocation, the 2002-05 west coast rock lobster limited commercial allocation, the 2003/04 east of Cape Hangklip west coast rock lobster limited commercial allocation and the beach seine and gill-net fisheries.
3. Being a "bona fide fisher". This applied to the traditional linefish sector amongst others (it is not evident how this was measured. "Proof" of involvement in the fishery was required.)
4. Being at least 66% HDP owned and managed. This applied in the 2003/04 abalone legal entity allocation.
5. Dependent on the resource for 50-75% (depending on fishery) of annual income. This applied to the 2003/04 abalone legal entity allocation, traditional linefish, and net-fisheries.

These essential requirements can be considered to be "vetos". In addition, depending on the particular allocation, the degree of paper quota risk (see 2.2 and the glossary for descriptions of paper quota risk) of the applicant was either regarded as a veto (i.e. excluded from further consideration), or given a negative score in the scoring process, or in some cases (e.g. the west coast rock lobster limited commercial 2001-2005 allocation) both. In the latter case, in other words, within the same allocation, some applicants were not further considered, apparently because of their paper quota risk (as deduced from comments in the spreadsheet), while others had similar comments yet remained within the scoring process, and in some cases were given rights.

Once an applicant had passed all the essential requirements they were scored according to a number of criteria. The basic criteria for all allocations since 2001 have been:

1. Degree of transformation. This was measured by the actual HDP status of the applicant (usually for limited commercial applications) or by the percentage of HDP ownership in the enterprise ("black economic empowerment"), by the degree of HDPs in senior management positions ("employment equity"), by the quality of a transformation plan and by compliance with the employment equity act (or whether the applicant was a "designated employer").
2. Degree of investment and involvement in the industry. This was measured in all cases by the degree of ownership of or access to a vessel. In some cases whether the applicant had previously held relevant rights,

quotas or exemptions was also considered and /or whether the applicant was involved in relevant processing (although the latter was also sometimes regarded as a negative attribute, e.g. abalone divers) and /or by “investment in human resources”.

3. *Past performance* was a criterion in some fisheries, and this related to whether the applicant had previously caught less than or more than his/her quota and/or had operated at more than the prescribed effort level.
4. *Compliance* with the MLRA, Customs and Excise and other relevant legislation.

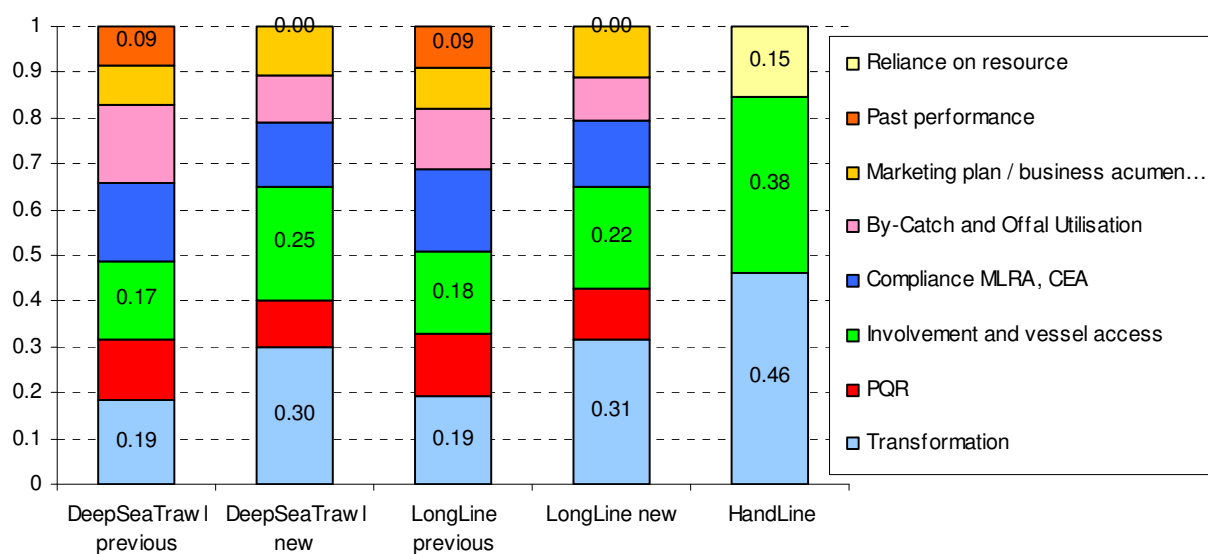
Within these categories, various criteria were defined and scored. Some of the scores given related directly to a reasonably directly measurable attribute (e.g. percentage HDP ownership) while for others it is unclear how consistency in scoring was maintained (e.g. quality of the transformation plan, or degree of “business acumen, financial capacity and capacity to catch, process and market”). In any case, the scores for the various criteria were then added within the spreadsheet. The Advisory Committee would recommend on whether the applicant should get a right, the DDG would add his recommendations and these would go to the minister.

## 4.2 Analysis of criteria and weights

The following sections describe the criteria used in the allocations in the four fisheries of relevance and the weights applied to them.

### 4.2.1 Hake deep sea trawl, longline and handline

The criteria used in the 2001-2005 allocations for the hake deep-sea trawl and longline sectors are the same, with slightly different scores being applied. Figure 4.1 shows the criteria and the scores normalised to sum to one. The criteria measure degree of involvement and investment, transformation, strategies for by-catch and offal, past performance, legislative compliance and the degree of paper quota risk. However, it is not clear that the scores for by-catch and offal strategies were used. There is no “past performance” measure for new entrants, but the related criterion of “business acumen, financial viability, ability to harvest” is weighed slightly more (Figure 4.1). For previous entrants the “marketing plan” was used instead of “business acumen..”. Although the general criteria applied for the handline fishery are similar to those for deep sea and longlining, handlining was handled quite differently (it is a new fishery). Essentially only three criteria were used: *transformation* (measured in a similar way to the other sectors - percentage HDP ownership and HDPs in senior management positions, transformation plan, etc.), *investment and involvement* (measured by the degree of ownership of or access to a vessel and “investment in human resources”-percentage of permanent employees) and *reliance on resource* (if more than 75% of the applicant’s income was derived from hake handline they scored 0.154 points). For hake handline, transformation accounted for nearly 50% of the points, whereas for previous rights-holders in longline and deep sea trawl it accounted for about 20% of the points and for new entrants about 30%.



**Figure 4.1.** Criteria and weighted scores (normalised to sum to 1) for the allocation of rights in the various hake sectors. “Previous” = previous rights-holders, “new” = potential new entrants, CEA=Customs and Excise Act.

### 4.2.2 Traditional Linefishery

The criteria applied and the weighted scores (normalised to sum to 1) in the 2003 traditional linefish allocations are illustrated in Figure 4.2. For the full commercial sector, of those not rejected for “material defects” etc., those who scored 7 or higher (out of a total of 15 points), were granted rights. For the limited commercial sector, of those not rejected for “material defects” etc., those who scored 9 or higher (out of a total of 18 points) were granted rights. “Investment in human resources” related to whether crew were employed and whether they were permanent or temporary. The hake handline criteria scores are very similar to those for the traditional linefishery. They were previously one fishery (linefishing), remain the same type of fishery and accessible to the same type of fisher.

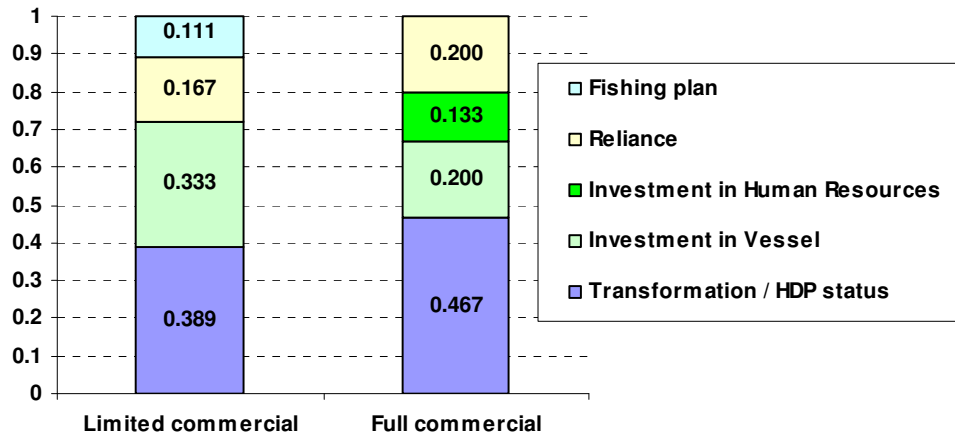


Figure 4.2. Criteria and weighted scores (normalised to sum to 1) for the traditional linefish allocations in 2003.

### 4.2.3 West Coast Rock Lobster

The weighted score applied for HDP (limited commercial) status or transformation (full commercial) in the 2001 allocation ranged from 20% to 24% of the score, while for the limited commercial allocation east of Cape Hangklip in 2003/04, HDP status accounted for 39% of the score. Previous involvement in processing and access to a vessel accounted for less in the full commercial allocations (about 20%) than for the limited commercial allocations where in 2001 it accounted for 46% and in 2003/04 it accounted for 62% (Figure 4.3). Note that ‘independent sale’ (2001, limited commercial) was considered an additional measure of paper quota risk.

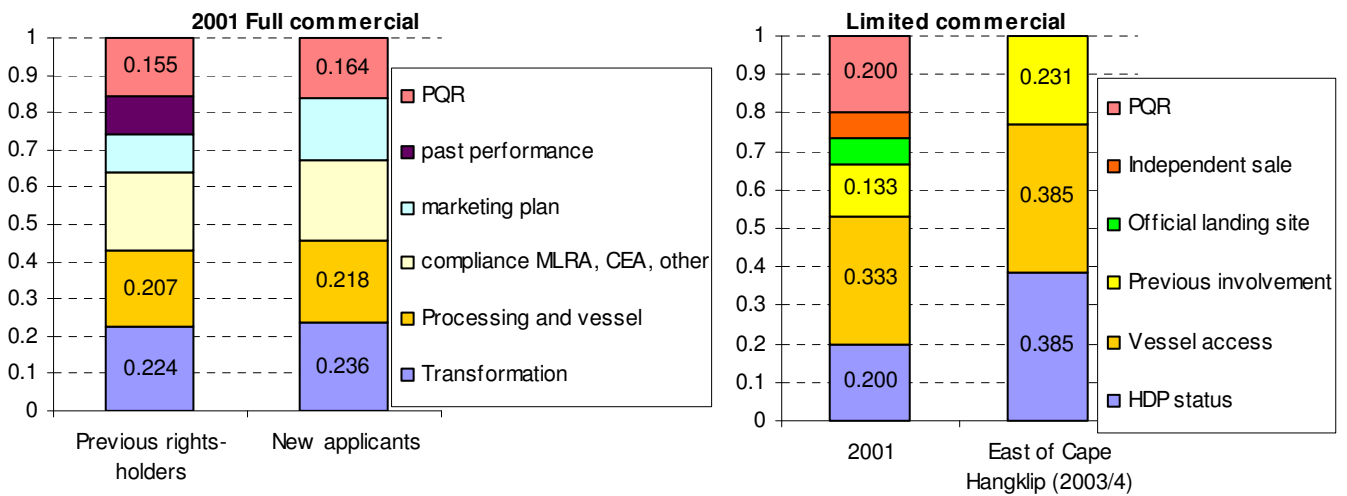


Figure 4.3. Weighted scores given to west coast rock lobster full and limited commercial applicants in 2001 and in limited commercial applicants east of Cape Hangklip in 2004. CEA=Customs and Excise Act.

### 4.2.4 Abalone

The criteria used for the allocation of abalone for 2001-2003 allocation and for the 2004-2014 allocation are shown in Figure 4.4. The criteria and their importance show a distinct change from 2001 to 2004. For example, the score given to HDP status or transformation has increased from between 0.18 and 0.24 in 2001 to being a veto (if there were less than 66% HDP ownership and senior management) for legal entities and a score of 0.33 for divers.

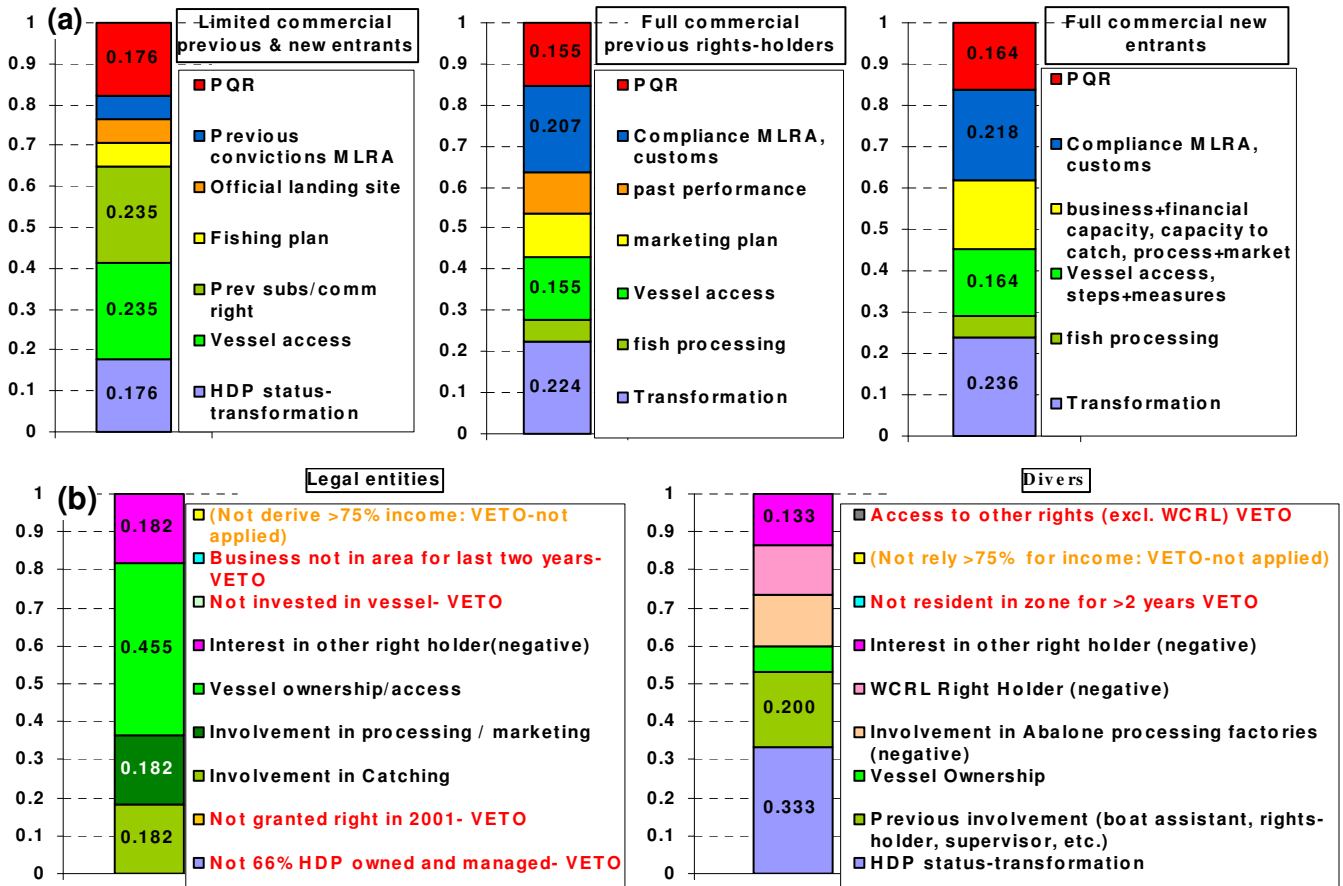


Figure 4.4. Criteria and weighted scores (normalised to sum to 1) allocated to different criteria (or criteria groups) for (a) the 2001-2003 abalone allocation and (b) the 2004-2014 abalone allocation.

## 4.3 Analysis of the allocation spreadsheets

### 4.3.1 Data entry and spreadsheet design

Applicant information was entered into Excel spreadsheets (with applicants in rows, criteria and comments in columns). The spreadsheets used during the period 2001-2004 were made available to us by MCM. There were numerous problems evident in terms of spreadsheet design and data entry:

- Only *some* of the information from the application forms was entered. This did not include, for example, identity numbers, addresses, contact persons for companies, shareholders in companies, etc. all of which information was available from the application forms (it is possible that this data had been entered in more complete spreadsheets elsewhere and a subset of this was used in the scoring and allocation process). This made cross-checking of information (e.g. applications of shareholders in other fisheries) and other analyses impossible.
- Depending on the fishery, subsets of fishers were separated from each other by a blank row with a heading (e.g. applicants from different zones, or groups of “improperly lodged” applicants). This meant that data had to be manipulated and re-arranged in order to analyse, for example, percentages of various groupings of all applicants.



- In some cases, a number of different versions of the file of applicants for a particular fishery was created. Information in the different sheets was not consistent and numerous errors crept in, for example:
  - The same names were spelt differently and / or were different order (surname-name in one and name-surname in another) in different versions. This made cross-checking difficult.
  - Applicants in one version were not present in another (for no apparent reason).
  - Different scores for criteria appeared in different versions for the same applicant.
  - Data (scores etc.) became attached to the incorrect applicant.
  - Formulae for calculating sums of scores were sometimes replaced by a fixed number, which was sometimes incorrect.
 The latter three points meant that some applicants' total scores were wrong (or at least different in different places). This, however did not appear to adversely affect the overall allocations. All of these features were particularly present in the WCRL limited commercial allocations of 2001.
- Some information was incorrect. The only clear case of this was in the case of certain HDP persons, who were known to be HDP by the authors, but were listed as non-HDP and where their residential area and name indicated a high probability of being HDP but they were listed as non-HDP.

A frustrating aspect of the spreadsheet design was that, in some allocations, separate material defect, improper lodgement or essential requirement aspects were usually combined in one column (one for each of these groups). This was particularly worrisome in terms of the essential requirement category as one could either not at all or not easily determine why an applicant had been excluded and consistency checking was extremely difficult. For example, as mentioned above, in one fishery sector it was the case that paper quota risk was applied both as a veto and as a negative score. This shortcoming became even more of a problem in later allocations, for which, although the relationship between score and allocation was improved, the number of essential requirements and the consequent percentage of applicants excluded had increased. This was particularly the case for the abalone legal entity and diver allocations in 2004. Although reasons were listed for exclusions, because they were lumped, one could not easily determine, for example, what percentage of the exclusions were because of lack of vessel access, residence, % of dependence or HDP ownership.

### 4.3.2 Consistency of relationship between score and likelihood of getting a right.

While the total scores of the applicants were referred to in the process of deciding whether s/he should get a right, it is clear, for many of the allocations (particularly those done in 2001 and 2002), that decisions were based on grounds other than the scores and on information not available on the spreadsheets. Some examples are provided below, referring to Figure 4.5 to Figure 4.15 where the applicants' total scores, whether they were granted a right, and where available, whether they appealed and whether the appeal were successful are given for hake handline, traditional linefish, west coast rock lobster and abalone allocations:

**Hake handline 2002-2005:** Figure 4.5. Compare applicant 2602 (bottom graph) and the applicant to the right.

The one on the right has a slightly higher score, yet did not receive a right, and was also not successful on appeal. Applicant 4765 and the one to the right are similar, but the latter applicant did succeed on appeal. Some applicants with scores above 6 were not granted rights, while others, with scores of 4 and below, did.

**Traditional linefish 2003:** Figure 4.6, Figure 4.7. In this case the scores and whether a right were granted were consistent. There was some flexibility on how strictly improper lodgements, material defects and essential requirements were applied. However, it was generally clear from the comments why a particular decision was taken (e.g. vessel size might have been slightly larger than the recommended 5-10m).

**West coast rock lobster: Full commercial 2001-2005** (Figure 4.8): Compare applicant 08053 (bottom graph) and the applicant to the right. They have the same scores, yet the one on the right did not receive a right, and was also not successful on appeal. Five applicants with negative overall scores still received rights (their scores would still have been very low, 1 or 1.5, if they had not had negative paper quota risk scores). In the new entrants (Figure 4.9) there are two anomalous allocations to applicants 12427 and 12875.

**Limited commercial 2001-2005** (Figure 4.10). Only Zone C and Area 11 scores were available and only Zone C is shown. Compare applicant 17436 and the one to the right who has the same score but did not receive a right and was not successful on appeal. Some people were excluded from the scoring process because of their paper quota risk (left of graph) while others were given a negative paper quota risk score, remained in the process and were granted rights (14054 to 14100, for example).

*East of Cape Hangklip, limited commercial 2003* (Figure 4.11-Hermanus area). The allocations appear consistent with scores. The one anomaly someone not given a right to the right of 03853, is because the bareboat charter agreement had not been signed, so this applicant should have been grouped with those earlier excluded for essential requirement failures.

**Abalone:** *Full commercial* (Figure 4.12) and *limited commercial 2001* (Figure 4.13): Anomalies are more apparent in the limited commercial allocation.

*Diver* (Figure 4.14) and *legal entity allocation 2004* (Figure 4.15). No particular anomalies can be detected. However as can be seen, a large proportion of applicants are excluded for essential requirement failures, where it is often not evident from the spreadsheet, which of the many essential requirements was not met. There were however, anomalies in terms of the amounts allocated. For example, one legal entity was given 600 kg, but was only 25% reliant on abalone, had a (relatively) large west coast rock lobster right and was apparently not a right-holder in 2001. According to the documentation this applicant should (a) not have got a right (because of not being at least 75% reliant, and not being a previous right-holder), and given that they were granted a right (b) they should possibly have received a smaller amount (given their additional access to west coast rock lobster). (75% reliance on the resource was supposed to be a requirement but was not applied in the actual allocation). In contrast, another entity which conformed to all the requirements (and had been a right-holder for a number of allocations), was excluded because a deposit slip did not accompany the application.

Given the above inconsistencies, one must assume that (a) either additional criteria were in fact used (for example, there are extensive comments within the spreadsheets which provide additional information about the applicant), or that (b) allegations of corruption were not completely untrue. That the scores were not the only consideration was confirmed by the DDG, who said that, depending on the “profile” of the applicants, one might choose, for example, to remove some badly performing previous rights-holders, in order to allow entry to some new applicants. It is possibly also true that, legally, both the DDG and Minister need to show that they “applied their minds” and this might require them to consider additional information. However, that the DDG and Minister applied their discretion, cannot fully explain the discrepancies evident in the figures.

However, by the time of the allocation of west coast rock lobster right for the areas east of Cape Hangklip and the abalone allocation (which both took place in late 2003 / early 2004), the process appears more systematic (e.g. Figure 4.11, Figure 4.14 and Figure 4.15). However, what is not clear from these figures is that, in fact, there were different and more extensive ‘essential requirements’ and that a higher proportion of applicants was excluded on this basis than in previous allocations. Adding to the problem is the fact that the different essential requirements are not listed in separate columns in the spreadsheet. Therefore, the actual reason for a person being excluded from the possibility of getting a right may have in fact become more obscure.

#### 4.4 Summary and conclusions

In summary, despite the emphasis on improved process and rigour, there were a number of flaws in the previous allocations. Firstly, data entry and spreadsheet design left much room for improvement. Secondly, there were numerous inconsistencies between rights granted and scores allocated, which could not easily be explained by discretion applied by the DDG and Minister. Generally, however, the process has improved since 2001 (for the (traditional linefish, west coast rock lobster and abalone allocations) in terms of data entry, spreadsheet design and simplicity of criteria and in terms of an improved relationship between the score and whether a right were granted or not. However, the latter point was due mainly to the increased number of ‘essential requirements’ and the consequent increased number of applicants excluded. In general, the emphasis on transformation increased between the 2001 allocation and those which took place in 2003 and 2004 (traditional linefish, west coast rock lobster and abalone). However, other than this it is difficult to detect any obvious trends in terms of changes in emphasis on the main objectives of transformation, equity and stability.

**4.5 Annexure to Chapter 4: Applicant' scores and rights granted in hake handline, traditional linefish, west coast rock lobster and abalone**

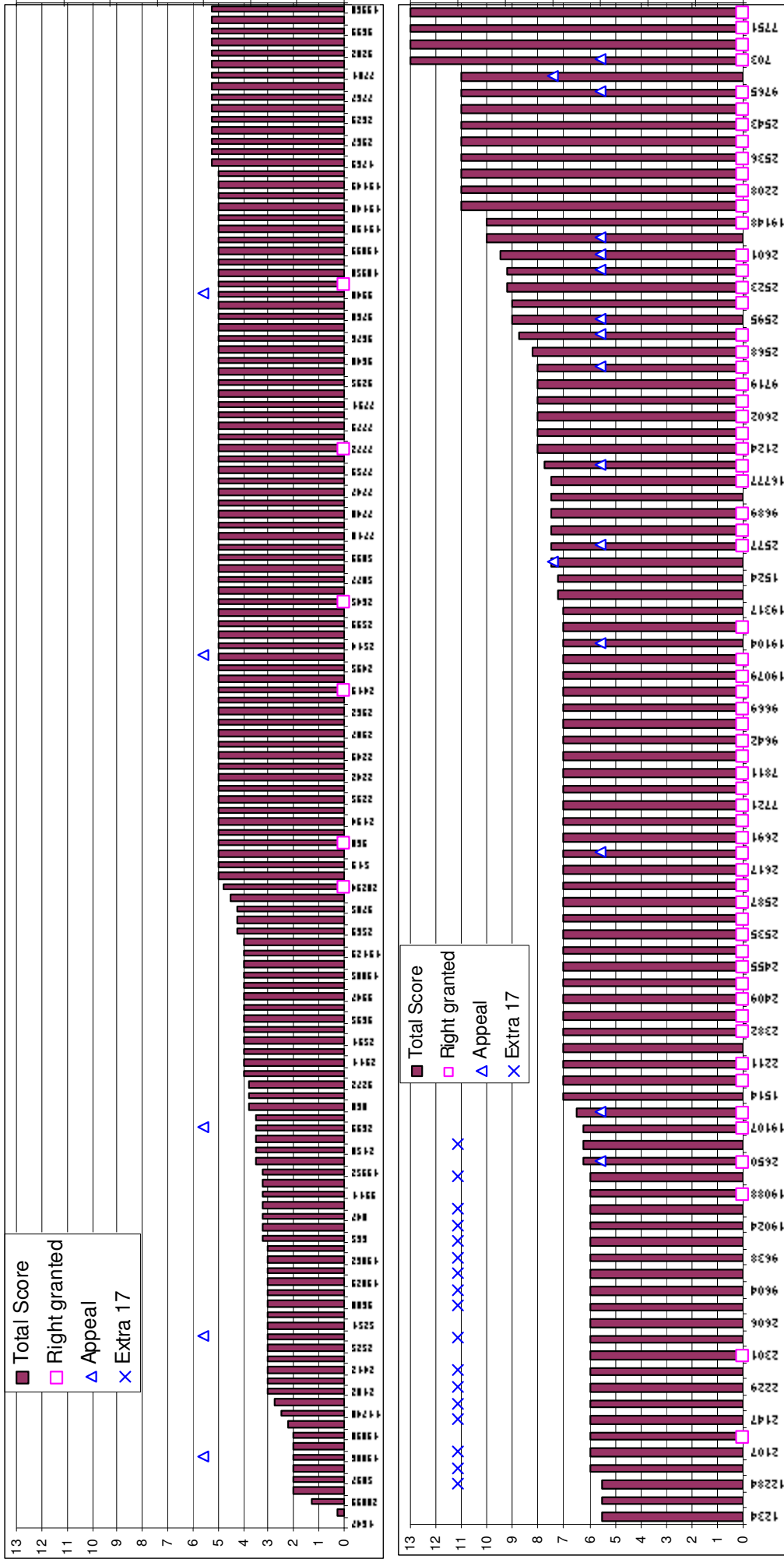
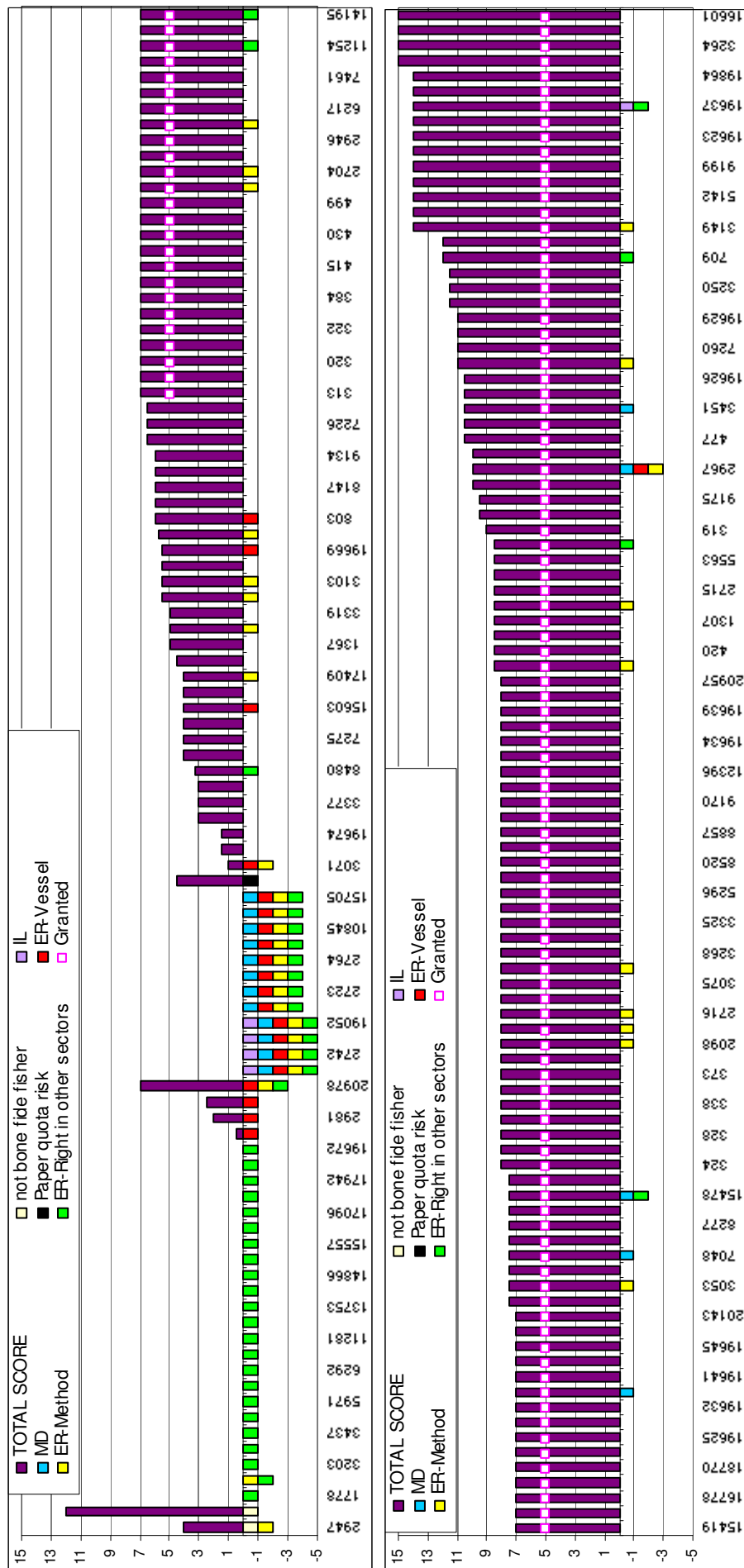


Figure 4.5. Total scores to make headline applicants (2002-2005), whether a right was granted (square), whether the decision was appealed and unsuccessful (lower triangle) and if the appeal were successful (upper triangle) - (there are only two successful appeals). The “extra 17” were granted rights in a separate decision, with no reason given.



**Figure 4.6.** Total scores for traditional linefish full commercial applicants (2003) and whether a right was granted (square). There were apparently no full commercial appeals. MD=material defects, IL=improper lodgements, ER=essential requirements. These latter were not scored, but are included here as indicators for exclusions and to highlight inconsistencies.

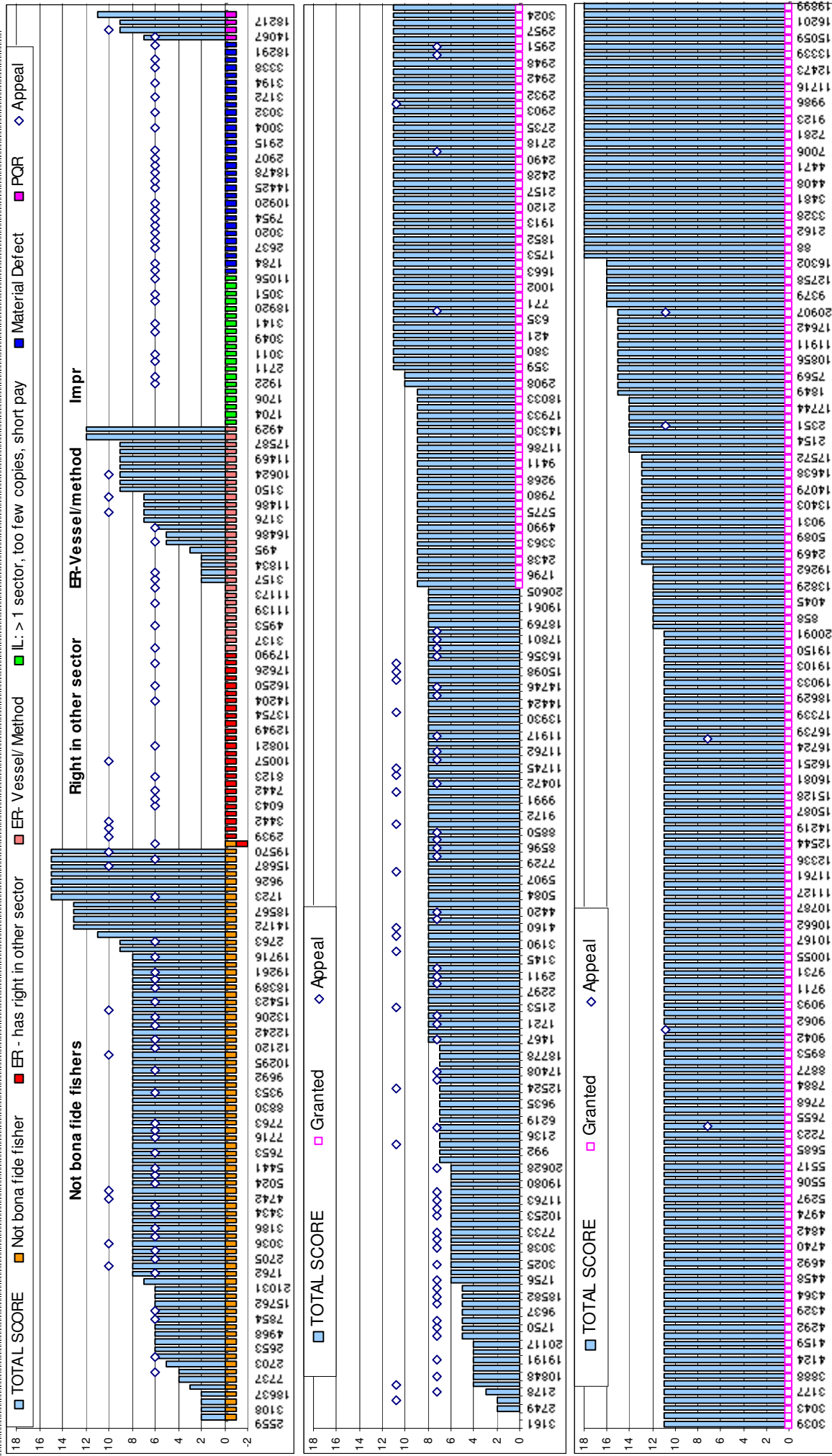
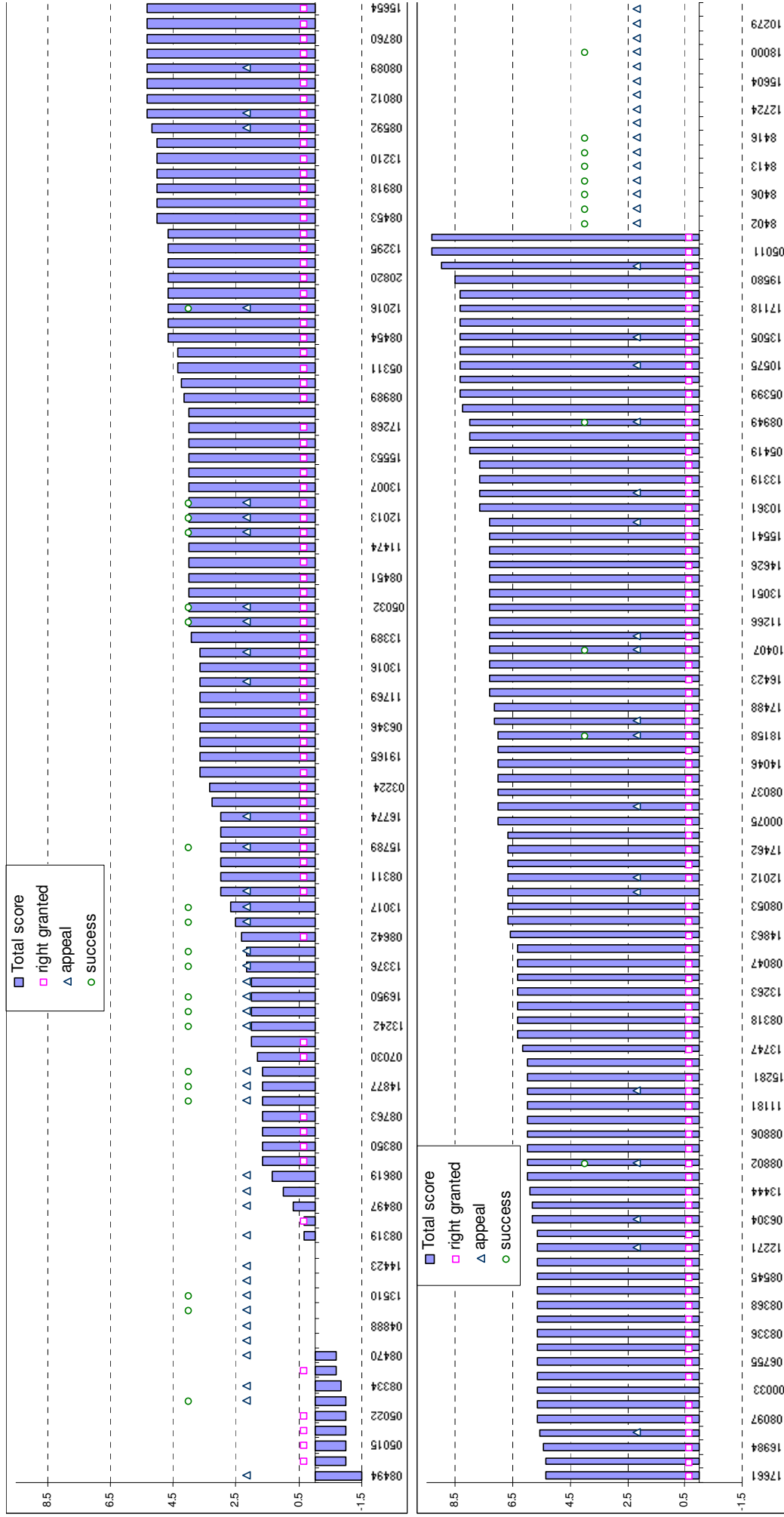


Figure 4.7. Total scores to traditional linefish limited commercial applicants (2003), whether a right was granted (square), whether the decision were appealed and unsuccessful (lower diamond) and if the appeal were successful (upper diamond) (note that appeals were also for quantum). MD=material defects, IL=improper lodgements, ER=essential requirements. Excludes exemptions.



**Figure 4.8.** Total scores to west coast rock lobster full commercial, previous rights-holder applicants (2002-2005), whether a right was granted (square), whether the decision were appealed and unsuccessful (triangle) and if the appeal were successful (circle). Note that appeals are also for quantum. The applicants on the bottom right were not in the original list of applicants, but in the list of appeals.

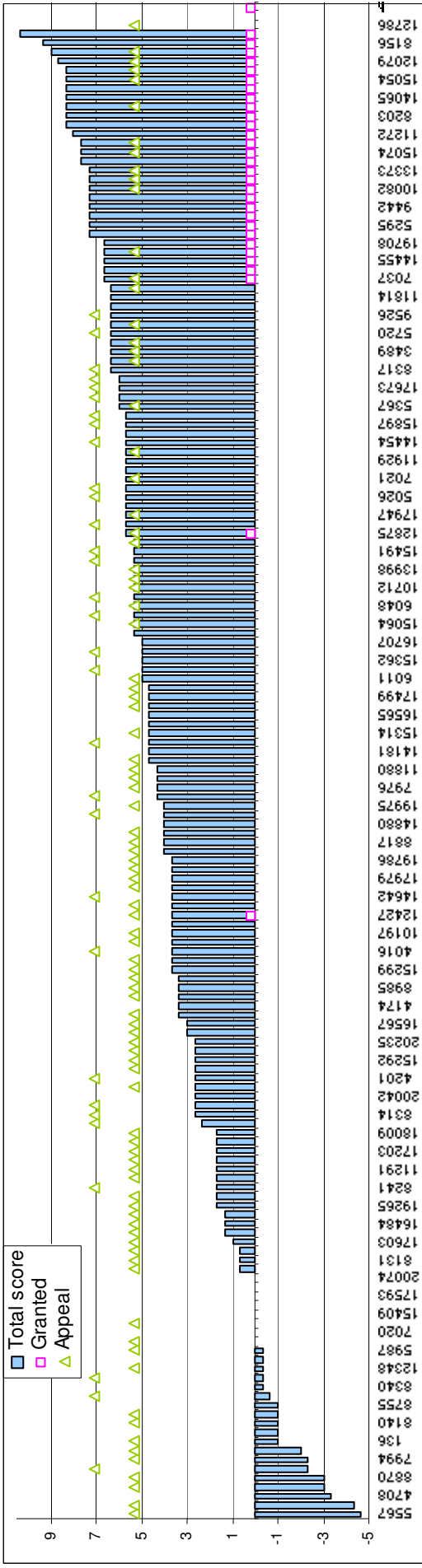


Figure 4.9. Total scores to west coast rock lobster full commercial, new entrant applicants(2002-2005), whether a right was granted (square), whether the decision were appealed and unsuccessful (lower triangle) and if the appeal were successful (upper triangle). Appeals are also for quantum.

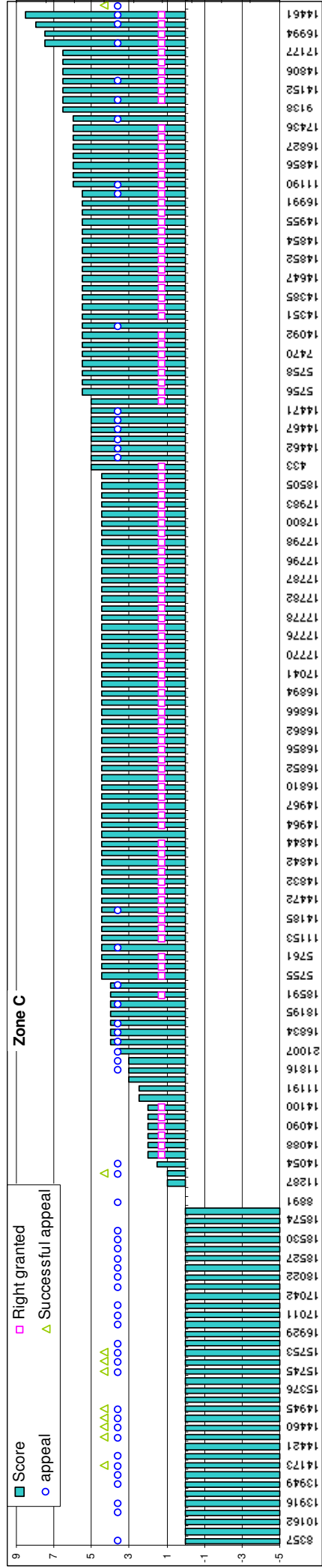
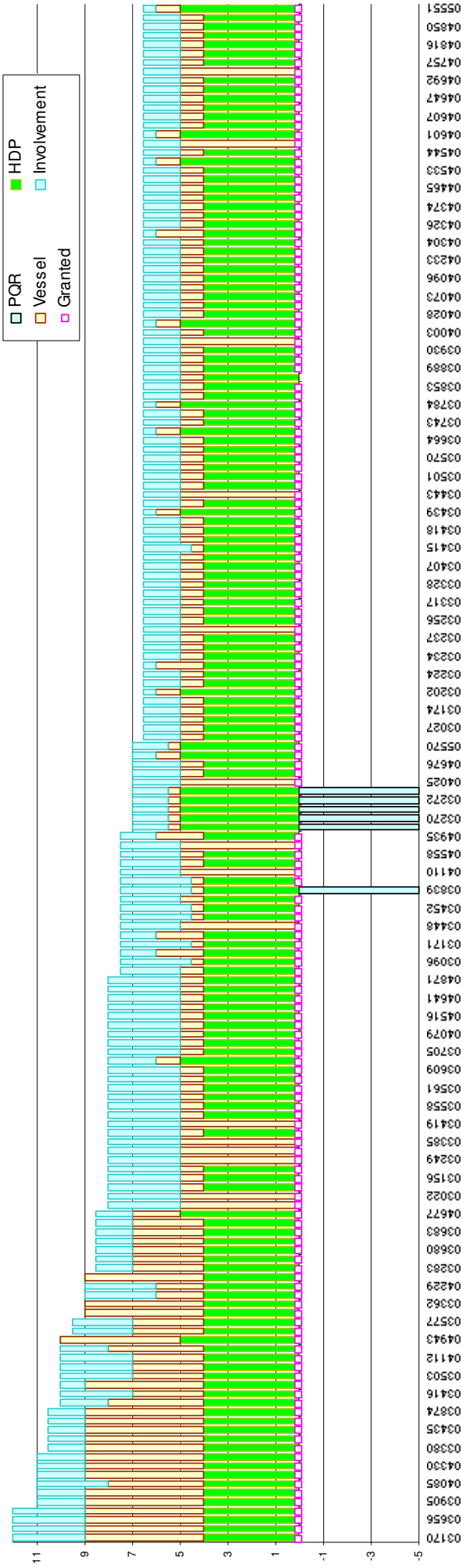


Figure 4.10. Total scores for the west coast rock lobster limited commercial rights allocation (2002-2005) Zone C only, whether a right was granted (square) whether the decision was appealed (circle) and whether the appeal were successful (triangle). Applicants to the right of 8891 were excluded because of potential paper quota risk, but others were given a negative score, remained in the process, and in some cases were granted rights (e.g. the cluster between 14054 and 14100).





**Figure 4.11.** Points allocated for the criteria for the west coast rock lobster limited commercial east of Cape Hangklip, Hermanus area, allocation (2003/2004). Only material defects, improper lodgements and essential requirement failure applicants are not shown. Paper quota risk (PQR) was not given a score, but acted as a veto, usually before any scoring took place, but for those shown here, after scoring. Appeals were unavailable.



**Figure 4.12.** Total scores for abalone full scale commercial applicants (2001), rights granted and appeal (one). Two new entrants granted rights are also shown (4019 had the highest new entrant score, 5723 was ranked 28th, but was commented to be considered as a previous rights-holder). 15313 was not listed on the new entrant or previous rights-holder lists.

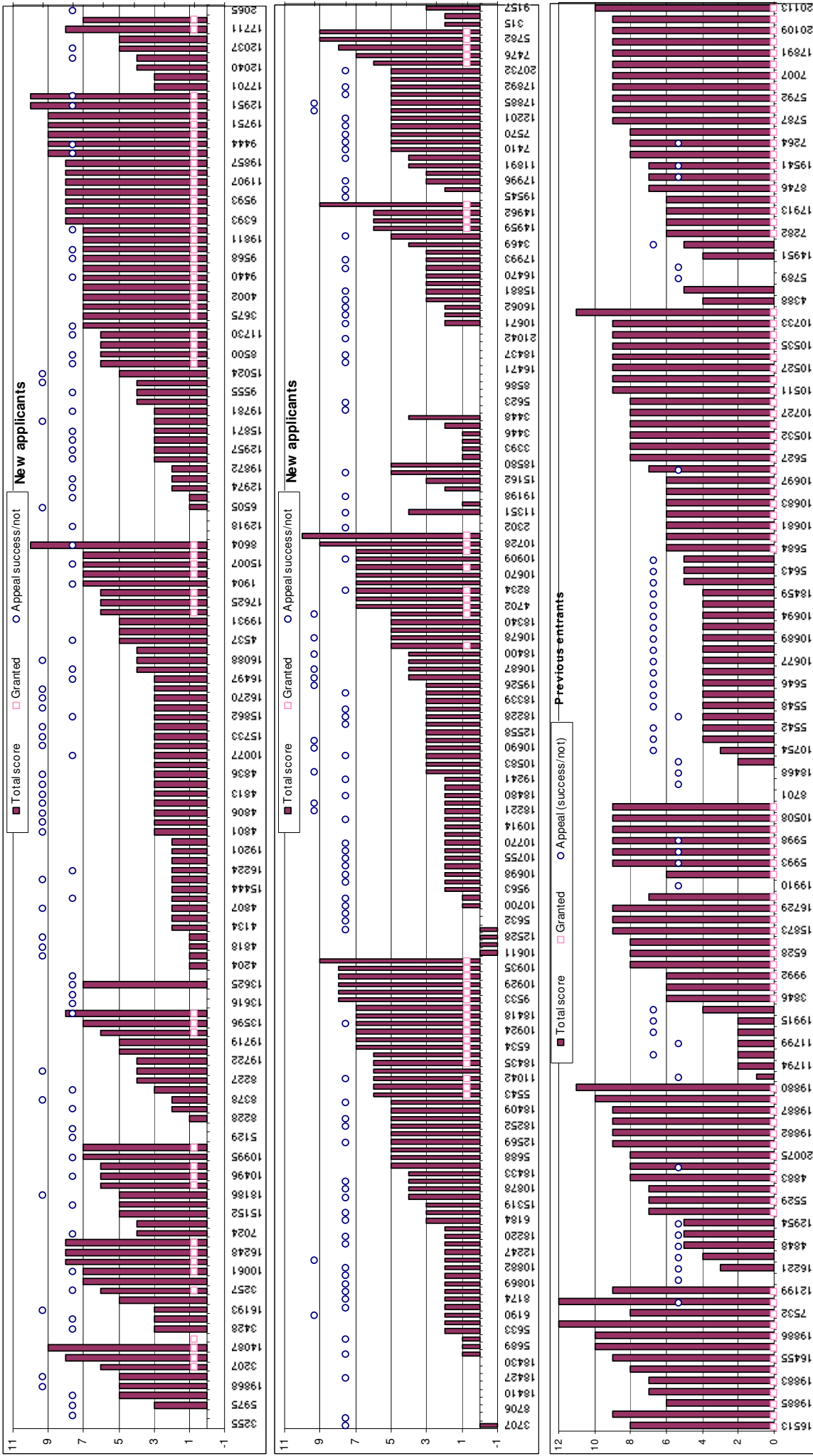
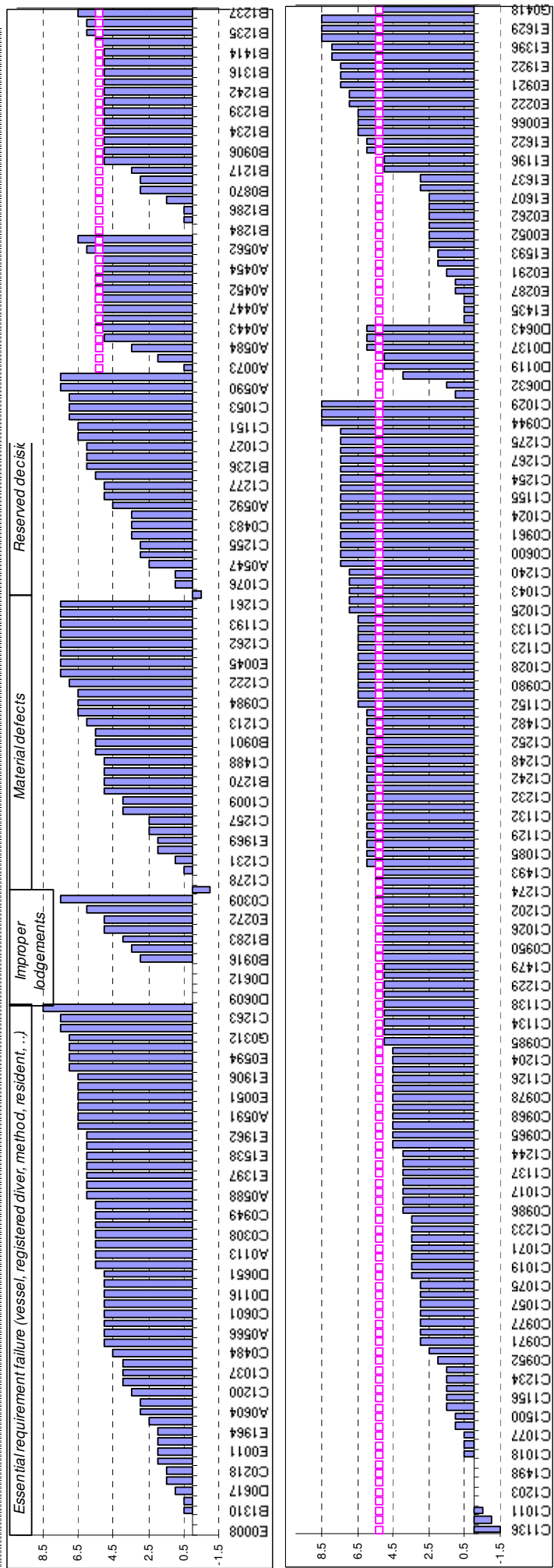
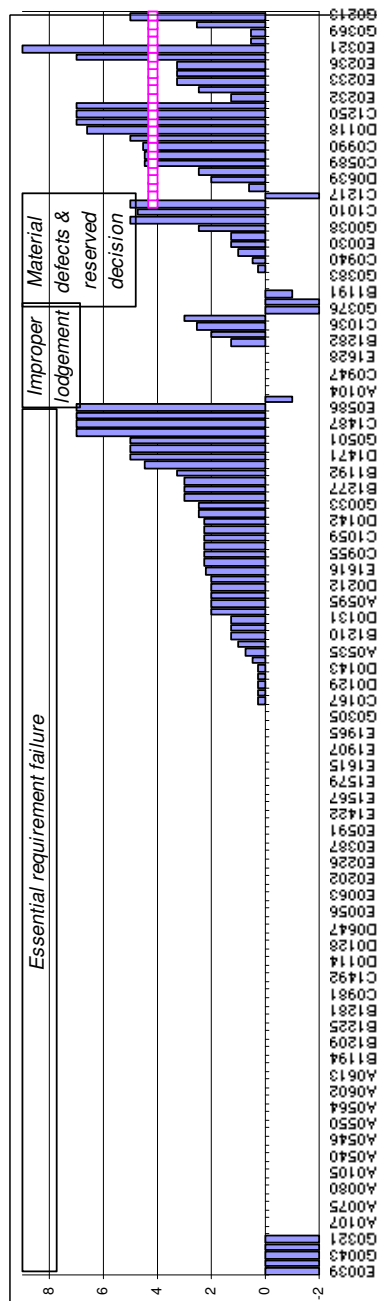


Figure 4.13. Total scores for abalone limited scale commercial applicants (2001), rights granted and appeals. Applicants are arranged from minimum to maximum score in zones. Note that appeals may also be for quantum.



**Figure 4.14.** Total scores for abalone diver applicants (2004), rights granted (square). Applicants are arranged from minimum to maximum score in zones, apart from those excluded for improper lodgements, material defects and essential requirement failures as shown. Appeals were unavailable.



**Figure 4.15.** Total scores for abalone legal entity applicants (2004), rights granted (square). Applicants are arranged from minimum to maximum score in zones, apart from those on the left excluded for improper lodgements, material defects and essential requirement failures as shown. Appeals were unavailable.



## 5. Interaction with stakeholders: Improving the allocation system

### 5.1 Approach: MCA workshops and action research

This chapter describes the main focus of the project: interaction with stakeholders in order to develop an improved allocation system. As mentioned in Section 1.2 the work was undertaken within the broad framework of MCDA with the view that MCDA was an appropriate approach for a justifiable allocation system. The workshops described here, therefore, were aimed at eliciting the types of information (as briefly described in Section 1.3) needed for an MCDA approach (e.g. identifying objectives and criteria). The use of direct interactions and workshops with the stakeholders to elicit values and priorities fits into the action research approach as described in Section 1.4.

### 5.2 Identification of criteria, development of value trees, refinement of process.

#### 5.2.1 Hawston

Three meetings / workshops were held with the Hawston community in 2003. The **first meeting** (15 September 2003) was advertised in the local press, and approximately 100 people attended. The attendees completed a questionnaire (Appendix 1) and nominated a group of people to represent them at subsequent meetings. The majority of those that attended the first meeting were interested in either abalone or crayfish quotas or both (63%) and relatively few were interested in linefish quotas (33%). Of this meeting, 44% currently had a quota or had previously had a quota of some kind (including so-called “experimental” and “subsistence” quotas) (see Sections 2.2.1 and 2.3.3 for the various sectors). Table 5.1 summarises the comments extracted from the questionnaire regarding criteria which should / should not be applied in the allocation process as well as other comments.

*Table 5.1. Frequency of responses regarding criteria for allocation (n=43) from the first Hawston meeting questionnaire (15/09/2003).*

Involvement with industry	24	
Dependence on resource	17	
Previously disadvantaged (race, gender)	1	
Not only to boat owners/ commercial divers	2	
Age shouldn't be criterion	1	
Qualifications and equipment to exploit	1	
Law-breakers IN or OUT	IN : 2	OUT : 2

The **second meeting** was a workshop held on 18 September 2003 with fourteen of the people nominated at the first meeting (Appendix 1). The intention of this meeting was simply to provide a platform for the participants to “air their views” rather than to attempt any formal problem structuring process. Each participant spent some time explaining their background in fishing and their communities and gave their perceptions of the current problems with allocation, fishery management, the resource and their community. They all also gave written “submissions” on these topics. The oral and written submissions were combined and an initial cognitive map and value tree were constructed from these issues together with the responses to the first meeting questionnaire for presentation and the third meeting.

The **third meeting** was a workshop held on 26 November 2003. As the fishing season had begun only six of the representatives could attend (Appendix 1). The intention of this meeting was to undertake more formal ‘problem structuring’ in order to understand the fundamental objectives of the community and their links to means-end objectives and their suggestions for changes to the allocation process, etc. The process was as follows:

- Two “post-it” sessions (Figure 5.1) were conducted. For each a question was posed (see below) so as to elicit responses which would help to develop a value tree and identify criteria for rights allocation and to identify possible improvements to the process. (Post-it responses are given in full in Appendix 1).
- After each post-it session, “points” were allocated to the issues within each question by asking each participant to distribute 10 stickers among the groupings or individual post-its (Figure 5.2, Figure 5.3).
- After the first two post-it sessions, the initial cognitive map and value tree (prepared from the first two meetings) were presented to the participants for discussion and updating in light of the post-it responses.
- A third post-it session was held to identify areas in which the community felt they could benefit from capacity building / training. This is discussed in Section 3.3.3.

The **first question** (“What does having or not having a fishing right mean to you personally or your community”) was intended to elicit responses which would, among other things, reflect the fundamental issues of concern of the representatives as individual fishers and as members of their community. The **second question** (“What *should* MCM be doing”) was addressed in two parts. **Question 2A** was “What should MCM’s aims and goals be?” and **Question 2B** was “What process should be followed? (committees, decision-makers, criteria, fees, etc.)”.



Figure 5.1. A post-it session in progress at the third Hawston meeting (photo: Leanne Scott).

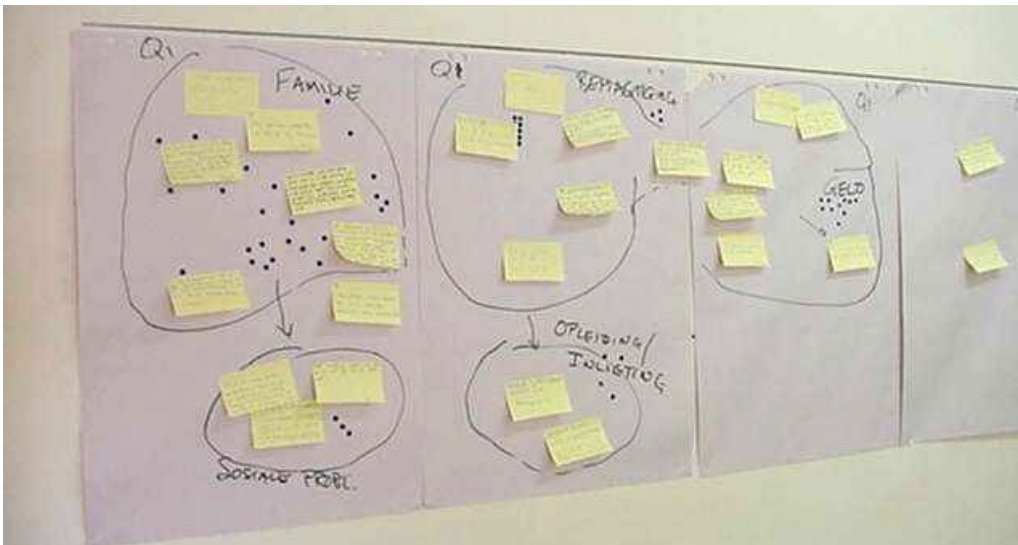


Figure 5.2. Post-it session from the third Hawston workshop after the grouping of like issues (photo: Leanne Scott).



Figure 5.3. Post-it session from the third Hawston workshop after points were allocated to groups (red spots) (photo: Leanne Scott).

A more complete cognitive map was developed after the third meeting (Figure 5.4) based on the previous meetings and the responses to these questions. This served to highlight what might be considered the “drivers” of the problems encountered by the community (for example, the apparent lack of acknowledgement by MCM of the applicants’ history of involvement in fishing) and potential actions which could improve the process and broad level goals (e.g. involve the community in verification of applicants). One of the more important goals was the need to have social continuity (in the sense of enabling people to continue with traditional fishing activities) and “re-integration” of the community (in the sense of overcoming the divisions caused by perceived unfair allocations, poaching and the legacy of apartheid).

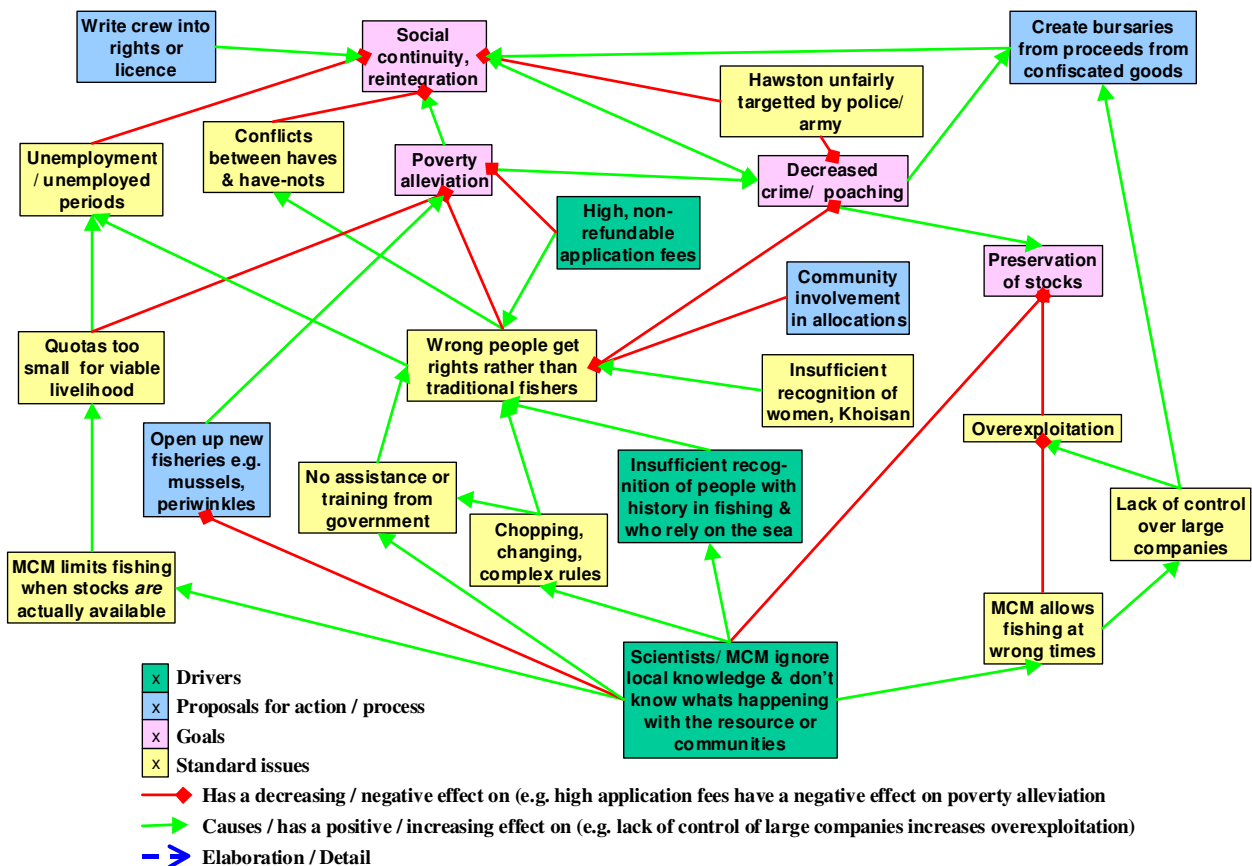


Figure 5.4. Cognitive map developed from the first two Hawston meetings.

The responses to Question 1 (“What does having or not having a fishing right mean to you (personally or your community)”) were grouped into four main areas of concern to the community:

1. Caring for the family and Avoidance / improvement of social problems,
2. Empowerment and the Acquisition of training and information,
3. The ability to make money for the individual and foreign exchange earnings for the country, and
4. Involvement in and commitment to the conservation of marine resources.

A value tree was developed from the cognitive map, the post-it responses, these groupings and other inputs from the three workshops (Figure 5.5). This attempts to link the higher level or fundamental goals with means to those ends and / or criteria with which applicants could be evaluated in terms of their potential contribution to those goals.

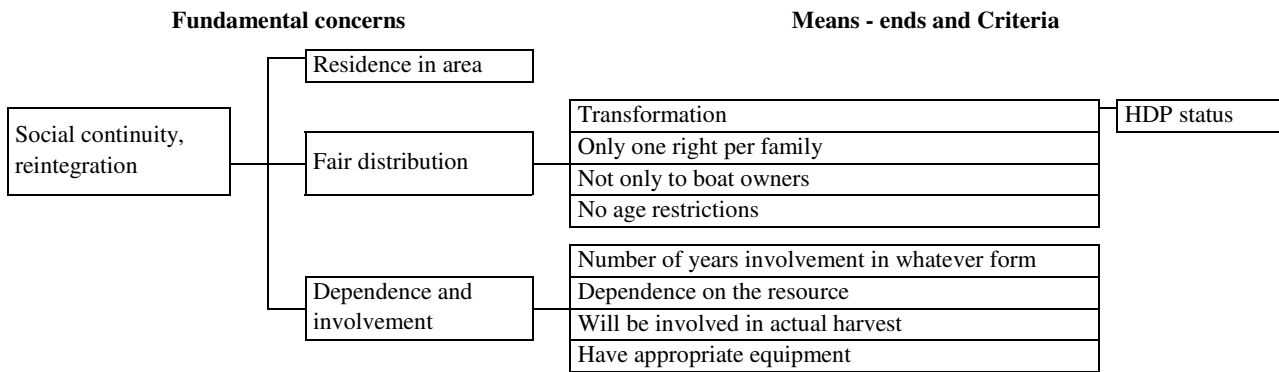


Figure 5.5. Value tree extracted from inputs at the three Hawston meetings.

The responses to Question 2A (“What should MCM’s aims and goals be?”) fell into three groups:

1. Conservation of marine resources,
2. Keeping the “wrong” people out of, and the “right” people in the fishery, using corrective action, giving traditional fishers preference, etc. , and
3. Supporting communities’ interests.

Points were allocated by the participants to the various groupings of Question 1 and Question 2A by each distributing 10 points between the issues (Figure 5.1 to Figure 5.3 show this process in progress). These were translated into weights (by adding all the points together per issue and normalising to sum to one) (Figure 5.6). This clearly showed that the issue of social continuity was of primary importance to the community (i.e. was their most important goal) while the community felt that MCM’s primary goal should be the transformation of the industry and redress of imbalances caused by the apartheid past.

Responses to 2B (“What process should be followed?: committees, decision-makers, criteria, fees,...”) were combined with ‘actions’ extracted from the previous meetings (e.g. in Figure 5.4) (summarised in Table 5.2).

Another meeting was held on the 30<sup>th</sup> of November 2004 during which feedback was given to the community regarding the project and a number of exercises were undertaken in order to obtain a first impression of the different priorities of the communities both within criteria (scores) and between criteria (weights). The results are summarised in Section 5.4.



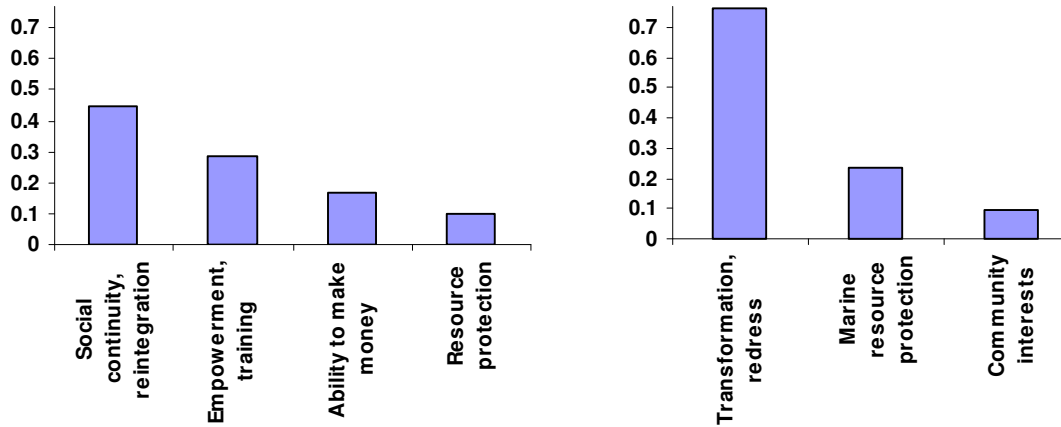


Figure 5.6. Points (converted to weights) allocated by the Hawston workshop to (left) fundamental concerns (Question 1) of fishers in Hawston community and to (right) what the aims of MCM should be (Question 2A).

Table 5.2. Suggestion regarding the allocation process and general approach arising from the Hawston meetings.

<p><b>Community involvement</b></p> <ul style="list-style-type: none"> <li>• Establish a community forum to advise allocations</li> <li>• Establish co-management arrangements</li> <li>• Make use of traditional / local knowledge of resource</li> <li>• Establish zonal rights</li> </ul>	<p><b>Community support</b></p> <ul style="list-style-type: none"> <li>• Establish a community trust fund for bursaries, factories, employment creation (which, for example, could be funded by confiscations)</li> <li>• Provide training (e.g. for filling in forms, developing business plans)</li> </ul>
<p><b>Application fees and forms</b></p> <ul style="list-style-type: none"> <li>• Application fee should be lower and refundable or only payable if successful</li> <li>• Simplify the application form</li> </ul>	<p><b>Enforcement</b></p> <ul style="list-style-type: none"> <li>• Better monitoring and enforcement (poachers, commercial fleets, etc.)</li> </ul> <p><b>New fisheries</b></p> <ul style="list-style-type: none"> <li>• Establish new fisheries for periwinkle, mussels, kelp, etc.</li> </ul>

### 5.2.2 Kalk Bay

A meeting was held with the Kalk Bay harbour master (Pat Stacey) to obtain background information regarding fishers and his perceptions of the allocation process in Kalk Bay area. He also suggested fishers who would provide a range of views from within the Kalk Bay community. They were contacted and invited to a meeting and to suggest additional names of those who could provide a different viewpoint than those already attending. The **first meeting** was held on the 23 February 2004 with four people. The meeting combined the steps undertaken in the second and third Hawston meetings, namely, “free” oral representations of concerns and personal stories from the representatives followed by two post-it sessions relating to objectives, criteria and processes relevant to the allocation process. The two questions posed for the post-it sessions were:

- What should be the aims and goals of MCM in allocating rights?
- What specific criteria and processes should be adopted by MCM in order to achieve these aims?

The responses from the post-it sessions are given in full in Appendix 2. The cognitive map developed by the team based on the discussions in the workshop is shown in Figure 5.7. The main driver of the perceptions of the Kalk Bay community was dissatisfaction caused by rights being allocated to new entrants but not to people who had been involved in fishing for generations. Goals included the need to maintain or re-establish traditional fishing communities such as Kalk Bay.

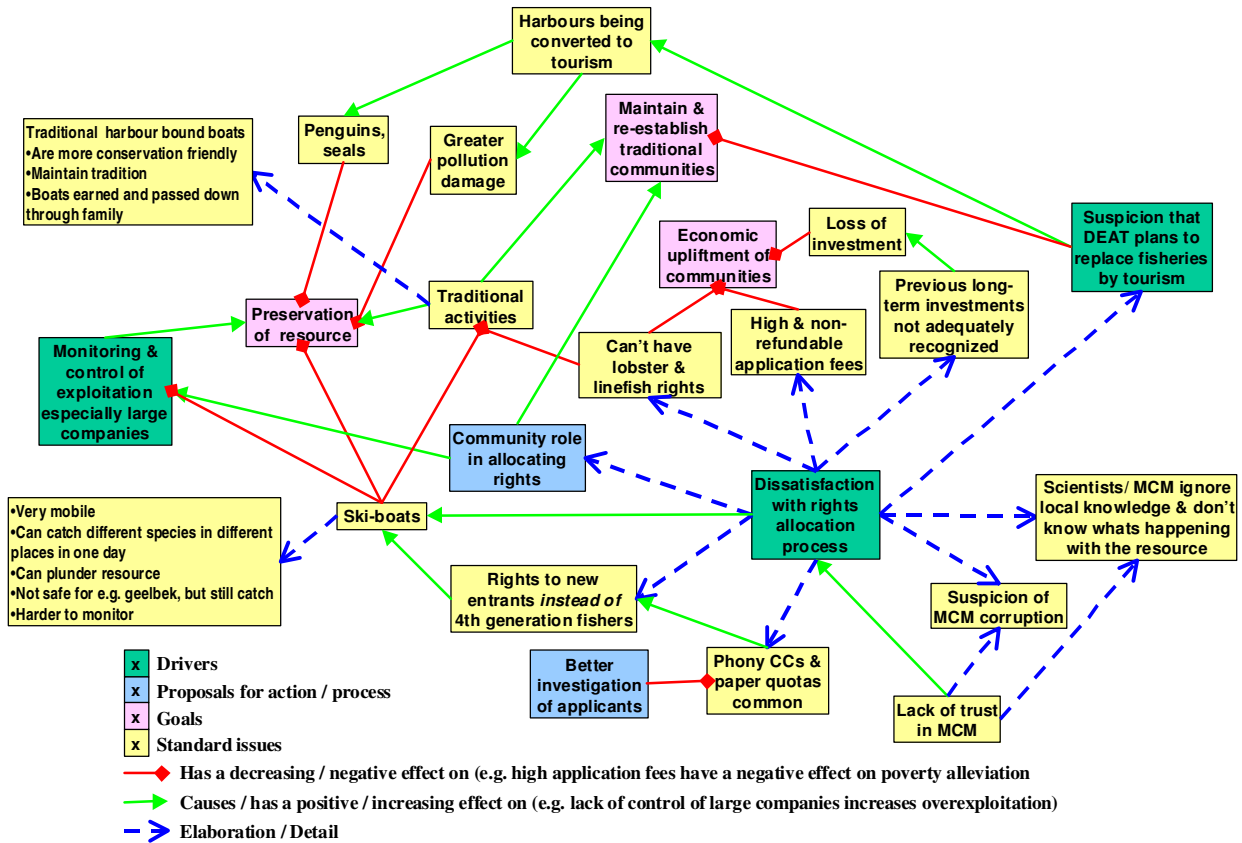
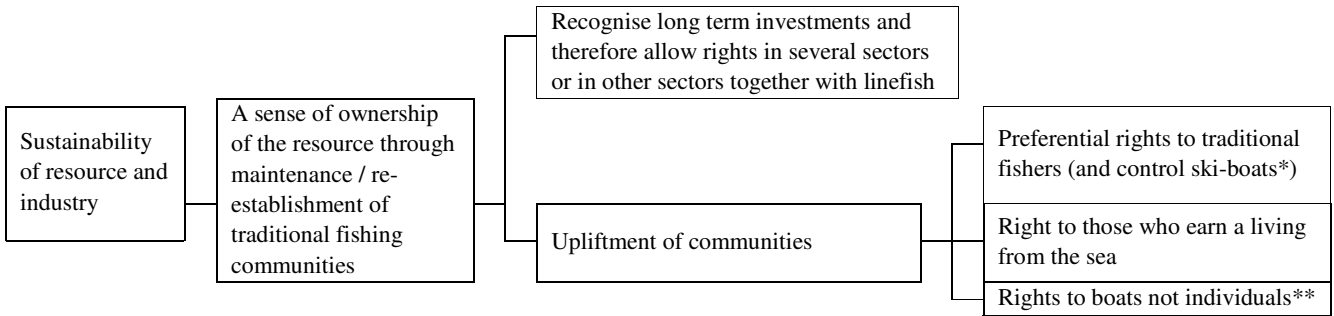


Figure 5.7. Cognitive map derived from first Kalk Bay meeting (23 February 2004).

A value tree was developed from the cognitive map and other inputs during the workshop (Figure 5.8). There was insufficient time to allocate points to different issues.



\*Refer to cognitive map and Table 5.3.

\*\*This point was not explored in depth, but was mentioned

Figure 5.8. Value tree developed from the first Kalk Bay meeting (23 February 2004).

Comments regarding the allocation process are summarised in Table 5.3. These include the blue shaded blocks from the cognitive map. There was particular concern over the explosion in the number of ski-boats over the last few years. There was a perception that there was little control over ski-boat operations, and this was problematic in terms of resource protection and crew safety.

**Table 5.3.** Suggestion regarding the allocation process boat regulations arising from the first Kalk Bay meeting (23 February 2004).

<b>General suggestions</b>	
<ul style="list-style-type: none"> <li>• Need to have a community role in the allocation process</li> <li>• Need to better investigate applicants</li> <li>• Need to acknowledge local knowledge</li> <li>• Need to better monitor exploitation especially large companies</li> <li>• Limit the number of participants in order to have workable rights</li> <li>• Need to give training regarding responsible resource management to new (and old) entrants</li> </ul>	
<b>Suggestions regarding the treatment of ski-boats and harbour-bound boats</b>	
Ski- boats	Traditional harbour-bound boats
<ul style="list-style-type: none"> <li>• Institute 1 m = 1 crew rule (or similar)</li> <li>• Restrict hours to daytime for safety reasons</li> <li>• Restrict to zones and to specified launching and landing harbours</li> </ul>	<ul style="list-style-type: none"> <li>• Institute 1 m = 1 crew rule (or similar)</li> <li>• Give rights preferentially to traditional fishers' boats in harbours</li> <li>• Don't penalise hard work (ownership of a number of vessels built up over years - want to pass these on to children)</li> </ul>

### 5.2.3 Ocean View

It was apparent that the group of participants from Kalk Bay represented a particular point of view: perhaps those of the more well-established fishers who had, despite the challenges of apartheid etc., managed to establish themselves in the fishing industry through buying vessels and obtaining access to quotas over the years. Therefore, we felt that we needed, in addition, the views of those who were in a less established position. The Ocean View community, most of whom had been forcibly removed from Simonstown during the apartheid era, included many fishers from traditional fishing families and we felt that they could represent slightly different point of views to complement those from the more established Kalk Bay representatives.

Through contact with Andy Johnston (representative of the Artisanal Fishers Association) and Moeniba Isaacs (from the University of the Western Cape who undertook extensive work relating to fishers in both Kalk Bay and Ocean View) some initial contact names were obtained and a meeting arranged with these and additional people suggested by them. Approximately 17 people attended this **first meeting** on 26 April 2004. As with the Kalk Bay meeting, we combined the steps undertaken in the second and third Hawston meetings, namely, “free” oral presentations of concerns and personal stories from the representatives followed by two post-it sessions relating to objectives, criteria and processes relevant to the allocation process. The two questions posed for the post-it sessions were:

- What should be the aims and goals of MCM for a fair rights allocation
- What should be the specific processes and criteria used (in order to make this question more explicit it was also paraphrased as “What would you do in Horst Kleinschmidt’s shoes?” (i.e. the deputy director general of MCM))

The post-it responses are given in full in Appendix 3. Figure 5.9 shows the cognitive map and Figure 5.10 the value tree which were both developed from these responses. Goals included the maintenance or re-establishment of community stability, the recognition of bona fide fishers and the redress of the imbalances caused by the apartheid past. A number of specific criteria were proposed which could be used in the comparison of applicants.

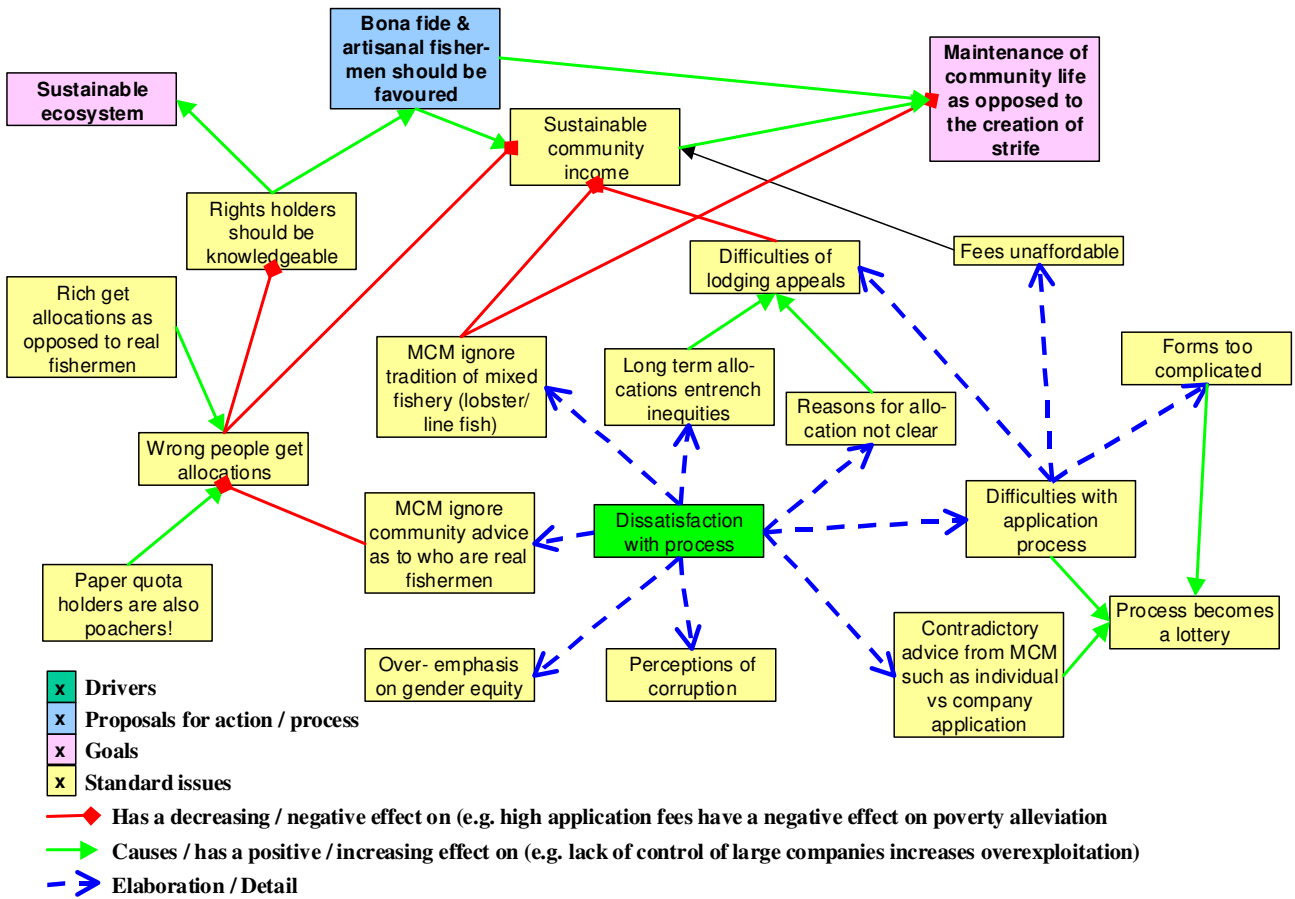


Figure 5.9. Cognitive map derived from first Ocean View meeting (26 April 2004).

1. PROMOTE CONSTITUTIONAL DIRECTIVES	2. Give rights to bona fide fishers or artisanal fishers who make a living from the sea (although they may never have had formal rights before)	Historical involvement	• Record of / proof of / verifiable history of involvement over the years
		Experience	• Knowledge of the industry • Skill and experience
		Investment	• Investment in the industry
		Access to the means of fishing	• Access to fishing vessel • Access to gear and equipment
	3. Address imbalances of the past	Transformation	• Genuine transformation and equity
	4. Empower with a sustainable income	Dependence	• Dependency on the resource (other employment and other earnings should count against)
	5. Poverty reduction		
6. Ecosystem management and sustainability	Compliance	• How the previous quota was handled • No lying on forms	
?	Maintain social / community stability	Rights to men in preference to women*	

\* Note that the value tree arises from the general discussions and the post-it sessions, not through agreement on each point and this particular point was not endorsed by all participants (women representatives had left by this stage).

Figure 5.10. Value tree developed from the first Ocean View meeting (26 April 2004).

Table 5.4 summarises the post-it responses and discussions regarding the allocation process itself.

**Table 5.4.** Suggestion regarding the allocation process and general approach arising from the first Ocean View meeting (26 April 2004).

<p><b>MCM processes</b></p> <ul style="list-style-type: none"> <li>• A completely new allocation approach is needed with new people overseeing the process</li> <li>• There should be better verification of information.</li> <li>• MCM should use their own databases more effectively (e.g. to check on involvement over the years) and make use of other departments' data (e.g. SARS for compliance).</li> <li>• MCM should involve the fisheries inspectors in the identification of bona fide fishers.</li> </ul>	<p><b>Community involvement and interactions</b></p> <ul style="list-style-type: none"> <li>• MCM should consult the community in the allocation process (e.g. to check who are bona fide fishers)</li> <li>• MCM should pay more attention to community views (and actually visit the community)</li> </ul>
<p><b>Information</b></p> <ul style="list-style-type: none"> <li>• Provide the correct advice to fishers (about whether to apply for full or limited commercial, whether to establish CCs etc.</li> <li>• Provide accurate information regarding the criteria to be used</li> </ul>	<p><b>Application fees and forms</b></p> <ul style="list-style-type: none"> <li>• The application fee should be refunded if the application is unsuccessful</li> <li>• Application forms should be simplified</li> <li>• Assistance should be given to those who need it (for filling in the forms).</li> </ul>
<ul style="list-style-type: none"> <li>• Linefish rights should be “on their names”</li> </ul>	<p><b>Length of rights</b></p> <ul style="list-style-type: none"> <li>• Rights should <i>not</i> be for 10 to 15 years (because of the current “wrong” rights allocations and the likelihood of future mistakes – should have a somewhat shorter period to allow for corrections)</li> </ul>



Ocean View meeting 26 April 2004 (Photo: Ron Janssen)

Another meeting was held on the 2<sup>nd</sup> of December 2004 during which feedback was given to the community regarding the project and a number of exercises were undertaken in order to obtain a first impression of the different priorities of the communities both within criteria (scores) and between criteria (weights). The results are summarised in Section 5.4.

### 5.3 Comparison of the issues of concern of the three communities

Most of the issues of concern are shared between all three communities. Of those which more directly affected the community, the primary one was that involvement in fishing over the years was not adequately recognised in the allocation process and that there was inadequate verification/investigation of applicants. These, in combination led to inappropriate people getting rights. These “inappropriate” people included those with other jobs, those with no experience or history with fishing and those who had no intention of fishing themselves, but would sell their quotas (paper quotas). All three communities suggested that the community should be involved in the allocation process in some way as “real” fishers could easily be identified by the community. There was also a feeling that there had been too many changes in rules and processes over the years and that people were often misinformed or misguided by consultants and sometimes by MCM officials (e.g. told to form big / small CCs, advised to apply for full / limited commercial rights) and that, in general, the process was complicated and the application form was difficult to fill in. This meant that applicants often had to pay lawyers or consultants for assistance. This expense, together with the application fee, meant that they often ended up deeper in debt to loan sharks and / or had to sign their rights away. All communities agreed that the application fees were too high, and should be refunded if the application were unsuccessful. In addition, they felt that the quantum allocated was often too small to be viable. Many of these issues were felt to have contributed to mistrust within the communities and to worse poverty than had previously been experienced (and consequent law-breaking). In general, the communities were aware of the need to limit exploitation in order to preserve the resource. However, at the same time they did not always appear to make the connection to the system designed to control overexploitation: i.e. the need for a quota system or effort control which limits the number and size of quotas or effort, because of the limited size of the resource.

Also common to all three communities was a feeling of mistrust towards MCM. This had a number of facets. Firstly, it was felt that, overall, MCM had done a terrible job of the allocation process (for the reasons in the previous paragraph). Associated with this was that they felt that MCM had often misinformed people, were not genuinely interested in the communities’ concerns, and did not investigate applicants properly (despite persuading people that the high fees were necessary precisely for this purpose). Secondly, they felt that the scientists did not really know what was happening with the resource and so put in place arbitrary or ineffective restrictions and allowed fishing in inappropriate seasons. They felt that MCM did not acknowledge local knowledge nor make use of it for making decisions regarding seasons, restrictions, the opening up of new fisheries etc. Thirdly, they felt that large companies were not adequately controlled leading to far larger irregularities and ecosystem consequences than occurred with smaller-scale fishers. Finally, there were suspicions of corruption and of unspoken motivations (e.g. that of converting fishing harbours to tourism activities which would exclude fishers because of higher berthing fees, etc.) within MCM.

There were some differences between the issues raised by the communities. For example, while Hawston and Ocean View representatives wanted more protection of crew, through, for example, writing them into the licence, the Kalk Bay representatives were concerned that in this way the investments that they had made over many years of hard work would be “signed away”. The Kalk Bay participants felt that rights should be given to boats/boat-owners while others felt that rights should be given to individuals rather than only boat-owners. The Ocean View representatives suggested that the fisheries / harbour inspectors should be more involved in the rights allocation process (Hawston representatives also brought this up at a later meeting). The Kalk Bay representatives were particularly concerned about the proliferation of ski-boats, the lack of control over them as opposed to harbour-bound boats and felt that their mode of operation was more damaging to the resource than the harbour-bound boats (as ski-boats were more mobile they could catch more and a number of different species at different places on the same day). They offered some specific suggestion to limit these problems. This issue did not arise in the other communities.

Hawston fishers suggested that new fisheries, such as for mussels, periwinkles and seaweed could be opened up in their area (but that MCM did not act on this), while this did not apply to Kalk Bay and Ocean View. Finally, the issue of preferential treatment of women by MCM’s allocation process arose in Hawston and Ocean View. There were several concerns: (a) that at a time when many experienced male fishers are out of work, it did not make sense to give rights to less experienced women and perhaps spend resources on training them, (b) that giving

rights to women disempowered the men in the community and led to further social breakdown and (c) that women usually did not want to go to sea anyway and so they employed men to catch their quotas (many applying to MCM for “exemptions” to be allowed to not be on the boat (as this is a condition of the permit)), further disempowering the men. Unfortunately, these issues arose at the third Hawston and the first Ocean View meeting at times when the women had left so there was no general discussion around them. However, it was clear from other discussions that the female representatives felt that they should be given particular recognition and, furthermore, that the allocation system was not adequately doing so. For example, a CC in Hawston felt that their status as a HDP women empowerment group was not recognised.

In general, although the representatives of all three communities brought up very similar issues, the slight differences suggested that those from Ocean View had more in common with those from Hawston than those from Kalk Bay (despite the geographic proximity and community links between Ocean View and Kalk Bay).

## 5.4 Summary and comparison of the scores and weights of the three communities

Additional workshops were held with Hawston and Ocean View fishers (November and December 2004) to give feedback about the project and to try to obtain the communities’ views on the importance of different criteria applied in the allocation of fishing rights. While the results should help to inform discussions within MCM, the results can not be considered definitive, because the participants were not necessarily representative of the entire fishing community. The criteria in the first (weighting) exercise were an amalgamation of the main criteria used in the allocations relevant to the communities, while the criteria and levels in the second and third (scoring/ranking) exercise were based primarily on those used in the west coast rock lobster allocation east of Cape Hangklip, because there were relatively few of them (three) and because the levels of performance were clearly defined.

Note that in most of the analyses (averages, medians and standard deviations), three participants have been excluded (two from Ocean View and one from Hawston) as the participants had appeared not to understand the exercises and/or had given very inconsistent and/or anomalous responses. However, in giving the percentage of people with a particular rank order these participants are usually included.

### 5.4.1 Weights of criteria

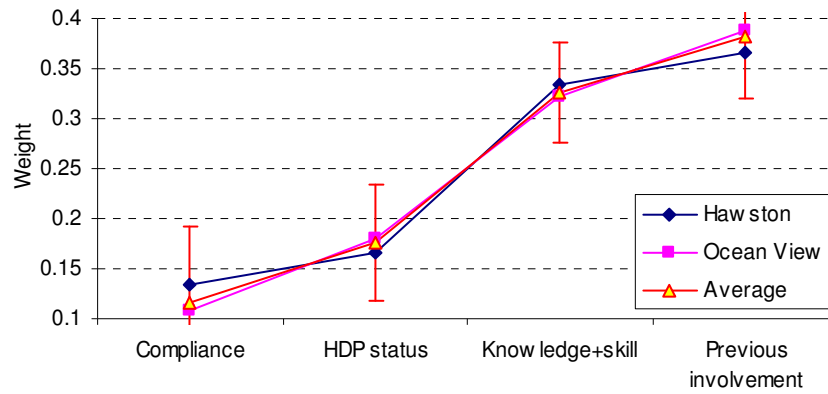
Participants were asked to distribute a total of ten adhesive stars among the criteria in each grouping of criteria presented to them. The first group (‘overall’) compared the four main groups of criteria: those relating to economic, transformation, equitability and compliance, the second group compared four specific criteria within the economic group, the third compared four criteria relating to transformation and the fourth compared four criteria relating to equitable distribution.

#### 5.4.1.1 Overall

There was a high degree of consistency among participants in terms of the order of importance of the four main criteria. The order of importance taken from the average of the (18-3) respondents was:

1. Previous involvement (average weight = 0.38)
2. Knowledge and skill (average weight = 0.33)
3. HDP status (average weight = 0.18)
4. Compliance (average weight = 0.12)

- 61% of respondents’ (11/18) ranked the criteria in the same order as above.
- 72% of respondents (13/18) agreed that previous involvement was the most important criterion.
- Nobody gave HDP status the highest weight.
- HDP status and Compliance were given significantly less weight than Knowledge and skill and Previous involvement.



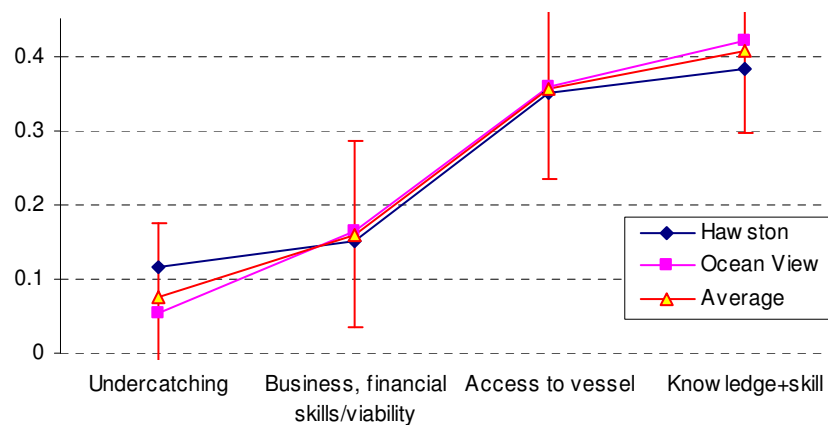
**Figure 5.11.** Average weights given to the criteria representing each of the four groups of criteria (Ecosystem health=Compliance, Transformation=HDP status, Economic=Knowledge, skill, Equitability=Previous involvement).

**5.4.1.2 “Economic” criteria**

There was a reasonable degree of consistency among participants regarding the relative importance of the criteria within the economic group. The order of importance taken from the average of the (18-3) respondents was:

1. Knowledge and skill (average weight = 0.40)
2. Access to vessel (average weight = 0.35)
3. Business, financial skills/viability (average weight = 0.16)
4. Undercatching (average weight = 0.07)

- 50% of respondents (9/18) agreed with this order.
- 78% of respondents (14/18) agreed that knowledge and skill was the most important criterion in this group.
- 44% felt that *access* to a vessel was the most important criterion (three gave Knowledge and skill and Vessel access tie first place).
- Business, financial skills and viability and Undercatching were given significantly less weight than Access to a vessel and Knowledge and skill.



**Figure 5.12.** Average weights given to the economic criteria.

**5.4.1.3 “Transformation” criteria**

The group of criteria relating to transformation had the least consistent answers - there is no clear picture or trend as each individual clearly had different views. Noting that the average is *not* a good measure in this case, nevertheless, the order of importance taken from the average of the (18-3) respondents was:

1. HDP status (average weight = 0.29, Std dev 0.11)
2. Number employed (average weight = 0.27, Std dev 0.11)
3. Paper quota risk (average weight = 0.22, Std dev 0.17)
4. Transformation plan (average weight = 0.21, Std dev 0.12)

- None of the individual responses agrees with this order.



- Only 2 of the individual response agreed with the order taken from the median response (1=Number employed, 2=HDP status and Paper quota risk, 3=transformation plan).
- Although the average weight gives the order of HDP status and then Employment, in fact, 44% of respondents (8/18) felt that Employment (the number of people employed) was the most important criterion, while only 28% felt that HDP status was the most important criterion.

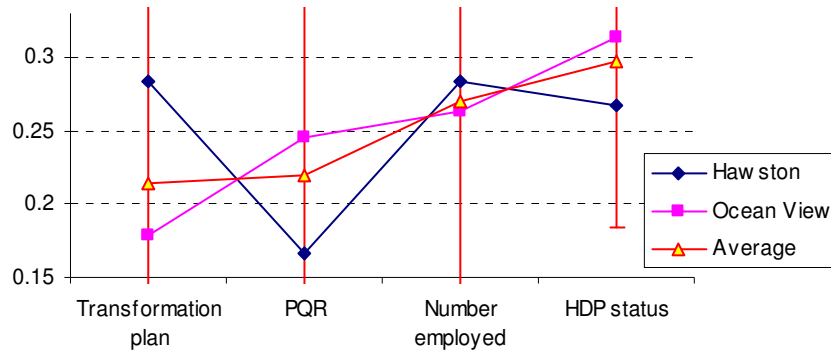


Figure 5.13. Average weights given to the transformation criteria.

#### 5.4.1.4 “Equitability” criteria

The weighting responses for the group of criteria relating to ‘equitability’ was also not very consistent. The order of importance taken from the average of the (18-3) respondents was:

1. Previous involvement (average weight = 0.29, Std dev 0.05)
2. Personally involved in harvest (average weight = 0.27, Std dev 0.06)
3. Dependence on the resource (average weight = 0.26, Std dev 0.09)
4. Residence in the area (average weight = 0.18, Std dev 0.1)

- 39% of respondents (7/18) agreed with this overall order.
- 67% of respondents (12/18) felt that Previous involvement was the most important criterion.
- 56% of respondents (10/18) felt that Dependence on the resource was the most important criterion.
- 39% of respondents (7/18) felt that personal involvement in the harvest was the most important criterion.

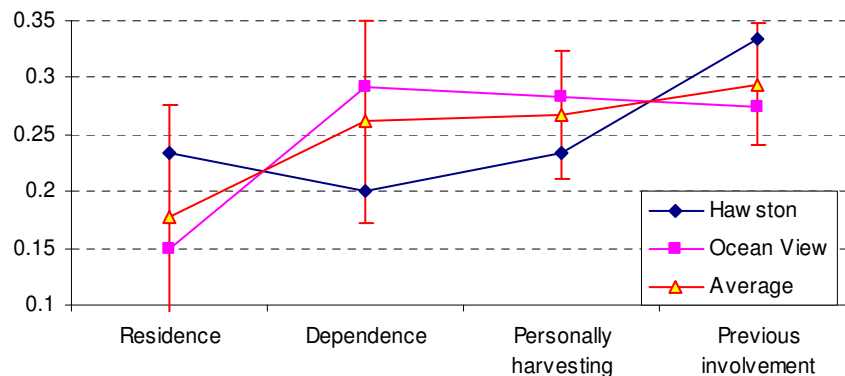


Figure 5.14. Average weights given to the equitability criteria.

#### 5.4.2 Ranking of “performance” levels of criteria: Scoring applicants for each criterion

Participants were asked to place the ‘levels of performance’ of each of three criteria in rank order. The levels were those used by MCM in the west coast rock lobster allocations east of Cape Hangklip, except that for Ocean View “experimental permit holder” or “experimental crew” were replaced with “limited commercial right holder” or “limited commercial crew”. Note that some participants found this exercise somewhat confusing initially as in the previous exercise “more” (stars) was “better”, whereas in the ranking exercise a lower number was better. The confusion was apparently cleared up after additional explanation to individuals. Note also that some participants did not rank all levels, so percentages are based on the number of respondents who ranked that particular level rather than the total number of respondents.

**5.4.2.1 HDP status**

There were three female respondents out of the 15 used. 53% of respondents (8/15) gave HDP male the highest rank, 33% (5/15) gave HDP females the highest rank and a further 13% (2/15) gave HDP males and females joint highest rank. There seemed to be a larger ‘gap’ between HDP and non-HDP in Ocean View than in Hawston. In other words, Ocean View participants were more concerned with race – this is also reflected in their slightly higher weights on average given to HDP status in the transformation criteria (Figure 5.13) and in HDP status when compared to other group criteria overall (Figure 5.12). 53% of participants gave non-HDP females the lowest rank.

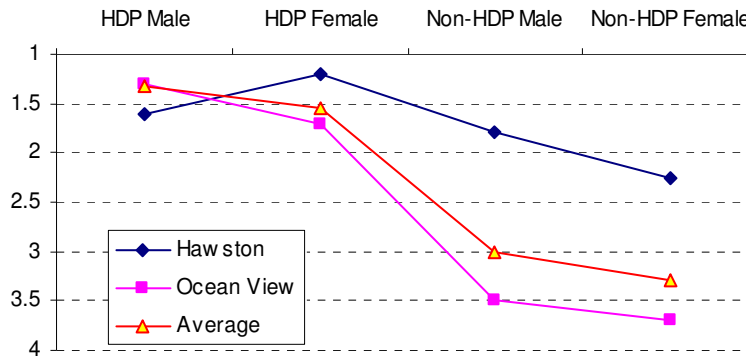


Figure 5.15. Average ranks to HDP status levels (although taking an average of a rank is not valid this does at least give some indication of the trends).

**5.4.2.2 Vessel access**

69% gave 75-100% vessel ownership the highest rank. Strangely, 71% gave a 50-100% Purchase Agreement a rank of 4 or better, while 75% gave a 1-24% Vessel ownership a rank of 5 or lower (i.e. on average an agreement to purchase a large share in a vessel was better than an existing small share). The Hawston respondents seemed somewhat more consistent (Figure 5.16).

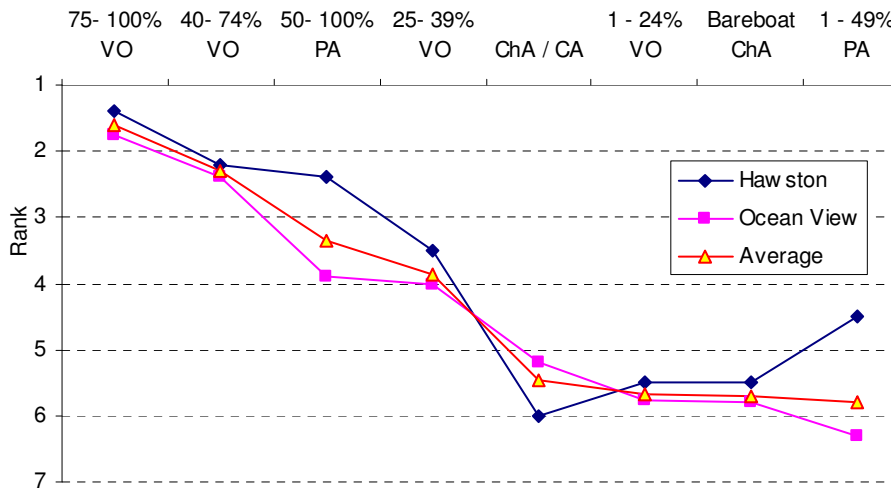
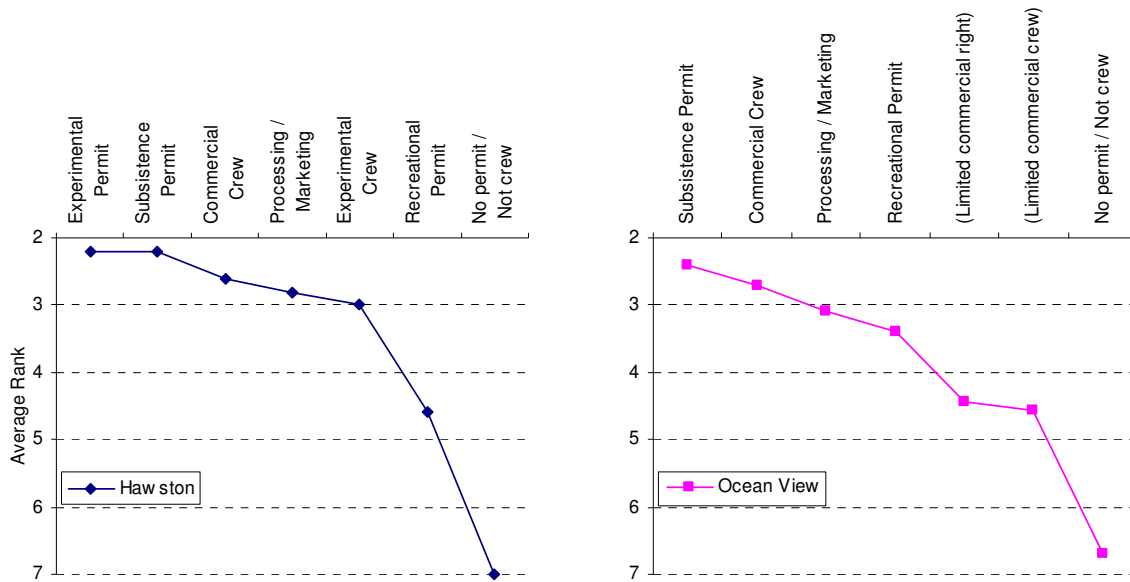


Figure 5.16. Average ranks to vessel access levels VO=vessel owner, PA=purchase agreement, ChA=charter agreement, CA=catching agreement (the average of ranks indicates trends, but is not strictly a valid operation).

**5.4.2.3 Previous involvement**

60% of respondents gave previous involvement consisting of a subsistence permit the highest rank, while 80% gave having previously been part of a commercial crew a rank of 3 or higher (Figure 5.17). 86% gave having previously been neither crew nor a licence holder the lowest rank (1 gave having a limited commercial licence a lower rank, and one gave having only processing or marketing experience a lower rank). The two rankings are shown separately as slightly different ‘performance levels’ had to be used in Ocean View to those used in Hawston.



**Figure 5.17.** Average ranks to previous involvement levels (although taking an average of a rank is not valid this does at least give some indication of the trends). Slightly different levels had to be used in the two communities (limited commercial rights replaced experimental rights in Ocean View).

### 5.4.3 Overall ranking of applicants: ‘Holistic’ ranking

The respondents were asked to assess 10 hypothetical applicants with combinations of different levels of the three criteria: HDP status, previous involvement and degree of vessel access. Table 5.5 shows these applicants in the order they were presented to the participants. The applicant number on the left is referred to in subsequent discussions.

**Table 5.5.** Ten hypothetical applicants presented to the participants.

Applicant Number	HDP STATUS	PREVIOUS INVOLVEMENT	VESSEL ACCESS
1	HDP Female	Experimental permit / Limited commercial right	75% - 100% Vessel Owner
2	HDP Female	No permit / Not crew	Bareboat Charter Agreement
3	HDP Female	Commercial Crew	50% - 100% Purchase Agreement
4	HDP Male	Subsistence Permit	1 - 24% Vessel Owner
5	HDP Male	Recreational Permit	40% - 74% Vessel Owner
6	Non-HDP Female	No permit / Not crew	75% - 100% Vessel Owner
7	Non-HDP Male	Experimental crew / Limited commercial crew	75% - 100% Vessel Owner
8	Non-HDP Male	Experimental Permit / Limited commercial right	Charter / Catching Agreement
9	Non-HDP Male	Commercial Crew	25% - 39% Vessel Owner
10	Non-HDP Male	No permit / Not crew	Charter / Catching Agreement

The results have to be viewed for the two communities separately because of for the Ocean View workshop “limited commercial” replaced “experimental” in the performance levels relating to previous involvement. However, in general, the majority of participants placed either applicant 1 (HDP-female, Experimental right (Hawston) / Limited commercial right (Ocean View), 75-100% Vessel Owner) or applicant 4 (HDP-male, Subsistence Permit, 1-24% Vessel Owner) in the top two positions (Table 5.6). In general, applicant 1 had a higher rank in Hawston than in Ocean View. The same four applicants are the top ranked applicants in both Hawston and Ocean View.

**Table 5.6.** Rank orders given by participants to 10 hypothetical applicants.

Applicant #	HDP Status	Previous involvement	Vessel access	Respondent											average rank	median rank	standard deviation	rank of average rank	Proportion giving rank of...		
				1	3	4	5	6	2												
<b>HAWSTON</b>																					
1	HDP F	Experimental Permit	75% - 100% VO	1	1	3	1	2	1							1.6	1	0.89	1	0.80	<=2
4	HDP M	Subsistence Permit	1 - 24% VO	2	4	1	3	2	1							2.4	2	1.14	2	0.60	<=2
3	HDP F	Commercial Crew	50% - 100% PA	4	3	3	6	1	7							3.4	3	1.82	3	0.20	<=2
5	HDP M	Recreational Permit	40% - 74% VO	8	1	6	3	2	9							4.0	3	2.92	4	0.60	<=5
8	Non-HDP M	Experimental right	Charter / Catching A	6	6	7	3	5	1							5.4	6	1.52	5	0.80	>=5
7	Non-HDP M	Experimental crew	75% - 100% VO	3	9	9	1	6	9							5.6	6	3.58	6	0.60	>=5
9	Non-HDP M	Commercial Crew	25% - 39% VO	7	10	3	7	6	1							6.6	7	2.51	7	0.80	>=5
2	HDP F	No permit / Not crew	Bareboat Charter A	5	5	7	9	8	1							6.8	7	1.79	8	1.00	>=5
6	Non-HDP F	No permit / Not crew	75% - 100% VO	9	8	1	8	8	8							6.8	8	3.27	8	0.80	>=5
10	Non-HDP M	No permit / Not crew	Charter / Catching A	10	7	10	10	8	1							9.0	10	1.41	10	1.00	>=5
<b>OCEAN VIEW</b>																					
				1	3	4	5	6	7	8	9	10	12	2	11						
4	HDP M	Subsistence Permit	1 - 24% VO	2	5	1	1	1	4	3	1	3	2	5	2	2.33	2.0	1.50	1	0.60	<=2
1	HDP F	Limited comm right	75% - 100% VO	3	4	2	2	2	4	1	2	2	10	7	10	2.44	2.0	1.01	2	0.60	<=2
3	HDP F	Commercial Crew	50% - 100% PA	1	1	9	3	3	3	8	3	1	4	10	4	3.56	3.0	2.96	3	0.30	<=2
5	HDP M	Recreational Permit	40% - 74% VO	5	6	2	5	5	1	1	5	4	8	1	8	3.78	5.0	1.92	4	0.80	<=5
7	Non-HDP M	Limited commercial crew	75% - 100% VO	7	1	5	7	8	6	5	7	5	5	3	5	5.67	6.0	2.06	5	0.90	>=5
2	HDP F	No permit / Not crew	Bareboat Charter A	4	8	10	4	4	10	9	4	8	10	7	10	6.78	8.0	2.73	6	0.60	>=5
8	Non-HDP M	Limited commercial right	Charter / Catching A	8	8	5	8	9	8	5	8	6	6	3	6	7.22	8.0	1.48	7	1.00	>=5
9	Non-HDP M	Commercial Crew	25% - 39% VO	9	9	4	9	7	7	4	9	7	9	10	9	7.22	7.0	2.05	7	0.80	>=5
6	Non-HDP F	No permit / Not crew	75% - 100% VO	6	8	10	6	6	9	8	6	9	6	2	6	7.56	8.0	1.59	9	1.00	>=5
10	Non-HDP M	No permit / Not crew	Charter / Catching A	10	10	10	10	10	10	10	10	10	10	10	10	10	10	0.00	10	1.00	>=5

M=Male, F=Female, VO=Vessel owner, PA=Purchase Agreement, A=Agreement

**5.4.3.1 Comparison of the ranking obtained from applying the scores and weights to the ‘holistic’ ranking**

The results from Sections 5.4.1 (weights) and 5.4.2 (ranks), where used to see how well the holistic ranking in Section 5.4.3 could be replicated by applying these weights and scores. The ranks given in Section 5.4.2 were converted to scores by converting the “average rank” into a score from 0 to 100 (we acknowledge that finding an “average rank” is not “correct” procedure, but felt that the trends shown would be valid nevertheless and of interest).

There is rough agreement between the results from the holistic ranking and from the applying the derived scores and weights (Table 5.7), although there are some anomalies, for example, the relative positions of applicants 4, 8 and 7 in Hawston and applicant 5 in Ocean View.

**Table 5.7.** Overall scores and ranks of the ten hypothetical applicants calculated using the weights given in the first exercise and scores derived from the ranks given in the second exercise.

Applicant number	SCORES derived from scoring exercise			Weighted sum of scores	Resultant Rank	Average rank from Table 5.6			
	HDP status	Prev Involve	Vessel Access						
<b>HAWSTON</b>									
1	HDP F	Experimental Permit	75% - 100% VO	100.0	100.0	100.0	28.3	1	1.6
3	HDP F	Commercial Crew	50% - 100% PA	100.0	91.7	78.3	24.8	2	3.0
7	Non-HDP M	Experimental Crew	75% - 100% VO	42.9	83.3	100.0	23.8	3	5.0
9	Non-HDP M	Commercial Crew	25% - 39% VO	42.9	91.7	54.3	19.4	4	6.0
5	HDP M	Recreational Permit	40% - 74% VO	61.9	50.0	82.6	18.5	5	4.0
4	HDP M	Subsistence Permit	1 - 24% VO	61.9	100.0	10.9	16.2	6	2.0
8	Non-HDP M	Experimental Permit	Charter / Catching A	42.9	100.0	0.0	14.1	7	5.0
6	Non-HDP F	No permit / Not crew	75% - 100% VO	0.0	0.0	100.0	11.7	8	6.0
2	HDP F	No permit / Not crew	Bareboat Charter A	100.0	0.0	10.9	5.7	9	6.0
10	Non-HDP M	No permit / Not crew	Charter / Catching A	42.9	0.0	0.0	1.9	10	9.0
WEIGHTS (separate community weights)				0.044	0.122	0.117			

Applicant number	SCORES derived from scoring exercise			Weighted sum of scores	Resultant Rank	Average rank from Table 5.6			
	HDP status	Prev Involve	Vessel Access						
<b>OCEAN VIEW</b>									
5	HDP M	Recreational Permit	40% - 74% VO	100.0	76.7	86.3	23.9	1	3.8
1	HDP F	Limited commercial right	75% - 100% VO	83.3	52.8	100.0	22.0	2	2.4
3	HDP F	Commercial Crew	50% - 100% PA	83.3	93.0	53.0	20.8	3	3.6
4	HDP M	Subsistence Permit	1 - 24% VO	100.0	100.0	12.1	17.8	4	2.3
7	Non-HDP M	Limited commercial crew	75% - 100% VO	8.3	49.5	100.0	17.3	5	5.7
9	Non-HDP M	Commercial Crew	25% - 39% VO	8.3	93.0	50.5	16.3	6	7.2
6	Non-HDP F	No permit / Not crew	75% - 100% VO	0.0	0.0	100.0	11.6	7	7.6
8	Non-HDP M	Limited commercial right	Charter / Catching A	8.3	52.8	24.2	8.9	8	7.2
2	HDP F	No permit / Not crew	Bareboat Charter A	83.3	0.0	11.0	6.0	9	6.8
10	Non-HDP M	No permit / Not crew	Charter / Catching A	8.3	0.0	24.2	3.3	10	10.00
WEIGHTS (separate community weights)				0.057	0.107	0.116			

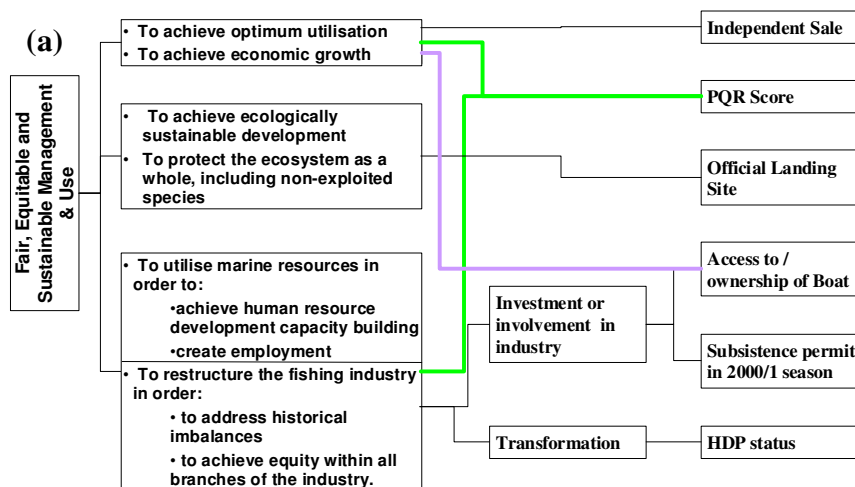
M=Male, F=Female, VO=Vessel owner, PA=Purchase Agreement, A=Agreement, Prev Involve=Previous involvement

### 5.4.4 Conclusions

While one cannot deduce absolute priorities for the communities together or separately, some distinct trends can be seen. The most clear is that the communities are less concerned with the HDP status of an applicant than with his or her previous experience, knowledge and skill.

### 5.4.5 Interactions with Marine and Coastal Management

Mr S Lamberth (SL) of MCM provided liaison between the team and MCM. Besides several meetings with him, three further meetings were held. The **first meeting** was with the deputy director general of MCM, Mr Kleinschmidt (HK) on the 4<sup>th</sup> November 2003. This meeting was the equivalent of the meeting of the 18<sup>th</sup> September with the Hawston community in that the intention was to simply hear the point of view of MCM. The **second meeting** (3rd December 2003) was the equivalent of the meeting of the 26<sup>th</sup> November with the Hawston community in that the intention was to try to structure a value tree representing MCM's objectives and to link these to specific criteria. A list of objectives and criteria was extracted from previous meetings with SL, the meeting with HK, the literature (Kleinschmidt *et al.* 2003), documentation relating to specific allocation processes, and the MLRA and the spreadsheets. A draft value tree was prepared linking the broader level objectives with the criteria used in the allocation process for the west coast rock lobster rights allocation process. We asked for clarification of certain of the objectives and for refinements to the value trees (Figure 5.18). Unfortunately, the meeting had to be cut short and so the process could not be completed.



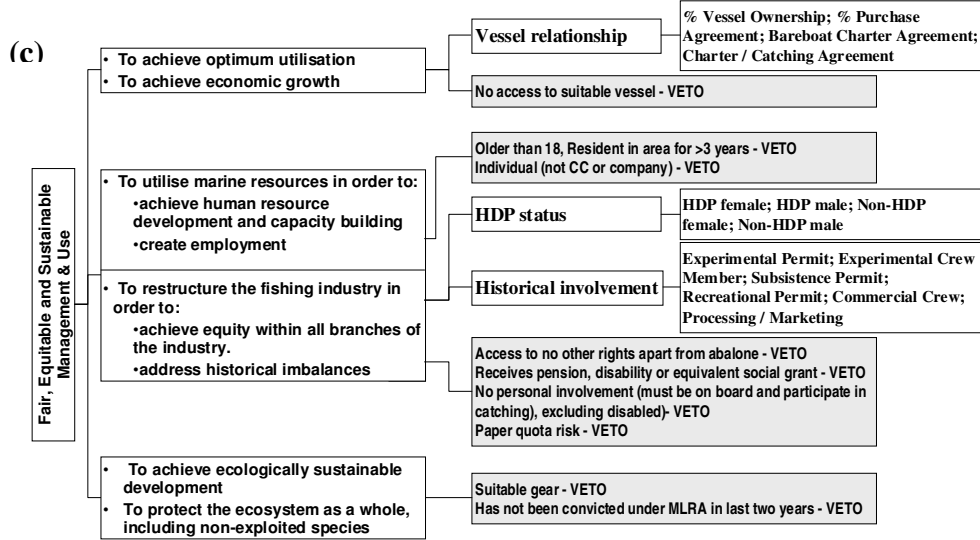
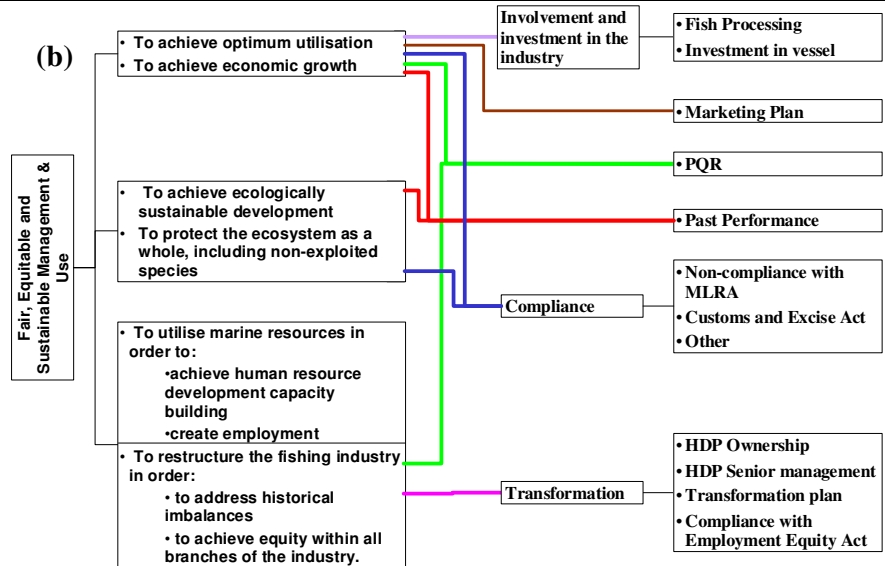


Figure 5.18. Value trees for west coast rock lobster (a) limited commercial, (b) full commercial and (c) east of Cape Hangklip limited commercial allocations extracted from MLRA and MCM documentation.

The **third meeting** with MCM (27/05/2004) was more broadly attended and the intention was to undertake more formally all of the initial steps of an MCDA process (problem structuring to identify criteria, development of a value tree, development of scoring systems and weights for the criteria). The intention was to both illustrate the process to MCM and to gain insights regarding the objectives and criteria for this project. Parts of the agenda were also devoted to feedback to MCM about the analysis of the most recent rights allocations. This was an analysis of the spreadsheets and documents relating to the allocations with an assessment of consistency and the implied weights of criteria (i.e. a summary of the works described in Chapter 4). Feedback was also given regarding the work with the three communities.

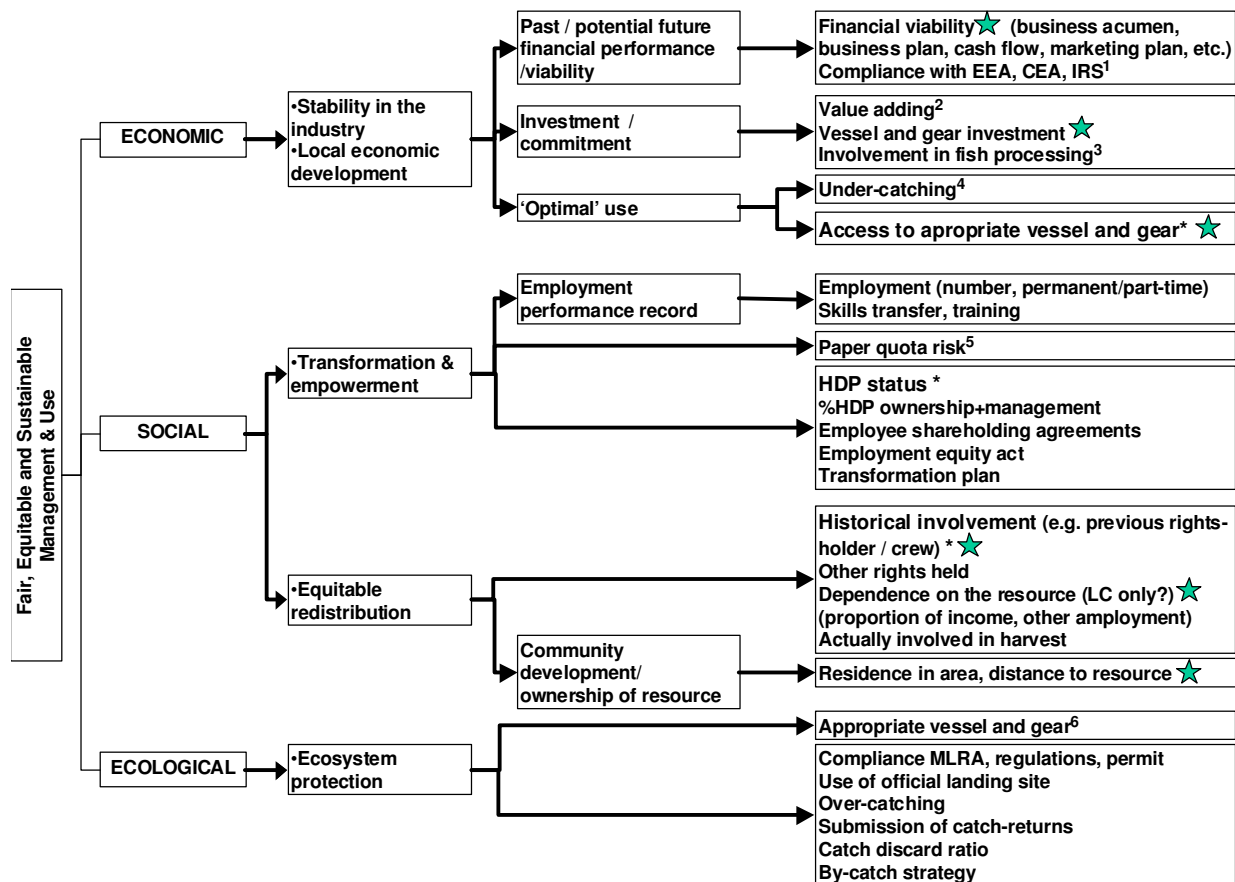
For the **problem structuring stage**, the post-it session was divided into three parts with corresponded to the three main objectives of the MLRA:

- Goal 1: *Economic*: To achieve optimum utilisation and economic growth
- Goal 2: *Social*: To achieve human resource development, capacity building and employment and to restructure the fishing industry to address historical imbalances.
- Goal 3: *Ecological*: To achieve ecologically sustainable development and protect the ecosystem including non-exploited species

As with the community meetings, the participants were asked to write down ideas in response to specific questions. For each of the above goals the following question was posed: “In order to satisfy this goal (a) what factors need to be considered when choosing rights-holders? and (b) How should the extent of goal achievement

be measured?”. Participants were asked to specify where necessary if they were referring to full or limited commercial and new applicants or previous rights-holders. This session and other stages of the workshop were applied to the **west coast rock lobster** sector as it well reflected the various challenges to any allocation system: it involved full commercial, limited commercial and recreational sectors, had previously involved a “subsistence” sector and was also subject to poaching. West coast rock lobster is also a sector which is relevant to all three communities with which we were involved.

The responses from the post-it sessions were summarised and grouped (Appendix 4, page 139). During the workshop, the main grouping criteria and some details were captured with the VISA software in a rough **value tree** for further discussion around the structure of the value tree and clarification of issues. However, there was insufficient time to complete this process with the group in the workshop and so the process was continued afterwards by the team, leading to the value tree in Figure 5.19. This value tree attempts to capture all of the issues relevant to MCM and some of the possible measures that could be / have been used. Not all criteria would be relevant for all fisheries.



Interpretations comments:

Note: that the three main groups (economic, social and ecological) correspond to the expanded versions given in Figure 5.18.

★ Differences in the emphasis/interpretation of these issues by MCM and fishers: referred to in Section 5.5 and Table 5.9.

\* These were the three criteria used for the limited commercial west coast rock lobster allocation East of Cape Hangklip.

1. Non-compliance with any of these has implications for financial sustainability (EEA=Employment equity act, CEA=Customs and Excise Act, IRS=Internal Revenue Service).
2. Value adding contributes to multiplier effects. It could also indicate ‘commitment’ through investment.
3. In the allocations this criterion was sometimes positive and sometimes negative (e.g. abalone - see Chapter 4)
4. Under-use of the resource means that the economic benefits to society are lost.
5. Agreements and shareholding can tell about PQR: they may either indicate positive contributions to empowerment / transformation or potential PQR. Paper quotas may affect transformation and empowerment, where the paper quota is held by an entity fronting for an untransformed entity. PQR also affects local economies because local economic benefits of a quota held within a zone will not be felt if sold to an established company outside the zone. A quota sold off only benefits the paper quota holder not the broader community and thus affects equity. ‘Independent sale’ was used in the west coast rock lobster allocation in 2001 as an additional indicator of PQR.
6. Not really an issue for choosing between west coast rock lobster applicants as mostly separated into full commercial using traps and limited commercial using hoopnets. This might influence the split of the TAC into full and limited commercial.

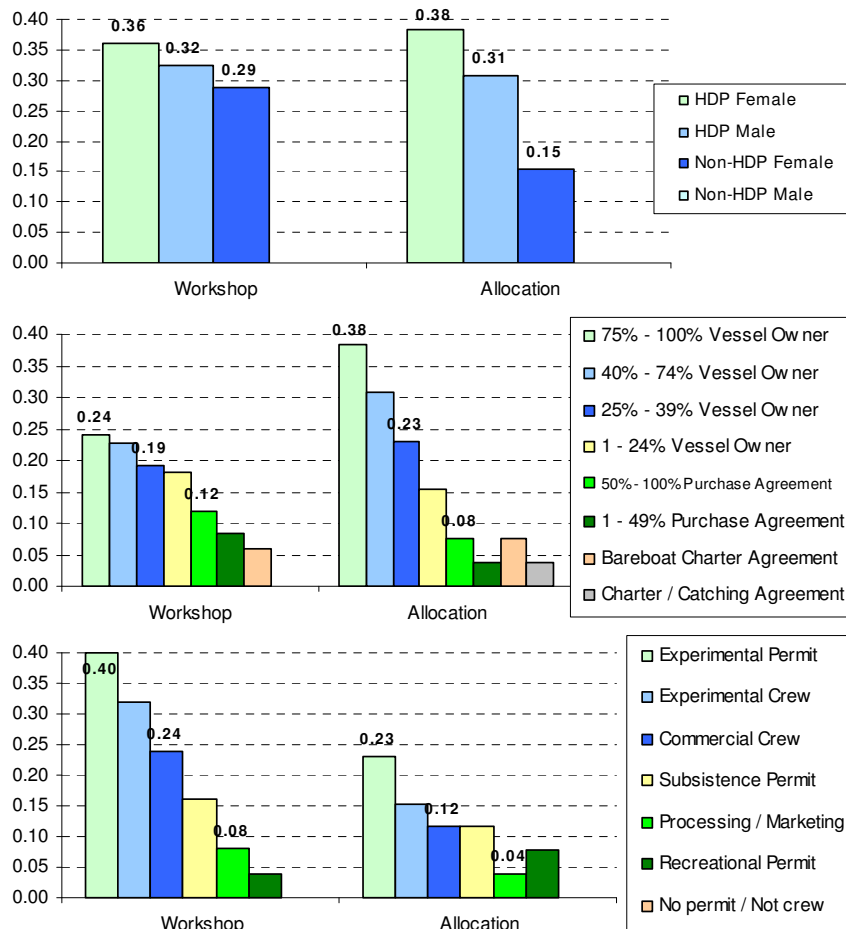
**Figure 5.19.** Value tree developed during and after the third meeting with MCM (27/05/2004).

For the development of **scoring systems**, the simplest available system, for the allocation of rights for west coast rock lobster east of Cape Hangklip, was used as an illustration. This was for reasons given above and because it was relatively simple because only three criteria were used in this allocation: HDP status, access to or ownership of a vessel, and historical involvement. Levels of “performance” were already established for these criteria. For each criterion, first the participants established the order from best to worst of these levels of achievement. Worst and best were given scores of 0 and 100 respectively. Then, emphasising the relative “gaps” between the levels, all the other levels were scored inbetween by discussion with the participants (Table 5.8). Subsequently, the participants were asked to weight the three criteria relative to each other and were guided to do this using the “swing weighting” (see Section 6.1) procedure (Table 5.8).

**Table 5.8. Scores and weights from the workshop for the west coast rock lobster east of Cape Hangklip allocation.**

VESSEL ACCESS / OWNERSHIP	Score	Wt*	HISTORICAL INVOLVEMENT	Score	Wt*	HDP	Score	Wt*
75% - 100% Vessel Owner	100	0.24	Experimental Permit	100	0.4	HDP Female	100	0.36
40% - 74% Vessel Owner	95		Experimental Crew	80		HDP Male	90	
25% - 39% Vessel Owner	80		Commercial Crew	60		Non-HDP Female	80	
1 - 24% Vessel Owner	75		Subsistence Permit	40		Non-HDP Male	0	
50% - 100% Purchase Agreement	50		Processing / Marketing	20				
1 - 49% Purchase Agreement	35		Recreational Permit	10				
Bareboat Charter Agreement	25		No permit / Not crew	0				
Charter / Catching Agreement	0							
No access	VETO							

Wt\*=Weight.



**Figure 5.20. Weighted scores (calculated from Table 5.8) given during the workshop for the three criteria used in the allocation of west coast rock lobster east of Cape Hangklip compared to the scores used in the actual allocation.**



The weights were combined with the scores to obtain weighted scores for each level of the three criteria which were normalised so that the maxima of the three criteria would sum to one (the weighted scores for 75-100% vessel owner, Experimental permit holder, HDP female were 0.24, 0.4, 0.36 respectively). The weighted scores were compared to those used in the actual allocation in 2003 after also converting these so that the maxima summed to one (Figure 5.20). An applicant who has a 1-49% purchase agreement, was a commercial crew member and is a HDP male scores:

$$\begin{aligned} \text{Under the actual system:} & \quad 3.85 + 12 + 30.8 = 46.2 \\ \text{Under the workshop system:} & \quad 35 \times 0.24 + 60 \times 0.4 + 90 \times 0.36 = 64.8 \end{aligned}$$

That the two sets of weighted scores are different (Figure 5.6) is not all that surprising, however it is interesting to note that: the order of importance has changed. In the actual allocation, HDP status and vessel access were the two most important criteria. In the workshop exercise, “historical involvement” was the most important criterion and “vessel access/ownership” was distinctly less important than the other two criteria. The workshop weights seem to reflect more closely the priorities of the communities than do the weights which were used in the allocation. In other words, fishers were far more concerned with rewarding fishers who had some previous involvement than with vessel ownership (as long as the fisher had some access to a boat) or with race (although transformation and equity were of concern to them).

There were also differences in the rank order of the levels of performance within criteria (Figure 5.6). For example in the workshop: (a) HDP males and non-HDP females were given higher scores (after some debate), (b) Having a bareboat charter was scored lower than having a 1-49% purchase agreement (the workshop participants felt that any purchase agreement involved “more risk”), and (c) Processing and marketing experience was placed ahead of having a recreational permit.

## 5.5 Comparison of fisher and MCM issues and criteria and the development of a combined value tree

The criteria gathered from communities and MCM could be divided broadly into two ‘themes’: criteria relating to the effects of allocation on *social continuity, transformation and local economic development*, and criteria relating to the *involvement, experience, ability and performance of fishers and stability and continuity of the industry* (Table 5.9). There were several objectives, goals, values and criteria which were common among the communities and between the communities and MCM. For example, communities and MCM were concerned with transformation, with the abilities of the fishers, and with whether they had previously been involved in fishing (Table 5.9). However, in some cases there are differences in the interpretation of the groups and the criteria within them (although on the surface they appeared the same). These differences are discussed in the next few paragraphs.

At the ‘theme’ level the slight differences in points of view between MCM and the communities are already apparent (as also reflected in their different headings in Table 5.9). For example, while all were concerned with transformation and local economic development, the communities emphasised the aspect of *social continuity*. The view was that if people had been involved in fishing, were dependent on the resource and had been long residents in the fishing community, and their rights were “taken away” this contributed to social breakdown in various ways. Social continuity was not raised by MCM. The community felt that the allocation system had had direct negative effects on social continuity, while MCM apparently either did not perceive these consequences of their actions or did not regard it as part of their responsibility to deal with them.

**Table 5.9.** Comparison of criteria from communities and MCM. LC= limited commercial, FC = full commercial, WCRL = west coast rock lobster, ECH = east of Cape Hangklip.

Criterion / Issue	Communities	Marine and Coastal Management
-------------------	-------------	-------------------------------

**THEME 1**

	Social continuity, Transformation, Local economic development	Transformation, Local economic development
1. Previous involvement in the industry	All (implicit or explicit): Previous involvement in any role, crew, boat assistant etc. (This appeared to be the most important issue from the point of view of fishers).	Depending on the right applied for, explicit involvement awarded points. e.g. WCRL ECH: previous subsistence, experimental, experience as crew.
2. Dependence on the resource.	All: Dependence. "Those who earn a living from sea". Hawston: Only one right per family Kalk Bay: not necessarily dependence on one particular sector for a particular percentage of income i.e. might earn living from a number of fisheries.	Dependence specified for some resources, e.g. linefish LC, hake handline, listed as essential requirement for abalone 2004 (but not used as such). Access to other rights excludes applicants from access to linefish. Access to rights other than abalone excluded applicants from access to WCRL and vice versa and reduces quantum Workshop: dependence specified for LC
3. Residence in the area	All: Implied or explicit in all communities	Only for certain resources: e.g. abalone 2004, WCRL LC and ECH
4. Transformation	All: HDP involvement and status	HDP status, % HDP ownership, % HDP management. WCRL ECH: 66% HDP owned an essential requirement

**THEME 2**

	Involvement, Experience, Ability, Performance	Stability and continuity in the industry
5. Access to appropriate vessel and gear	All: Access to appropriate vessel and gear Kalk Bay: boat-owners to get preference (but not exclusively) Hawston/Ocean View: not only boat-owners to get rights	Access an essential requirement. Written agreement required showing access including ownership, purchase agreement, charter agreement. Highest points for ownership.
6. Potential & past performance	All: bona fide fishers Ocean View: Knowledge of the industry, skill and experience	Business acumen, financial viability, business, marketing plans Workshop: financial viability
7. Actually involved in harvest	All: Explicit or implicit in all communities All: bona fide fishers	Explicit essential requirement for e.g. WCRL ECH
8. Investment in the industry	All: recognise investment Kalk Bay: Don't penalise accumulation of wealth (as expressed in boat ownership) and multiple rights access built up through years of work	Primarily relates to vessel investment Abalone legal entities involvement in processing is positive, but abalone divers involvement in processing is negative
9. Potential & past performance: Regulations	Ocean View: How the previous quota was handled (i.e. in terms of regulations, over- and under-catching)..	Past performance in terms of over and under utilisation in some resources, submission of catch returns in some resources.
10. Compliance with MLRA	Some felt law-breakers should automatically be excluded, others disagreed ("give them a chance to prove themselves") Ocean View: people who lie on application forms should be penalised	Compliance given a score. But MLRA Section 28 cases apparently exclusionary (not explicit)

The issue of *dependence on the resource* was only regarded as a criterion for some fisheries or sectors by MCM, while (presumably because of the nature of the fisheries concerned) dependence was of prime importance to all the communities. The connection between dependence and access to multiple fisheries was addressed by MCM by excluding rights-holders in other fishers from access to linefish rights. In their view this meant that truly needy fishers who had not received access to any other rights would have some form of income<sup>23</sup>. This would therefore enable them to spread the benefits of marine resources more broadly. While this was an admirable intention, there are a number of problems with this approach. First, combining linefishing with a seasonal high value fishery such as abalone or west coast rock lobster had been the traditional strategy of many fishers. This new system therefore places a bigger business management burden on fishers (how to budget for an entire year with a seasonal income,

<sup>23</sup> The restrictions arose after the crisis in the linefishery was declared in 2000. The linefishery was split into three sectors, hake handline, tuna pole and handline and traditional linefish. Some fishers were accommodated in the 2001 hake handline and tuna fisheries allocations. In the traditional linefish sector, bag and size limits were revised, effort drastically reduced in the 2003 allocations and access limited to those who had no other access.

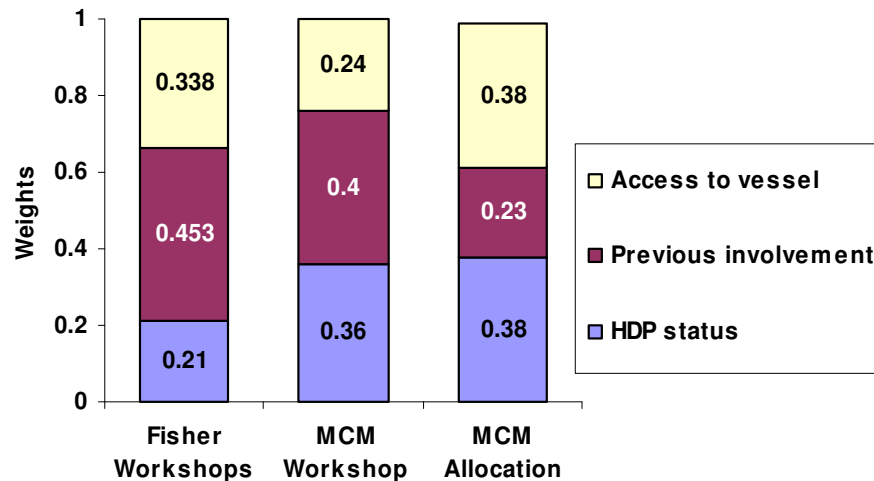
how to deal with crew now only seasonally employed, or how to find employment as crew elsewhere). Second, a limited commercial abalone or west coast rock lobster right on its own would not be sufficient to maintain a fisher and his crew for more than a few months (e.g. see Table 2.2 and Sections 2.3.3 and 2.3.4). Dependence on the resource, therefore, should perhaps reflect *multi-sectoral* dependence.

*Access to an appropriate vessel* was also a common requirement between communities and MCM. All agreed that *access* was an essential requirement, but Ocean View and Hawston communities placed less emphasis on actual ownership. The view of the Kalk Bay boat owners more closely reflected those of MCM in this regard. **However, given the desire to ultimately limit access, MCM needs to beware of overemphasising vessel ownership, which will tend to lead to overcapacity rather than the reverse as well as to overcapitalisation.** Besides obviously wanting people with the capacity to catch fish to participate, another part of MCM's intention behind this criterion was, presumably, to limit paper quota allocations (as someone who owns a vessel is likely to use the right himself rather than sell it on). One assumes that ultimately MCM would want an efficient fishery, and in this case the multiple use of boats by different rights-holders and for catching different fish species would increase efficiency rather than the current system which is encouraging the reverse. The intention of this criterion from the fishers' point of view was to an extent also due to concern about paper quota holders. However, they also regarded it as a measure of whether the person were part of the fishing community and therefore would have **access to** a boat, but not necessarily ownership.

Besides *historical involvement* in fishing which was common to the communities and MCM, additional measures of ability were mentioned by both. For the fishers, ability should be measured by looking at *knowledge and skills* while MCM used the *business plan*, and measures of "*business acumen*" as indicators of the potential success of the fishers (MCM also being concerned with long-term stability and improved labour relations and conditiona). This difference points to one of the fundamental differences between the community and MCM: MCM requires the fisher to be a good businessman while the fishers feel that they should simply be good fishermen. Government in general and MCM in particular has adopted the position that small and medium enterprises are the way to provide employment (and the answer to other problems as well). This may be an inappropriate assumption for some fisheries, and, in any case, it may be inappropriate and "unfair" to require fishers to become businessmen (Legum, 2004) virtually overnight. Those who have been involved with fishing for generations, may be best positioned to find and harvest fish resources although they may not do this most efficiently (e.g. may not have the most efficient boats) and they may not necessarily, along with their fishing skills, have business skills. But there seems no particular reason, why the government should require them to acquire these, if that fisher were managing to catch and sell his fish effectively without necessarily being efficient. Given the threefold nature of sustainability (social, economic and environmental) it may be that the contribution of the fisher to the local community (e.g. in terms of "social continuity"), may far outweigh his possibly less economically efficient approach. However, it is also apparent that government's aims is not purely to maximise efficiency in the economic sense, otherwise it may make most sense to give rights to "big business" to manage as they wish. Therefore they need to be explicit about which goals apply to which fisheries and what the relative priorities of the goals are in these different fisheries.

The weights given to the criteria by MCM during the workshop (Section 5.4.5) seemed to more more closely reflect those given by the fishers during the exercise described in Section 5.4.1 than did the weights actually used by MCM in the allocation (Figure 5.21). In both cases Previous involvement was considered to be the most important criterion (remembering that only a subset of criteria was used in these exercises). This was followed in the case of MCM by HDP status, but this was of less importance to fishers than was Knowledge and skill and Access to a vessel. In terms of ranks (fishers) and scores (MCM) of the levels of the criteria, fishers gave non-HDP females the lowest overall rank, whereas MCM gave this level a higher score than that of non-HDP males. A high percentage purchase agreement was given a higher rank by fishers than a small percentage ownership of a vessel as compared to MCM who gave any actual ownership a higher weight than purchase agreements. In terms of previous involvement, a subsistence permit was given a higher rank by fishers than by MCM. As mentioned, neither the weights and scores obtained in the MCM workshop nor those in the fisher workshops can be regarded as definitive, given the possible lack of representivity, however it is interesting to note these similarities and differences. The important point is that this process of determining scores and weights could be used in future

allocations in order to ensure that MCM's priorities (how they evaluate applicants) are not completely disjunct from fishers (given that MCM also has to pursue certain constitutional and MLRA objectives).



**Figure 5.21.** Weights derived for the three criteria used in the east of Cape Hangklip lobster allocation from the Hawston/Hermanus and Ocean View fisher workshops, the MCM workshop, and those actually used in the allocation.

The numbered criteria on the left of Table 5.9 provides a checklist (together with any additional criteria in Figure 5.19) to which MCM can refer for each allocation. This list is not very different from (and of course in part derives from) the criteria that MCM has used in allocations since 2001. However, it is important that MCM considers the different interpretations or actual measures which surfaced between MCM and the communities and which are reflected in the notes in Table 5.9 and in the preceding paragraphs. However, before referring to this list, for each new allocation cycle, the broad objectives of government and MCM need to be clarified, given socio-economic and resource changes since the previous allocation. Then, MCM would need to reassess the specific objectives which can be met with allocations for the different fisheries and regulations associated with them. For example, as was the approach in the recent allocations, different emphases and objectives pertained to different fisheries (e.g. capital intensive fisheries vs. more easily accessible fisheries such as west coast rock lobster and abalone). Cognisance should also be taken of the linked nature of some fishing activities and strategies (e.g. links between seasonal fishing sectors (west coast rock lobster and abalone) and year-round ones (linefishing)). The *integrated* approach across all sectors then should jointly address the objectives.

Finally, while not part of the value tree and scoring process, the quantum allocated was also an issue. Fishers felt that they were often given nonviable quotas. Certain of them felt that the size of the score should affect the size of the quota (i.e. bigger score = bigger quota) and that the degree or type of previous involvement should also be rewarded. The issue of quantum was not raised in the MCM workshops and was considered to be beyond the scope of the project.

## 6. Design of a new allocation process

Although the allocation system developed in 2001 and applied since then has been both more systematic and more transparent than previous approaches it still had serious flaws. First, there was a lack of focus on the objectives of the allocation. There were clear objectives stated in the MLRA and in the documentation associated with each allocation, but there was no clear link between these and the criteria used. The interactions in Chapter 5 were intended to improve on this aspect. Second, there did not appear to be enough cognisance taken of the particular characteristics of different communities, fisheries, the linkages between fisheries and the particular dependencies of different communities on various fishing sectors. The background in Chapter 1 and the interactions in Chapter 5 were intended to clarify these linkages. Third, the spreadsheets used for the allocations were “messy”, had numerous errors, and various analyses highlighted serious inconsistencies between scores and rights allocated (see Chapter 4).

To improve on this, an “allocation protocol” needs to be followed for each allocation cycle. Although, if allocations were annual this would be an onerous task, with the current longer term rights, this is no longer the case. In this regard, however, it should be noted that, given the depth of unhappiness and the evident flaws of allocations since 2001 (and before), it would perhaps be unwise for the next (2005) allocations to immediately implement longer term rights (e.g. anything longer than about five years). The suggested protocol is outlined in Box 6.1. Note that many of the points in the protocol arose from the MCM meeting of 27/05/2004 and that MCM is about to gazette their new allocation policy for each fishery.

### *Box 6.1. The proposed allocation protocol.*

1. **An initial analysis of:**
  - socio-economic status and needs on a zonal basis,
  - the status of the various fishery resources on a zonal basis,
  - geographic distribution of current rights and quantum, and
  - geographic distribution of industry infrastructure (processing factories, markets, transport etc.).
2. **Identification of broad level goals** (e.g. transformation, economic development, sustainability, etc.) of MCM and ways of assessing these, i.e. linking of objectives and criteria (value tree, scores, weights)
3. **An assessment of the zonal analyses in the light of identified goals,**
4. **Data entry:** *all* applicant information recorded in a database kept separate from later analyses,
5. **An analysis of the applicants in terms of whether and by how much the applicant can / will contribute to government and MCM’s broad goals.** In other words scores are given to the applicant on a number of criteria and then aggregated. The criteria need to be organised in such a way that the applicant’s scores *can* be aggregated to indicate the applicant’s contribution to the broad goals.
6. **An analysis of the applicants’ scores in comparison to the analyses in 1 and 3.** For example, within a particular geographic area, emphasis might be placed on different criteria (different weights given) considering the socio-economic needs and the status of the resource in that zone.
7. **Initial decisions regarding the granting of rights,** given the analyses in 5 and 6.
8. **Verification of applicants** through, for example, interaction with communities.
9. **Decisions regarding quantum allocated to each successful applicant,** given the criteria in 2 and possible additional criteria.

It is clear from the interactions with fishermen communities and with MCM, that the problem of allocating fishing rights (specifically **steps 2, 5** and 6 above) entails dealing with multiple and conflicting objectives. Thus, it is fundamentally a *multiple criteria decision making (MCDM)* problem, as suspected at the outset of the project. In the next sections these aspects (how to score applicants, find an overall ranking, and other complementary analyses relating to the achievement of objectives) are discussed by first framing the current approach in an MCDM format and then proposing ways of improving this.

## 6.1 Allocation procedures and systems

This section outlines the theoretical considerations and mathematical formulation of the current and proposed new approach together with complementary analyses. Section 6.2 provides a practical example of some parts of the system.

### 6.1.1 Current system

The procedures used by MCM up to now can be classified as an **additive value measurement (scoring) system**, i.e. an applicant  $i$  is allocated an overall score of  $v_i$  defined by:

$$v_i = \sum_{j=1}^p s_{ij} \quad (1)$$

where  $s_{ij}$  is the assessment (score) assigned to applicant  $i$  in terms of criterion  $j$ , and  $p$  the number of criteria being used. Note that when an additive model is expressed in this form, the range of attainable scores for a particular criterion is a measure of the relative importance of that criterion. For example, in the west coast rock lobster east of Cape Hangklip allocation, HDP status ranged from 0 to 5, vessel access from 0 to 5 and previous involvement from 0 to 3. Levels of these criteria were scored within these ranges. Normalised to sum to 1, the criteria have importance weights of 0.385, 0.385 and 0.231 respectively.

In some approaches, it is conventional to express  $s_{ij}$  in the form  $s_{ij} = w_i u_{ij}$ , where  $w_i$  is an explicit importance weight, and  $u_{ij}$  is a standardized score (e.g. on a 0-10 or 0-100 scale for every criterion). For example, in the exercise undertaken with MCM described in Section 5.4.5, *scores* ( $u_{ij}$ ) on a 0 to 100 scale were first defined for the levels of each of these three criteria (e.g. HDP female=100, HDP male=90, non-HDP female=80 and non-HDP male=0), and subsequently *weights* ( $w_i$ ) (e.g. HDP status = 0.36) were defined. Thus, the weighted score of a HDP female is 0.36 (see Table 5.8 and Figure 5.20). This is added to her scores for other criteria.

### 6.1.2 Proposed system

The basic approach adopted by MCM is sound. However, there are various pitfalls of using weighted summation that need to be avoided, and a structured formal approach following the steps of MCDM helps in this regard. Our primary recommendation is therefore that MCM maintain a weighted summation approach, but that they follow the standard MCDM procedures at each stage. The basic approach would be to:

- Define the objectives or goals, identify distinct criteria used to judge goal achievement and form a value tree;
- Develop scoring systems separately for each criterion so as to be able to compare applicants;
- Score the applicants according to each criterion
- Assign weights to the criteria and find the weighted sum of each applicant's scores across criteria;
- Decide on an initial allocation;
- Analyse the allocations and rankings (graphically and numerically) in terms of achievement of goals, sensitivity to scores and weights, consistency, etc.

A practical example of this procedure is given in Section 6.2 while the remainder of this section discusses the theoretical background to and the details of these steps.

Critical to good and defensible MCDM (see e.g. the review in Belton and Stewart (2002)) is the selection and definition of the criteria to be used for evaluation. General principles of criteria selection include the following (Belton and Stewart, 2002, Chapter 3):

- There is a need for balance between ensuring completeness (capturing all relevant concerns) and retaining a sufficiently concise set of criteria so that evaluations can be completed, and audited where necessary, with reasonable expenditure of time and effort.
- The methodology used for aggregating assessments across criteria (e.g. trading off better and worse aspects of an applicant) needs to be simple and transparent.
- Criteria need to have a broadly understood operational meaning, and to be clearly linked to the fundamental goals and values being strived after.
- Criteria need to be defined in a judgmentally independent manner, in the sense that evaluation in terms of one criterion should not be dependent upon level of performance in other criteria.

**Objectives and Criteria:** The results reported in Chapter 5 indicate a large degree of convergence of opinions from the different communities as to what the criteria are that need to be taken into consideration. The various criteria that were identified appear to be broadly *understandable* to all groups, even if there remain differences in terms of priorities and emphasis, particularly when compared to those of MCM.

Although there are criteria that might have been recognized by one group only, it seems that the union of all the criteria identified would generate a complete and comprehensive list of criteria, which are also broadly understood and operationally implementable. Not all of these criteria may be relevant in all contexts (defined by community setting, fishery and region<sup>24</sup>). Nevertheless, a combined set of criteria (e.g. Table 5.9 and Figure 5.19) can serve as a checklist or starting point, to be referred to whenever starting evaluations in a particular region and fishery.

The one remaining issue in critically examining the criteria generated relates to judgmental independence. The effects of judgmental dependencies are strongly dependent on the methodology adopted for aggregating assessments of applicants across criteria to obtain an overall evaluation. We thus delay discussion of judgmental independence until after dealing with aggregation methodology.

**Scoring and Aggregation:** Additive scoring has the advantage of being simpler and more transparent than virtually any other methodology. While the form of equation (1) above is appropriate it may be easier in some respects to adopt the alternative form and to explicitly specify both scores and weights, i.e.:

$$v_i = \sum_{j=1}^p w_j u_{ij} \quad (2)$$

The additive model can also be placed on a sound theoretical basis, provided that certain key assumptions are met (Belton and Stewart, 2002, Section 4.2):

- *The individual scores must be assessed on an “interval scale”:* Suppose that scores for a particular criterion are set between 0 and 100. Then the value of moving (say) from a score of 20 to 40 should be equivalent to the value of moving (say) from 80 to 100 (in the sense of permitting the same tradeoff with other criteria). One means of facilitating satisfaction of this criterion is to document clear operational descriptions of what constitutes different levels of scoring, especially for criteria with a substantial qualitative component.
- *Additive independence:* The additive scoring model demands a somewhat stronger condition than the simple judgmental independence required for any set of assessment criteria. The requirement is that the tradeoffs allowed between any two criteria in comparing two applicants who are identical on all other criteria should not in any way depend on the levels of performance on the criteria on which they are identical. In other words, it is not permissible to say that a particular combination of HDP status and ownership of boats is preferable to another if both applicants have long involvement in the

<sup>24</sup> Note that the new general policy groups all fisheries into four categories. A general approach is defined for each category and specific policies specified for each fishery within a category.

fishery, but *vice versa* if they are recent entrants. If this occurs then the criteria selected for scoring need to be redefined.

- *Use of “swing weighting”*: Whether importance weights are defined explicitly (as the  $w_i$  in equation (2)) or implicitly (through choice of range of scores  $s_{ij}$  as in equation (1)), these need to reflect the importance of the swing from the level of performance associated with the lowest score, to the level associated with the highest score. This implies that these levels need to be made explicit at the outset, as part of the definition of the criteria (in much the same way as for ensuring the interval scale property above).

All three of these conditions are simply expressed, but often need substantial care (“applying the mind”) to ensure that they are satisfied.

As indicated earlier, there is no *prima facie* reason to reject the combined set of criteria developed (Table 5.9 Figure 5.19) on grounds of completeness or operational meaningfulness. With adequate care, it would seem possible to establish scoring systems that satisfy interval scale and swing weighting properties. Our primary recommendation is thus that MCM continue with the practice of assessing applicants on the basis of a simple additive scoring system as at present (and as described above), provided that care is taken:

- To define levels of performance on each criterion explicitly, and to associate scores with each level in a manner which satisfies the interval scale property described above; and
- To allocate weights to each criterion according to the swing-weighting principle.

The processes of selecting criteria, and of establishing scores and weights at the start of a new round of allocations would be facilitated by a half or one-day workshop run by a decision analyst with experience of scoring and weighting in this context. This is particularly important in terms of ensuring that the provisos above are met. It may be useful to also invite community representatives to participate in such workshops.

The basic processes of applying the scores to the applicants, weighting criteria and analysing results graphically and otherwise can easily be undertaken in, for example, Excel spreadsheets, as was done by MCM for previous allocations. However, given the criticisms in Chapter 4 and the suggestions here and in Sections 6.1.3 and 6.1.4, the entire process would be better facilitated by suitably designed software (which may remain Excel based), as described in Section 6.4. Such a DSS can also be set up to support the elicitation of scores and weights in the workshops mentioned above.

### 6.1.3 Graphical analysis

It is recommended that all allocations should as a matter of course, be summarized graphically in the forms illustrated by Figure 4.5 to Figure 4.15. This will allow management and auditors to obtain a clear picture of what has been done, and of any anomalies that might have arisen.

### 6.1.4 Complementary analysis

Although the additive scoring system would form the backbone of the allocation process, one word of warning needs to be expressed regarding the judgmental and additive properties (required, as we have pointed out, to provide justification for the additive scoring system) of transformation goals *vis a vis* the other criteria. The additive model requires that relative scores and weights can be specified at the outset for these transformation goals as well as for all others, implying specific tradeoffs (e.g. the level of previous experience in the fishery that would compensate for not having the preferred HDP status).

The practical and theoretical problem in selecting weights and scores to be allocated to individual applicants as a measure of their contribution to transformation goals, is that achievement of such goals can really only be assessed once the complete set of allocations has been made (when the proportions of HDP groups and women can be assessed). It is thus possible that after the scores have been calculated, and rights allocated, the desired degrees of transformation either are not achieved or are over-achieved (implying perhaps less than desirable achievements of other goals).



If transformation targets are found not to be satisfactorily achieved, one possibility (besides ad hoc removal or addition of candidates) would simply be to reassign the weights between criteria, and to recalculate the scores. This is also essentially ad hoc, and while it may be convenient it could also open areas of litigation (however, it is important as part of sensitivity analyses to look at the effects of a range of weights on the resulting allocation). Our proposal, therefore, is that although the procedures should allow managers to reassign weights in this way, the decision support system should also provide a complementary means of evaluation, in which optimal allocations are determined in order to maximize scores on other criteria subject to specific transformation targets. This would allow managers to apply a “what-if” mode of analysis, applying their minds to the potential effects of other allocations. Such a target-seeking optimization procedure is relatively simple to implement, and is now described (for those wishing to avoid the mathematical formulation a practical illustration is given in Section 6.2).

In order to implement this complementary procedure, we partition the criteria into two sets, namely:

- Those which refer to characteristics of the applicant (e.g. access to a vessel, quality of the business plan) apart from membership of racial, gender or other groupings. These can be listed as the first  $q < p$  criteria.
- Indicators for membership of each group of interest such as race and gender. Membership of a particular group would be expressed as a simple *yes/no*. Formally, we define  $g_{ik}$  to be 1 if applicant  $i$  belongs to group  $k$ , for  $k=1,2,\dots,K$  (the number of groups to which transformation goals apply).

Formally, let us represent the decisions for a particular fishery in terms of *indicator decision variables*, say  $x_i$ , taking on the value 1 if an allocation is made to applicant  $i$ , and 0 otherwise. For the purposes of the present report, we shall assume that the quantum of the allocation (e.g. numbers of tons) that would apply to each applicant if an allocation is made can be specified at the outset. For example, currently in certain fisheries, characteristics of the applicant such as access to other rights and vessel ownership help to determine the size of the quota granted. We shall denote the quantum by  $a_i$ . A potential extension to the model would be to allow consideration of different possible levels of allocation to be made to a particular applicant, but this would require more difficult assessments of the relative benefits accruing (to society at large) at different levels of allocation, in contrast to a simple score for the individual. As such relative assessments have not been attempted up to now, we shall not discuss an extended model at this stage.

A best set of allocations, achieving a best aggregate value score subject to meeting transformation goals is then obtained by solving the following *integer linear programming* optimization problem:

$$\text{Maximize } \sum_{i=1}^n \sum_{j=1}^q s_{ij} x_i$$

Subject to:

$$\sum_{i=1}^n a_i x_i \leq A \quad (\text{total allocations not to exceed the total available, } A)$$

$$\sum_{i=1}^n g_{ik} x_i \geq G_k \sum_{i=1}^n x_i \quad (\text{where } G_k \text{ is for each } k, \text{ the target proportion for group } k)$$

$$x_i \in \{0,1\} \text{ for all } i.$$

Constraints can be added to limit, for example, the number of allocations so as to not exceed zonal TACs (given a minimum quota size) (see example in Section 6.2).

Software for solving such problems is widely available, for example the Solver Tool in Microsoft Excel. A “demo” of such a system using Solver has been developed and is described in Section 6.3.

### 6.1.5 Summary of procedural recommendations

In summary, the procedural recommendations for undertaking **steps 2 and 5** of the allocation protocol are as follows.

1. At the outset of any new round of allocations, MCM would need to re-specify their overall objectives (e.g. once transformation goals have been met, this may no longer be an objective, or the objective may be to maintain rather than attain transformation targets). Then, criteria need to be selected which are linked to these objectives and can be used to evaluate the applicants. Both quantitative and qualitative criteria can be used. A combined set of criteria (e.g. Table 5.9 and Figure 5.19) can be used as a checklist from which the criteria for the allocation can be selected. Reasons for including or excluding criteria should be documented.
2. The additive scoring system should be used as the primary basis for evaluating applicants and determining allocations. Attention should be paid to the following issues:
  - a) Clear definition of levels of achievement to be used for each criterion;
  - b) Allocation of scores to each level of achievement taking cognizance of the need to ensure an interval scale; and
  - c) Determination of weights according to the swing weighting principle.
 Consideration of the above three issues might be facilitated by a decision analyst.
3. The complementary mathematical programming system could be employed to give consideration to the effects of setting different target levels for transformation goals.
4. Final allocations should be summarized graphically as illustrated in Figure 4.5 to Figure 4.15.

## 6.2 The allocation procedure in practice

This section illustrates **steps 2 and 5** of the allocation protocol. Combining these steps in sequence results in the following MCDM stages:

- Define the objectives or goals and identify distinct criteria used to judge goal achievement and form a value tree;
- Develop scoring systems separately for each criterion so as to be able to compare applicants;
- Score the applicants according to each criterion
- Assign weights to the criteria and find the weighted sum of each applicant's scores across criteria;
- Decide on an initial allocation;
- Analyse the allocations and rankings (graphically and numerically) in terms of achievement of goals, sensitivity to scores and weights, consistency, etc.

(Step 6 would also form part of the MCDA analyses, but is not addressed here).

In terms of our recommendations above, an additional complementary analysis would be to:

- Set specific goals such as the percentage of HDP applicants to be granted rights or the percentage of women to be granted rights, and utilising the goal program described, assess the implications of the resultant exploratory allocation.

### Defining the value tree

The first step is identification of the objectives, selection of criteria and formation of the value tree. A facilitated workshop may be needed to redefine and make explicit the objectives and link these to criteria. A set of criteria has been identified (Section 5.5: Figure 5.19 and Table 5.9) that can be used as a starting point or checklist. Each fishing sector (whether west coast rock lobster, abalone, hake handline etc.) and type (whether full or limited commercial) would probably require only a subset of these criteria, and a different value tree might be developed for each. For example, the value tree for the west coast rock lobster, east of Cape Hangklip allocation constructed by the team from DEAT 2003b is given in Figure 6.1. The criteria on the right of the value tree are intended to be measures in some way of the objectives on the left. For example, if one applicant had more 'historical involve-

ment' than another (e.g. an experimental permit rather than a recreational permit), s/he should get preference as granting him or her a right would go further towards restructuring the industry (given the various forms of involvement prevalent in the fishery and fishing communities of concern). As it happens, in this case this criterion would also contribute to the goal of achieving 'optimum' use and economic growth, as the applicant with more experience is probably better able to exploit the resource.

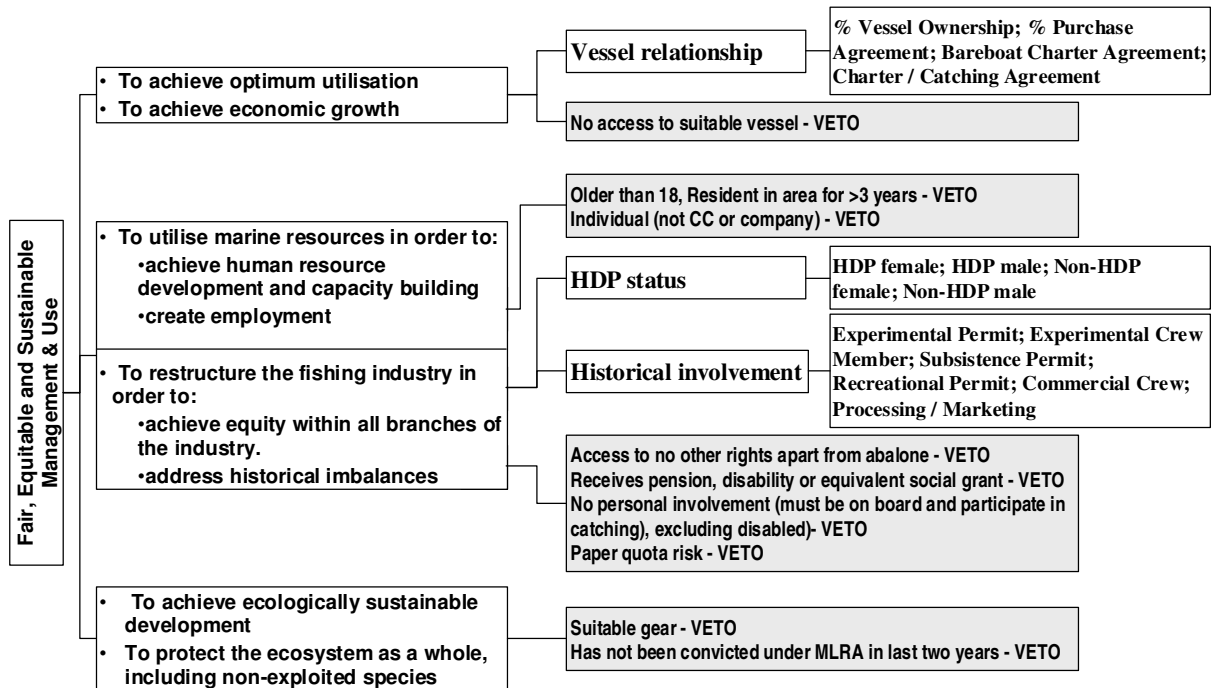


Figure 6.1. Value tree for the west coast rock lobster east of Cape Hangklip allocation.

### Scoring the applicants

As occurs in the current MCM process, the applicants would receive a score for each criterion, resulting in a table of performance profiles for each applicant. An example extract, based on the east of Cape Hangklip west coast rock lobster allocation but using the scores developed in the MCM workshop (Table 5.8), is shown in Table 6.1. In this case all criteria had qualitative levels defined to which quantitative scores were attached, forming an index. It is possible that some criteria may be quantitative (e.g. the actual % HDP ownership of an enterprise) and then a function can be defined translating the % HDP ownership into a score on a 0-100 scale<sup>25</sup>. Scoring systems of either kind should be developed with the guidance of an analyst, usually in a workshop setting in a similar way to the process in Section 5.4.5.

Table 6.1. Performance of a selection of the applicants for the east of Cape Hangklip west coast rock lobster allocation using the scores and weights from Table 5.8. Please note that the data are real except that HDP status has been changed for later illustrative purposes.

App No	Landing Site	HDP status	Vessel ownership or access	Historical Involvement	Total Score (all three criteria)	Total Score (excluding HDP score - for goal program)	Total score (original MCM scores)
03170	Hermanus	90	100	100	96.4	64	12.0
00955	Hermanus	90	100	100	96.4	64	13.0
01032	Hermanus	90	100	100	96.4	64	12.0
00083	Hermanus	90	95	100	95.2	63	11.0
03559	Hermanus	90	80	100	91.6	59	10.0
03656	Hermanus	90	100	80	88.4	56	12.0
05556	Hermanus	90	100	80	88.4	56	12.0
04398	Hermanus	90	100	80	88.4	56	11.0
00248	Hermanus	90	100	80	88.4	56	12.0
04085	Hermanus	0	95	80	54.8	55	7.0
03416	Hermanus	90	80	80	83.6	51	10.0

<sup>25</sup> Careful thought would have to go into decisions regarding whether a large company with numerically more HDP employees (but lower percentage) was contributing more to transformation than a smaller entity with a higher percentage of HDPs but fewer numerically.

App No	Landing Site	HDP status	Vessel ownership or access	Historical Involvement	Total Score (all three criteria)	Total Score (excluding HDP score - for goal program)	Total score (original MCM scores)
03503	Hermanus	90	80	80	83.6	51	10.0
04062	Hermanus	90	100	60	80.4	48	11.0
04321	Hermanus	0	100	60	48.0	48	7.0
04330	Hermanus	90	100	60	80.4	48	11.0
03387	Hermanus	90	100	60	80.4	48	10.5
03435	Hermanus	90	100	60	80.4	48	10.5
03794	Hermanus	90	100	60	80.4	48	10.5
03874	Hermanus	0	100	60	48.0	48	6.5
03012	Hermanus	90	95	60	79.2	47	10.0

**Allocating weights to criteria**

Weights need to be given to the criteria in order to find the total scores given in Table 6.1. These should be elicited using the swing weight approach, usually with the guidance of an analyst in a workshop setting. The weights for the three criteria used in the east of Cape Hangklip allocation which were elicited during the MCM workshop are shown in Figure 6.2. (The weighted scores, i.e.  $w_i u_{ij}$  were shown in Figure 5.20).

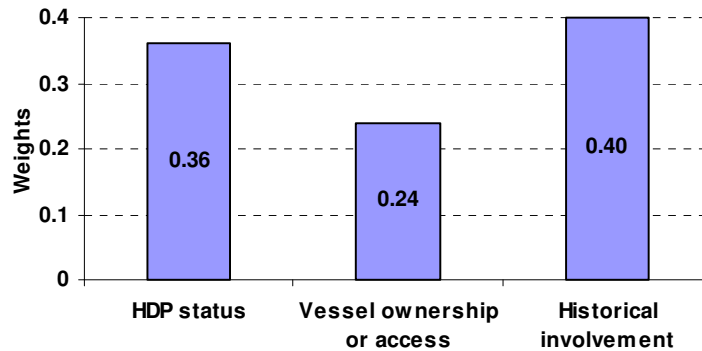


Figure 6.2. Weights from the MCM workshop for the performance criteria for the east of Cape Hangklip allocation. (see also Table 5.8 and Figure 5.20).

**Ranking of the applicants and initial allocation**

To determine the ranking of the applicants the criterion scores are multiplied by their weights and added to obtain a total score (third last column in Table 6.1). The total score of each applicant is then used to rank the applicants. The result of this step, the ranking of 60 applicants from the three east of Cape Hangklip areas, based on their total score, is shown in Figure 6.3 which is displayed together with the figures of the goal programming results for ease of comparison.

The weighted contribution of each criterion to the total score and an initial allocation are also shown. For this allocation example, in order to not exceed the constraint placed by the TAC, all applicants with a score over 55 were given a right. As two more could still be accommodated, details regarding the three applicants with the next highest scores were assessed. In this case, additional information had to be used (number of years involved, for example). Note that the scores are ranked from highest to lowest within zones according to the score *without* the HDP status score for ease of comparison with later graphs. Also recall that the levels for HDP status were HDP female, HDP male, non-HDP female and non-HDP male. Thus, a non-HDP female (such as the last applicant on the right) still receives a positive score for HDP status. In this initial allocation, three non-HDP applicants received a right, and the total score (i.e. overall performance of those granted rights) was 50% of the maximum possible (this is relevant for later comparison with the goal program results).

**Setting goals and analysing allocations resulting from achieving these goals**

Current policy goals are to increase the participation of HDPs and women in the fishing industry (the term HDP is actually used, in this context, to refer also to women). One way to make this goal operational is to set a minimum

percentage for each group to be included in the applicants which are allocated rights (e.g. set a goal that 60% of rights should go to HDP applicants). This is the complementary analysis described in Section 6.1.4. Table 6.2 shows the formulation of the goal program as set up for Solver in Excel. The goal programming routine finds a solution that maximises the overall performance of the applicants (i.e. the sum of their scores excluding HDP scores, second last column in Table 6.1)) that are allocated rights while meeting the transformation goals. It is set up in this example, to find an appropriate number of applicants within each of the three east of Cape Hangklip areas in order to not exceed the zonal TACs (i.e. the zonal TACs are an additional constraint).

*Table 6.2. Formulation of the goal programming (Solver) problem in Excel.*

INPUT:		Percent	
% HDP goal (race)		0.80	
% HDP goal (gender)		0.00	

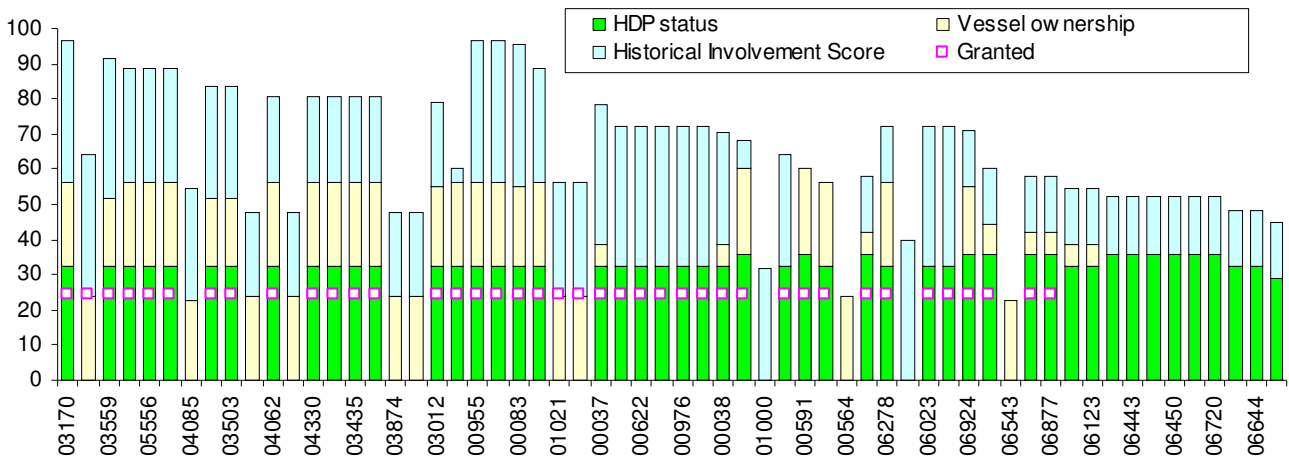
  

OUTPUT		Allocation		TAC constraint
Total # allocated Hermanus		18.00	≤	18.00
Total # allocated Kleinmond		13.00	≤	14.00
Total # allocated Gansbaai		9.00	≤	9.00
	<b>Percent</b>	<b>Number</b>		<b>HDP constraint</b>
Total HDP allocated	0.825	35.00	≥	33
Total women allocated	0.100	4.00	≥	0
Total Score (excluding HDP score)		1853.60	≤	2560
Total Score percent		0.725		

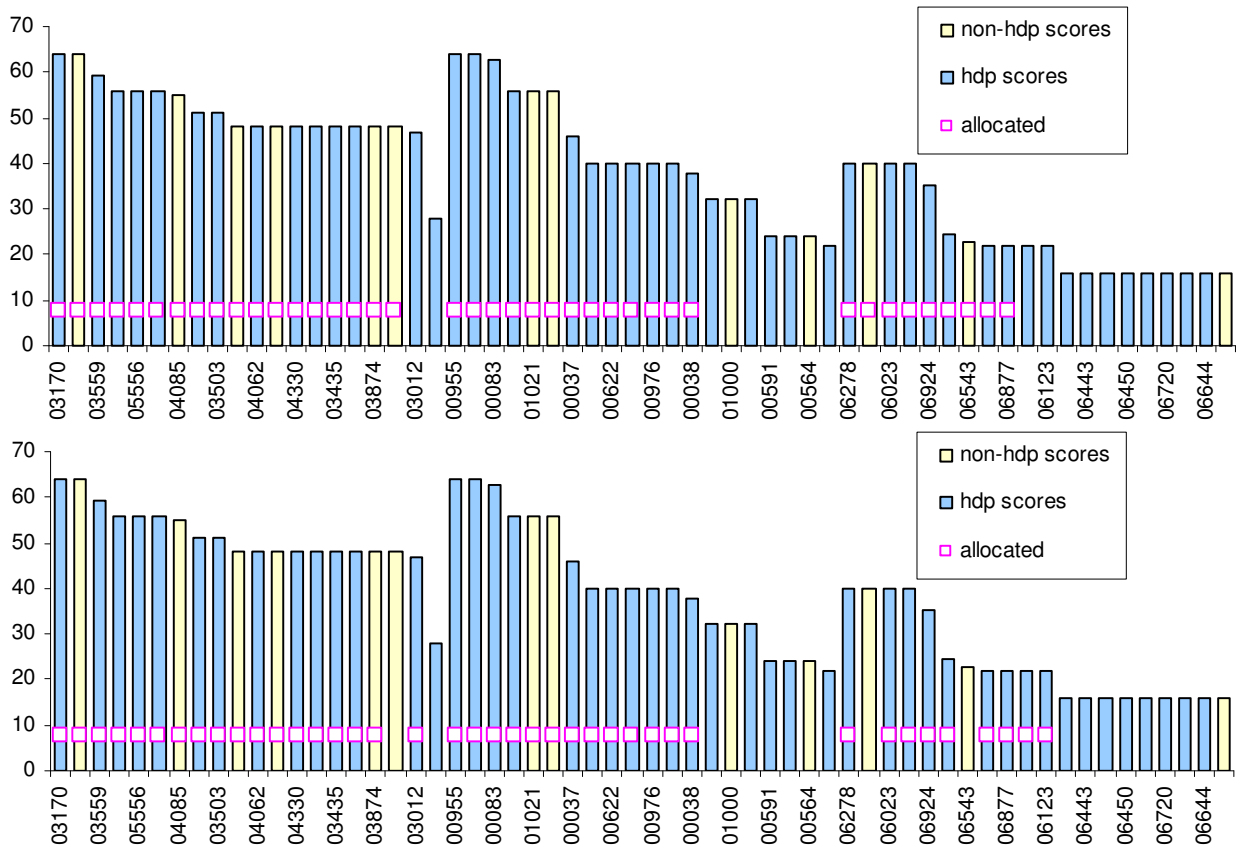
  

ZONAL TACs	TAC
Hermanus	7380
Kleinmond	5405
Gansbaai	3622.5

In the illustrative example the target for HDP representation was first set at 30%. This actually results in 75% of the allocations being granted to HDP candidates, while the total score (overall performance of the rights-holders) is 73% of the maximum possible. Increasing the goal to 80% of HDPs, does not significantly change the results. 82.5 % of the resulting rights-holders are HDP, while the total score is 72% of the maximum (i.e. more HDPs slightly reduces the overall score). This is because one HDP candidate, 03012, has been granted a right, but s/he had a slightly lower score than the non-HDP candidate to the left. The results of these goal programming runs (Figure 6.4) should be compared with the initial allocation of Figure 6.3, where 97% of the allocation went to HDP candidates, but the overall score was only 50% of the total possible (i.e. it is possible that HDP goals were overachieved at the expense of performance in terms of rights going to applicants with previous involvement etc.).



**Figure 6.3.** Weighted contribution of each criterion for the east of Cape Hangklip allocation (applicants in Table 6.1 are the leftmost twenty). Applicants are ranked in the same order as Figure 6.4 for later comparison; i.e. from highest to lowest in zones in order of total scores without HDP scores. HDP status has been changed from the original for illustrative purposes. For the initial allocation example, those scoring higher than 55 were granted a right.



**Figure 6.4.** Results of the goal programming routine run (top) with a goal of 30% HDP and (bottom) with a goal of 80% HDP.

**Final allocation of rights**

Two elements play a role in the allocation of the rights. First the scoring and ranking of individuals according to all criteria which indicates the overall achievement of various goals for the fishery and second the targets set for various goals such as the proportion of HDPs who are granted rights. The example above shows that, in a sense, one can “overachieve” in terms of the representation of HDPs (Figure 6.3) (e.g. 97%), this may result in underachievement of other goals (total performance in terms of all three criteria was only 50% of the maximum possible). In the example above, underachieving in terms of the two other criteria, means underachieving in terms of the degree of vessel ownership/access the rights-holders in the fishery might have, or in terms of how many experienced applicants are included. While in this particular case, underachieving in terms of these two criteria may not be terribly important, it might well be that for larger scale and more capital intensive operations there are

broader economic and employment consequences. In such a case, the alternative, produced by the goal program, where 72% of the total possible score is achieved with 82.5% HDP representation may be a fair compromise (especially as in this example, 78% of the applicants were HDP).

It is at this point, presented with these various alternatives, that the DDG and Minister will have to “apply their minds”.

### 6.3 Software support

The previous sections described the procedures that should be adopted in allocating rights in any particular fishery. One means of ensuring that the recommended steps are followed in each case is to provide suitable software; i.e. a decision support system (DSS) specially designed to take managers through the process.

A number of software systems do exist for the general support of multicriteria decisions making use of additive value scoring models. These include V.I.S.A, DEFINITE, HiPre, HiView, Expert Choice and Logical Decisions. None of these are specially designed for the fishery rights allocation process, however.

A specially designed system would need to include support for the following aspects:

- Selection of criteria from the master check list;
- Definition of levels of performance on each criterion and scoring of these;
- Swing weighting to define the full scoring system;
- Data entry (for each applicant);
- Calculation of scores for each applicant;
- Specifying of allocations;
- Implementation of the complementary mathematical programming model;
- Graphical displays; and
- Provision for extraction of an audit sample (e.g. for review by the minister).

Initial discussions have suggested that the DEFINITE software developed at the Institute for Environmental Studies (Vrije Universiteit, Amsterdam) could relatively easily be modified to provide the above functionality. This would involve time and costs beyond that supported by the current project, however. As an interim measure, a “demo” system has been developed using Microsoft Excel. This, together with other information management needs, is discussed in the next section.

### 6.4 Decision support system

The aspects needing “support” were grouped into four functional sections of the DSS (Figure 6.5):

- Section 1: Simple data entry with data-checking procedures. Data kept separate from later data analysis,
- Section 2: “Higher level” components, such as choosing criteria, setting scores for the different performance levels of the criteria, and setting weights for the criteria. A standard list of criteria from which to choose, and graphical support for scoring and weighting is provided,
- Section 3: Applying the scores to the applicants
- Section 4: Analysis of the applicants graphically, to assess consistency of allocations. (The goal program is currently separate but could be included in this section).

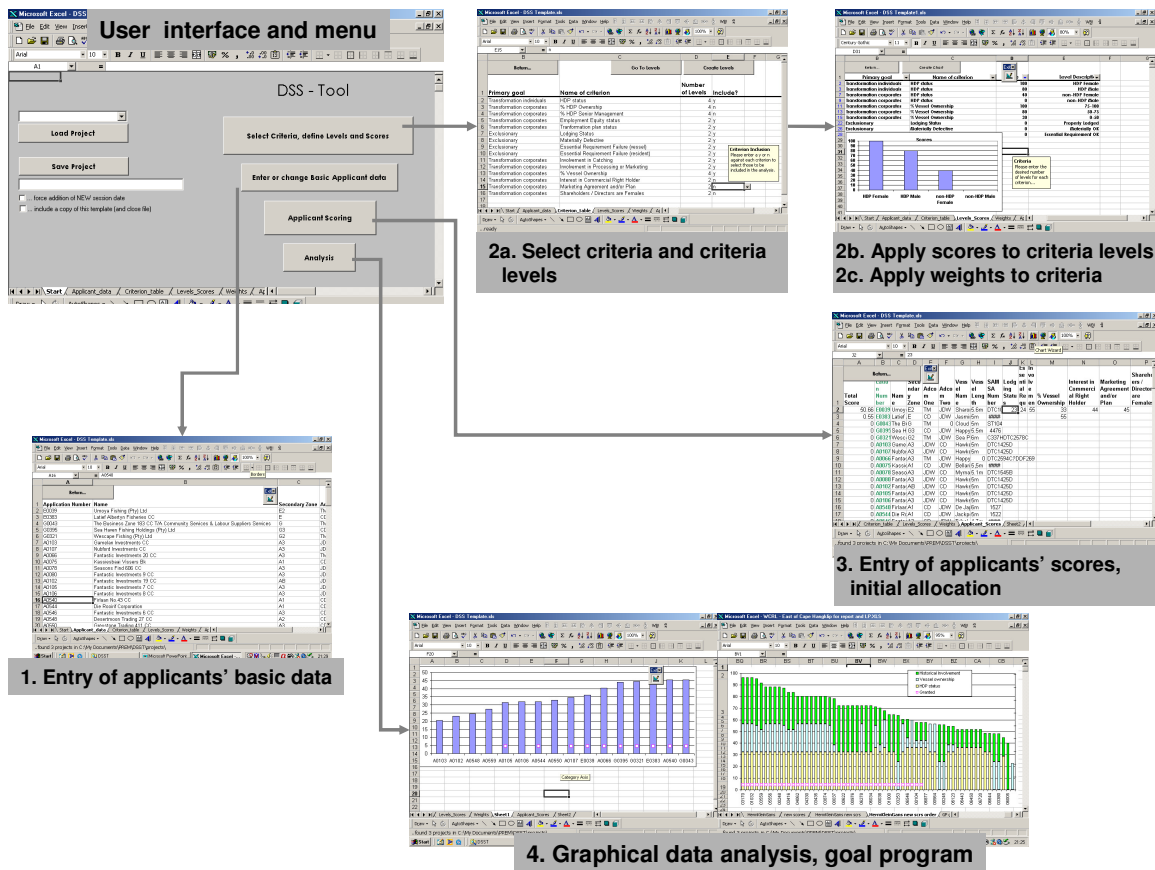
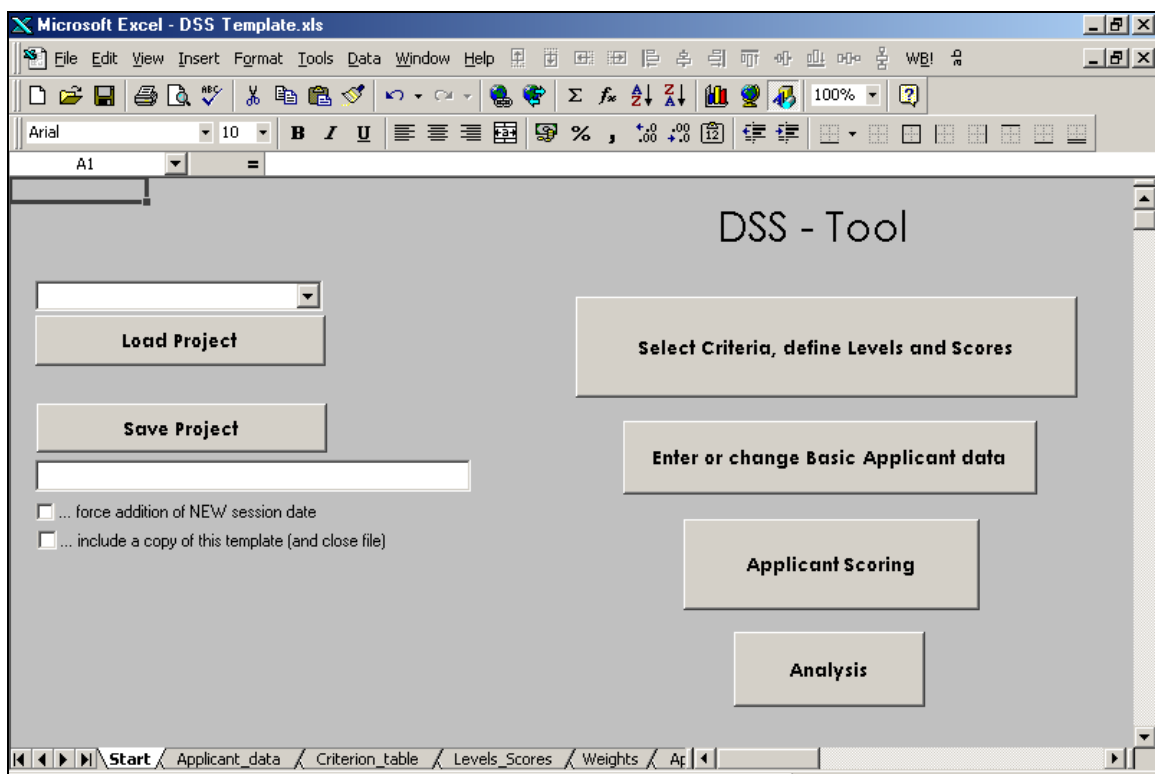


Figure 6.5. Basic architecture of the DSS and order of proceeding.

The user can navigate to each of the four sections by clicking the relevant menu button on the main menu interface (pictured below). However, activities within these sections can only be reached from within a section in order to maintain the correct order of events (e.g. scoring of levels of criteria can only happen once criteria have been chosen and numbers of levels of performance for each criterion defined).





## 1. Entry of applicants' basic data

In order to avoid later analyses overwriting and compromising raw data, the original applicant data is kept separate from the analyses. The general format used by MCM (rows of applicants and columns of criteria and comments) was maintained with the additional following guidelines:

- 1) Although attachments and certified documents cannot be “entered” into this database, *all* other information on the application form should be entered. This would include identity numbers, crew names, addresses, landing sites, shareholder names, joint venture partners, etc.
- 2) In addition, a separate field should be used for each. For example, each different “material defect”, “improper lodgement” or “essential requirement” should be separately listed. First names and surnames should be separated.

These two points together would help to avoid the situation which arose with the previous allocations where analysis was difficult if not impossible because the reasons for exclusions were not clear and where applicants could not be traced in different spreadsheets because there was no agreed system of name entry (and no identity numbers in the files available to us).

- 3) For criteria, where possible, the relevant information rather than a score should be entered. In other words, where levels of achievement on a particular criterion have been defined and scored, the *level* should be entered rather than the associated score. (This has not been incorporated into the current version - scores need to be entered manually and are not automatically determined from previously entered data)

## 2. Choice of criteria, scoring and weighting

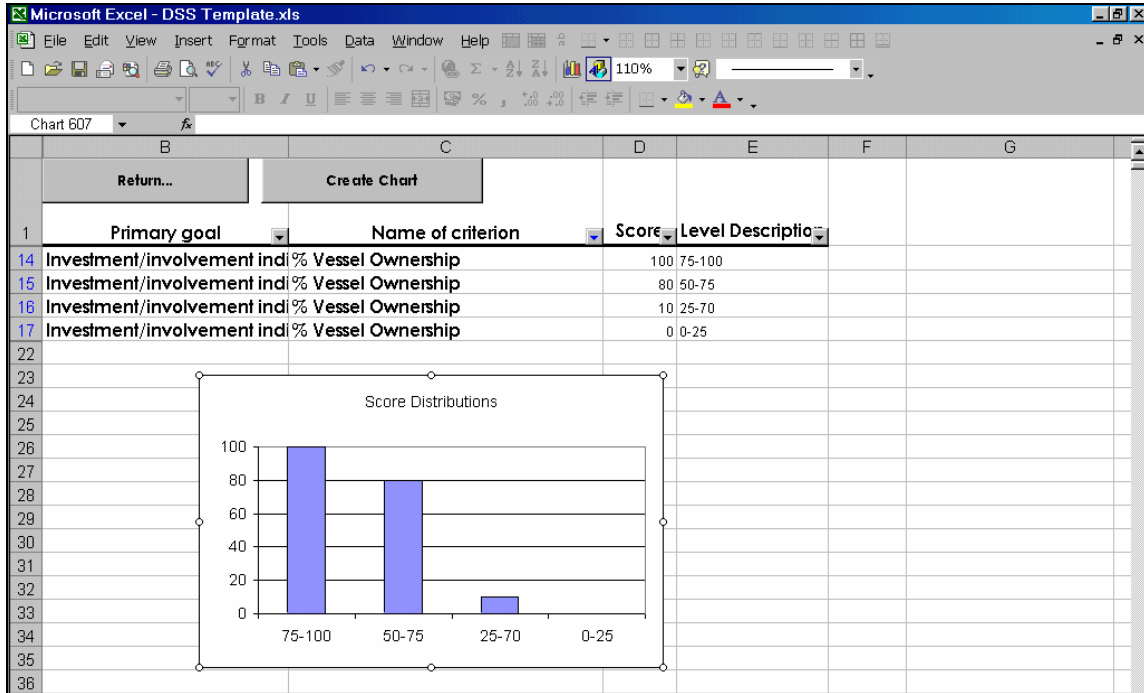
In a separate section of the DSS (click on <Select criteria, define levels and scores>) a system is set up which supports the selection of criteria, the determination of the number of levels for each criterion and the definition of levels of the criteria:

- 1) A checklist of criteria is provided (see picture below). Different criteria can be selected depending on the fishery or whether limited or full commercial.
- 2) The number of performance levels for each criterion is chosen (e.g. 4 for HDP status).

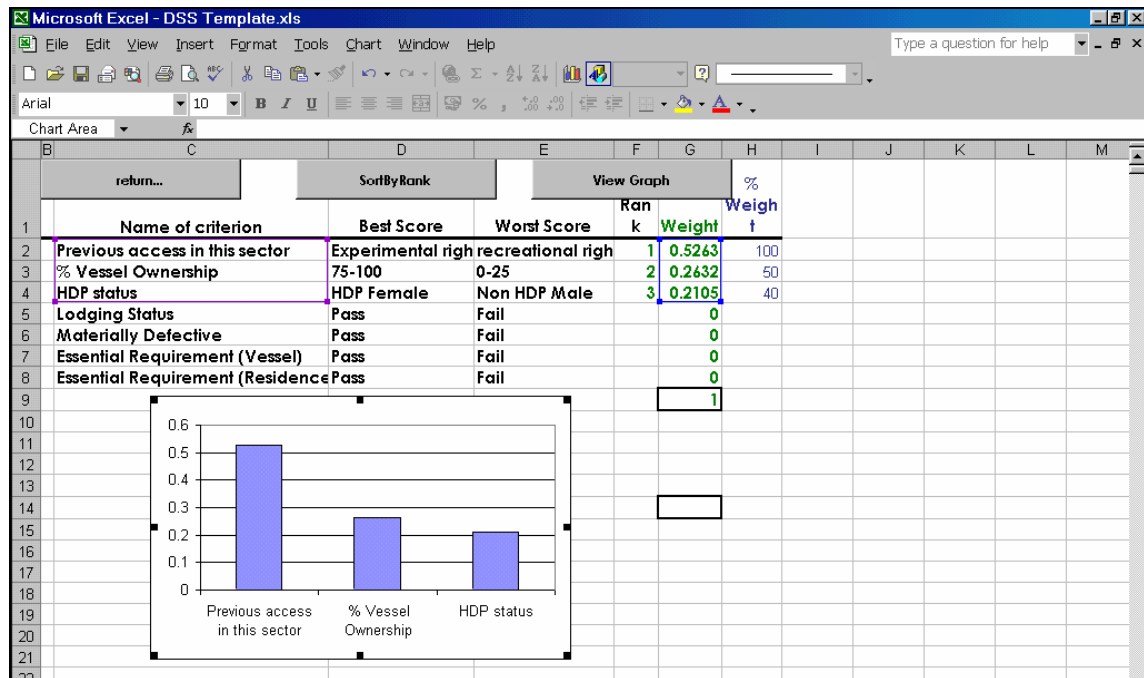
1	Primary goal	Name of criterion	Number of Levels	Include?
2	Exclusionary	Lodging Status	2	y
3	Exclusionary	Materially Defective	2	y
4	Exclusionary	Essential Requirement (Vessel)	2	y
5	Exclusionary	Essential Requirement (Residence)	2	y
6	Transformation individuals	HDP status	4	y
7	Transformation corporates	% HDP Senior Management	4	n
8	Transformation corporates	% HDP Ownership	4	n
9	Transformation corporates	% HDP Senior Management	4	n
10	Transformation corporates	Employment Equity status	2	n
11	Transformation corporates	Transformation plan status	2	n
12	Transformation corporates	Involvement in Catching	2	n
13	Transformation corporates	Involvement in Processing or Marketing	2	n
14	Business ability individual/corporates	Marketing Agreement and/or Plan	2	n
15	Investment/involvement individual/corporates	% Vessel Ownership	4	y
16	Investment/involvement individual/corporates	Interest in Commercial Right Holder	2	n
17	Investment/involvement individual/corporates	Previous access in this sector	4	y
18				

From this sheet one can navigate to the next process; applying scores to the levels and applying weights to the criteria.

- 3) The performance levels for each criterion are defined (e.g. HDP female, HDP male, non-HDP female, non-HDP male).
- 4) The levels of achievement of the criteria are scored. This is supported graphically.



5) The “worst” and “best” levels of each criterion (from (2)) are automatically carried across to the weighting section to assist in the swing weighting of the criteria. This is also supported graphically.



### 3. Entry of applicants’ scores and initial allocation

Based on the selection of criteria, a new spreadsheet is automatically created which includes the previously entered data and additional columns with appropriate headings for each criterion. The scores need to now be applied to the applicants. In the current format of the DSS, this has to be done manually. In other words, for each applicant, the data enterer needs to ascertain what level of performance they have achieved and type in the

associated score. Ideally, for many criteria this could be “automated” so that, for example, if the data enterer typed “HDP male” in Step 1, a score of e.g. 80 would appear in this spreadsheet.

The applicants’ total scores are automatically determined by summing their weighted scores for each criterion. The applicants can now be sorted according to total score. The number of applicants of a particular kind or scoring above a certain score can be calculated.

For the initial allocation, all applicants receiving more than a certain score can be allocated a right (as in the practical example in Section 6.2 and Figure 6.3).

#### **4. Analysis of the allocations**

The ranked applicants (and those allocated a right) can be viewed graphically (as in Figure 6.3). Overall performance of the initial allocation (e.g. percentage of total possible score achieved for the allocation) can be determined.

The goal program has not been included within this version of the DSS but can easily be formulated as an additional spreadsheet analysis.

The allocations by the two different approaches can then be compared and final decisions made.



## 7. Summary and recommendations

The problems of the management of marine fishery resources, the allocation of rights to exploit those resources and of allocating associated quota (in terms of quantum or effort) are universal (see Shotton 2001 for a collection of excellent case studies). This project has attempted to investigate and offer solutions to some of the problems in a context of the additional need for transformation. The objectives of the project were to (a) investigate the role of local knowledge in resource management, (b) to investigate the skills and training needs precipitated by the introduction of new approaches to allocations in previous years and the empowerment of fishers for more successful application for and use of fishing rights and, primarily, to (c) develop a simple, transparent and legally defensible allocation system.

To provide background material for the project, the development of rights allocation internationally and in South Africa was investigated. Three communities were chosen who would contribute to the various parts of the project through workshops and other interactions. Four fisheries relevant to these communities were investigated in more depth in terms of the changes in rights allocation over time. This background material is presented in Chapter 1.

The analyses and interactions undertaken to achieve the three objectives of the project led to a number of recommendations all of which have implications for environmental management, sustainable use, empowerment and poverty reduction. The activities and methods are summarised below together with the recommendations associated with each.

### 7.1 The potential role of local knowledge in resource management

A questionnaire / semi-structured interview survey and two follow-up surveys (in-depth and confirmation) were used as a pilot study regarding local knowledge (Section 3.2). West coast rock lobster was used as an example and interviews were conducted with fishers in Hawston and Kalk Bay. Respondents generally had good knowledge of the habitats and habits of lobster, although the approach to fishing did not lend itself to assessing detailed size and sex distributions as the fishers would move to a new location to avoid undersize lobster (often females). It appeared that local knowledge could best be used to refine rules regarding *seasons* as fishers were more aware on a local and day-to-day basis of in- and offshore movements and breeding stages than scientists. This means that they could advise on zonal seasons (and possibly even within season refinements to these).

Besides potentially improving environmental management and sustainable use of the resource, the use and acknowledgement of local knowledge is empowering to fishers. In addition it was evident that the experimental fishery conducted by MCM and fishers in the area east of Cape Hangklip had been empowering to the fishers. Further studies of this sort, such MCM/fisher surveys to determine the start of the season, (a) would provide a powerful tool for knowledge sharing between “scientific” and “local” communities, (b) is empowering to participants and (c) provides a means of introducing aspects of co-management into a fishery.

### 7.2 Empowerment of fishers for more successful application for and use of fishing rights

A combination of approaches was used to develop an understanding of skills and training needs in communities. These were a workshop with school students, informal interviews and an MCDA “post-it” session. With high unemployment levels in all sectors of society, skills training alone will not provide a solution and so the emphasis of the schools interaction was on the development of business and entrepreneurial skills and mentoring. It was felt that existing training programmes could be improved by, for example, the inclusion of a “sustainable resource use” component.

It was evident that the “chopping and changing” of approaches to rights allocation over the last decade have had severe social consequences both in terms of poverty and in terms of social continuity. The feeling from the fishing communities was that specific support and training programmes should be undertaken by MCM. This

could include, for example, advice on applications and advice on developing business plans (as the quality of the business plan is assessed as a criterion in many fisheries). However, MCM have apparently been advised by the state attorneys that they should not give specific advice as this could lay them open to litigation. The only other solution would be to improve communication from MCM in terms of providing more information which is more widely and easily accessible. Queries (phone calls) from fishers also had to be better dealt with as a frequent complaint was that phones were never answered.

### **7.3 Development of simple, transparent and defensible allocation system**

A number of avenues were pursued with the aim of developing a new approach to rights allocation:

1. The actual allocation process and allocations made since 2001 were investigated,
2. Communities and MCM were consulted to help to develop a new approach,
3. A new, MCDA-based allocation system was developed, and a prototype DSS for the implementation of such a system was developed.

Each of these aspects is discussed in a little more detail below.

#### **7.3.1 Analysis of previous rights allocation**

Fishing rights allocations made in South Africa since 2001 were analysed by consulting the documentation and spreadsheets made available to us by MCM (Chapters 1 and 4) and by talking to MCM and three communities (Section 2.4 and Chapter 5). Four fishing sectors were considered: hake, traditional linefish, west coast rock lobster and abalone. The spreadsheet analysis revealed flaws in spreadsheet management and inconsistencies in the relationship between the score and whether someone was granted a right. Various suggestions were made regarding spreadsheet design and evaluation of allocations. Some of these are incorporated in the prototype DSS described in Section 6.4. Interaction with communities revealed deep unhappiness regarding the allocations and the process. These were further pursued (Chapter 5) with the aim of designing a new system (Chapter 1).

#### **7.3.2 Interactions with stakeholders to develop a new rights allocation system**

The interactions with the communities and MCM were designed so that information for an MCDA-based approach could be elicited. In the communities, informal submissions were made by all participants, and then post-it sessions were held during which specific questions were addressed. From these sources, cognitive maps were developed for each community, which highlighted their particular concerns, drivers, goals and from which criteria could be extracted. Initial value-trees were then constructed. Priorities were determined for one of the communities (Hawston) during the initial meetings and more formal processes were used in both Hawston and Ocean View to determine weights and scores during subsequent meetings. A similar but more condensed workshop process was followed with MCM to determine criteria, develop value trees and to give scores to performance levels for criteria and weights to criteria (using the west coast rock lobster east of Cape Hangklip as an example). Issues from the communities and MCM were compared.

The criteria derived from the different sources appeared to be very similar (see Sections 5.3 and 5.5, Figure 5.19 and Table 5.9) and related to transformation and stability in the industry and to performance of fishers. However, there were subtle differences in the interpretation of similar sounding issues, which included that:

- Communities were concerned primarily with social continuity and that rights allocation should not disrupt traditional ways of life. MCM's concern was rather stability in the industry.
- Communities felt that people who were dependent on fishing for a livelihood and who were bona fide fishers should get rights. While MCM considered dependence as a criterion for some fisheries, this was dependence on a single sector, rather than dependence on year around fishing activity, or multi-sectoral dependence. MCM relied on fishers to find employment as crew with other fishers if they only had a single seasonal right themselves. Two associated issues were:
  - The size of the quotas granted in some fisheries (e.g. limited commercial west coast rock lobster) were not viable, and
  - The ruling regarding traditional linefishing (fishers with rights in other sectors may not hold linefishing rights).

- While all agreed that access to an appropriate vessel was an important criteria, there were differences between communities and between communities and MCM regarding the emphasis placed on this criterion. The highest score was given by MCM to those who *owned* a vessel while the communities (except for Kalk Bay) felt that access was more important than ownership. There are two potential problems with overemphasis by MCM on ownership: (a) it may well lead to overcapacity in a context where the aim of a quota / effort control system is to limit capacity, and (b) sharing of vessels would improve the viability of small quotas.
- Communities wanted historical or previous involvement in fishing to be recognised and for the most part this was a criterion used by MCM in the allocations. There were a number of factors encompassed by this issue. Previous involvement is, to some extent, a proxy for “performance” or “ability”. MCM was concerned with business skills in terms of ability, while communities were concerned with fishing skills: there seems no particular reason why a good fisher (and one who fishes within the law) should need to be a businessman with business plans to prove it. In addition, recognition of previous involvement should ensure some stability in the industry, while for those previously informally involved, recognition contributes to transformation and equity.

A recommendation is, therefore that MCM considers these differences (and other mentioned in Chapter 5) when developing criteria and objectives for their new round of allocations in 2005.

During the workshop with MCM scores were given to performance levels of criteria and weights were given to the criteria used in the east of Cape Hangklip allocation. The resulting weighted scores were different to those used in the allocation. Interestingly, the priority given during the workshop was closer to that indicated by communities: i.e. emphasis was placed on previous involvement rather than on vessel access and HDP status. Weights and scores were also obtained from Hawston and Ocean View communities which confirmed the above view. Interestingly there was most consistency in terms of overall weights, and less in terms of how important various criteria within the main groupings were, especially with regard to those concerning transformation.

### **7.3.3 Development of a new allocation system and prototype DSS.**

The basic approach used by MCM to evaluate applicants - the sum of scores on a number of criteria - remains an appropriate, simple and transparent approach and should be retained (see Section 6.1 for more details of the specific MCDA-modified proposal and Section 6.2 for a practical example). Approaching this same task with the help of MCDA “thinking” and methods will improve a number of aspects, particularly:

- the explicit linking of objectives to criteria, and
- the applying of scores to performance levels of criteria (interval scales) and weights to criteria (swing weights) in a way which justifies using a weighted sum of scores.

In addition to using a weighted sum of scores an additional complementary analysis was proposed using goal programming (set up in Solver for Excel). In this approach, specific goals are defined (e.g. percentage HDP representation) and the program allocates rights to applicants in order to achieve this goal while maximising a measure of overall performance of the applicants (for example, the sum of the scores of all those who received a right (excluding the score for HDP status)).

The results of the two approaches (awarding rights based on the individual achieving a score of above a certain amount and awarding rights in order to achieve a specific goal) can then be compared and evaluated and final decisions made by the delegated authority.

A prototype DSS was designed (in Excel) which implements some of the recommendations made. Facilities are available to:

- Separate basic data entry from other functions,
- Select a subset of criteria appropriate for the particular fishery and to define performance levels for the criteria,
- Support (with graphs) the allocation of scores to performance levels of criteria and the allocation of weights to the criteria,

- Analyse resulting allocations graphically.

## 7.4 Overall recommendations for the allocation process

In summary, the recommendations are:

1. An allocation protocol needs to be followed for each allocation cycle (Chapter 1, Box 6.1). This will contribute to the overall legitimacy of the process, while specific points within the allocation protocol will help to minimise potential adverse social and economic consequences of inappropriate allocations.
2. An MCDA-based allocation system should be used within the allocation protocol (Chapter 5 and 1). Inputs from MCM and fishers should contribute to the definition of objectives and criteria, the scoring of levels of achievement on criteria and the weighting of criteria.

The use of the MCDA approach has implications for environmental management and the sustainable use of the resource. This is because without a generally accepted approach to allocation, and without one which appropriately uses inputs from fishers, there will be little “buy-in” from consequently alienated and marginalised fishers and they will therefore have little incentive to abide by management rules. Although no system will make everyone happy, any perceived arbitrariness or administrative bungling will immediately undermine the entire system. Further, in order for the marine fish resources (a public good managed by government) to be managed in the best interests of society it is important that MCM acknowledge and make explicit the different goals and different priorities of goals which pertain to different fishery sectors. Thus, for certain fisheries the emphasis may be on poverty alleviation, while for others it might be economic efficiency or for others (e.g. threatened stocks) ecosystem protection. In this regard, MCM also needs to ensure that their goals (for example, the requirement for fishers to be businesspeople) or management decisions (e.g. the decoupling of seasonal fishing sectors from line-fishing) are not incompatible with the nature of certain fishing sectors.

The use of MCDA also has implications for empowerment of communities in that their inputs are required and acknowledged.

Finally, it has implications for poverty reduction in that with this system appropriate criteria can be chosen in order to evaluate allocations in terms of the contribution to poverty reduction (given that this is one of government’s goals).

3. There should be community input into verification of applicants or initial allocations. The current Minister has already suggested that an initial allocation will be published for comment before final allocation decisions are made (Marthinus van Schalkwyk pers. comm. Fishing Imbizo, 17 Aug 2004). This has implications for the legitimacy (and therefore sustainability) of the process as well as in terms of empowerment of communities (their views are being heard and acknowledged).
4. The local ecological knowledge of fishers can be used to improve management on a zonal basis, particularly with regard to the timing of fishing seasons. This is empowering to fishers, and may improve the sustainability of resource use.

## 7.5 Future research needs

The further research needs arising from this project include:

- The processes which could be used to determine the relative priorities of fishers in different communities and to compare these with those of MCM were illustrated during this project. These processes could be fine tuned for use during an allocation process to investigate what scores and weights different stakeholders feel should apply to the evaluation criteria. Therefore, “protocols” need to be developed for the identification of criteria, value trees, scores and weights for future allocations,
- Determining appropriate mechanisms for the use of local knowledge in certain aspects of local resource management, and



- Determining the “minimum viable quota” for different small-scale fishing sectors and alternative livelihood strategies associated with the new rights allocation system and regulations. This would entail dealing with the seasonal nature of many fishing sectors and developing ways to support fishers in establishing strategies so that, where rights-holding in many sectors by one fisher is not possible, a fisher with rights in one sector crews for someone with rights in another sector and vice versa. This will help to ensure that fishers earn a viable living and that rights are distributed through the community. While the utilisation of such strategies was one of the implicit intentions behind MCM’s new approach, no support was provided to communities in achieving them, nor was the intention, apparently, ever explicitly expressed.



## References

- Ackerman F and Eden C, 2001. SODA - Journey making and mapping in practice. In Rosenhead J and Mingers J (eds): *Rational analysis for a problematic world revisited: Problem structuring methods for complexity, uncertainty and conflict*. John Wiley & Sons Ltd. Chichester.
- Barange M, Werner F, Perry I, and Fogarty M, 2003. The tangled web: global fishing, global climate, and fish stock fluctuations. *IGBP Newsletter* No. 56, December 2003.
- Belton V and Stewart TJ, 2002. *Multiple criteria decision analysis: An integrated approach*. Kluwer Academic Publishers.
- Boyd AJ and Adriaans W, 2002. “The 2000/2001 subsistence fishery for west coast rock lobster” *Problems, successes and lessons for the learning*”. Power point presentation and abstract for Southern African Marine Science Symposium (SAMSS) 2002. Swakopmund, Namibia, 1-5 July.
- Boyd AJ, Adriaans W and Oosthuizen WH, 2000. Where do we stand at present?, Subsistence Fisheries Management in South Africa, *SANCOR Newsletter*, Issue # 185. November 2000.
- Bradshaw M, 2004. The market, Marx and sustainability in a fishery. *Antipode*. 2004.
- Buck EH, 1995. Overcapitalization in the USA. commercial fishing industry. CRS (Congressional Research Service) report for Congress from the Environment and Natural Resources Policy Division.
- Cape High Court, 2003. Scenematic Fourteen (Pty) Ltd. vs the Minister of Environmental Affairs & Tourism and the Deputy Directory General, Department of Environmental Affairs & Tourism. Decision 12/12/2003.
- Caws P, 1988. *Structuralism: The Art of the Intelligible*. Atlantic Highlands, N.J.: Humanities Press.
- Checkland P. and Scholes J, 1991. *Soft Systems Methodology in Action*, Wiley, Chichester.
- Cockroft AC, Sauer WHH, Branch GM, Clark BM, Dye AH and Russell E. Assessment of resource availability and suitability for subsistence fishers in South Africa, with a review of resource management procedures. *South African Journal of Marine Science*, 24:489-501
- Connor R, 2001. Initial allocation of individual transferable quota in New Zealand fisheries. In: Shotton R (ed). *Case studies on the allocation of transferable quota rights in fisheries*. FAO Fisheries Technical Paper. No. 411. Rome, FAO. 373p.
- Creamer Media’s Engineering News Online, 2000/05/26. Riaan de Lange: “Bulk earthworks for Cape casino”. (<http://www.engineeringnews.co.za/eng/news/>).
- Creamer Media’s Engineering News Online, 2004/08/09. Jill Stanford: “SA aquaculture industry heading for export boom”. (<http://www.engineeringnews.co.za/eng/news/>).
- DEAT 1994. South African Commercial Fisheries Review. (published in 1997)
- DEAT 1998. South African Commercial Fisheries Review. (published in 2002)
- DEAT 2001a. *Summary of recommendations, considerations and decisions in respect of west coast rock lobster rights for the 2001-2005 seasons*. AND. *Allocation of rights and quantum in the west coast rock lobster fishery and general reasons for those decisions*. AND *Associated spreadsheets*.
- DEAT 2001b. *Summary recommendations, considerations and decisions in respect of abalone rights for the 2001 – 2003 seasons* AND *Associated spreadsheets*.
- DEAT 2002a. *Where have all the fish gone? Measuring transformation in the South African fishing industry*. Published by the Department of Environmental Affairs and Tourism. Republic of South Africa. Private Bag X447, Pretoria, 0001.
- DEAT 2002b. *Summary of recommendations, considerations and decisions in respect of handline hake rights for the 2002 to 2005 seasons* AND *Associated spreadsheets*.
- DEAT 2002c. *Summary of recommendations, considerations and decisions in respect of hake deep sea trawl rights for the 2002 to 2005 seasons* AND *Associated spreadsheets*.
- DEAT 2003a. *Criteria and weighting for traditional linefish full commercial rights application* AND *Criteria and weighting for traditional linefish limited commercial rights application* AND *Associated spreadsheets* (also for exemptions).
- DEAT 2003b. *Policy for the granting of rights: west coast rock lobster, east of Cape Hangklip* AND *spreadsheets*.
- DEAT 2003c. *Policy for the allocation of commercial fishing rights in the abalone fishery*: 2003. 10 October.
- DEAT 2003d. *Draft Policy for the allocation of commercial fishing rights in the abalone fishery*. 20 August.
- DEAT 2003e. *MCM website document*: (abalone\_processing\_factories\_19122003.doc.).

- DEAT 2004a. *Summary of 2004 abalone allocation AND Criteria and weighting for abalone AND Associated spreadsheets*
- Echo, October 7 2004. *Ocean View fisher fold finally represented*. Inga Strydom.
- Eden C and Ackerman F, 2001. In Rosenhead J and Mingers J (eds): *Rational analysis for a problematic world revisited: Problem structuring methods for complexity, uncertainty and conflict*. John Wiley & Sons Ltd. Chichester.
- Eden C and Huxham C, 1996. Action research for the study of organisations. In: Clegg S, Hardy C and Nord W (Eds), *Handbook of Organisation Studies*, 526-542, Sage, Beverley Hills.
- Fals Borda, O, 2001. Participatory (action) research in social theory : origins and challenges, In: Reason P and Bradbury H. (Eds), *Handbook of Action Research: Participative Inquiry and Practice*, Chapter 2, 27-37, Sage, London.
- FAO. 2000. *The State of World Fisheries and Aquaculture*. 142 p.
- Focus, 2002. The sea is ours! Local people complain that fishing licences are still unfairly distributed. *Focus*, 25.
- Ford W, 2001. The effect of the introduction of individual transferable quotas in the Tasmanian rock lobster fishery. In: Shotton R (ed). "Case studies on the effects of transferable fishing rights on fishing capacity and concentration of quota ownership", FAO Fisheries Technical Paper 412.
- Friedman VJ, 2001. Action science: creating communities of inquiry in communities of practice. In: Reason P and Bradbury H (Eds), *Handbook of Action Research: Participative Inquiry and Practice*, Sage , London.
- Gaventa J and Cornwall A, 2001. Power and Knowledge. In: Reason P and Bradbury H (Eds), *Handbook of Action Research: Participative Inquiry and Practice*, Sage , London.
- Greenwood D and Levin M. 1998. *Introduction to Action Research*, Sage, Thousand Oaks.
- Griffiths C and Prochazka K, 1999. Cape action plan for the environment (C.A.P.E.): Second report of the marine sub-component (April-June 1999). Marine Biology Research Institute, University of Cape Town, Rondebosch 7701. Ph 650-3604, email clgriff@pop.uct.ac.za, kprochaz@botzoo.uct.ac.za
- Hardin G, 1968. The tragedy of the commons. *Science*, vol. 162, Dec 1968, pp1243-1248.
- Hardin G, 1994. The tragedy of the unmanaged commons. *Tree*, Vol 9, no. 5, May 1994.
- Harris JM, Sowman M, Branch GM, Clark BM, Cockroft AC, Coetzee C, Dye AH, Hauck M, Johnston A, Kati-Kati L, Maseko Z, Salo K, Sauer WHH, Siqwana-Ndulo N and Beaumont J, 2002. The process of developing a management system for subsistence fisheries in South Africa: Recognising and formalizing a marginalized fishing sector in South Africa. *South African Journal of Marine Science*, 24:405-424.
- Hauck M and Sweijd N, 1998. Untitled article in *South Africa Commercial Marine*: 6 February 1998.
- Hauck M and Sowman M (eds), 2003. *Waves of Change*. UCT Press.
- Hazell RWA, Schoeman DS and Noffke MN, 2002. Do fluctuations in the somatic growth rate of rock lobster (*Jasus lalandii*) encompass all size classes? A re-assessment of juvenile growth. *Fishery Bulletin*. 100(3): 510-518.
- Hersoug 2000. Not an east task. *Samudra*, April 2000.
- Hersoug B and Holm P, 2000. Bringing the state back in: The choice of regulatory system in South Africa's new fisheries policy. In: Shotton R (ed). "Use of property rights in fisheries management", Vol. 2. FAO Fisheries Technical Paper 404/2. Proceedings of the FishRights99 Conference, Fremantle, Western Australia, 11-19 November 1999, Workshop presentations.
- Heydorn AEF, 1969. The rock lobster of the South African west coast *Jasus lalandii* (H. Milne Edwards): 2. Population studies, behaviour, reproduction, moulting, growth and migration. Dept. of Industries: Division of Sea Fisheries. Republic of South Africa. (Investigational Report of the Division of Sea Fisheries, South Africa 71).
- Hawston Fishing Company (HFC) web address: [http://www.hfcbww.com/about\\_us.htm](http://www.hfcbww.com/about_us.htm)
- Hutton T, Raakjaer Nielsen J and Mayekiso M. 1999. Government-Industry co-management arrangements within the South African deep-sea hake fishery. Paper presented at the International Workshop on Fisheries Co-management. Penang, Malaysia, 23-28 August. Working paper no 2, 1999. Institute for Fisheries Management and Coastal Community Development.
- Isaacs M, 1998. Conflict or co-operation? Attitudes towards the new fisheries policy in three fisheries communities in Cape Town. Masters thesis, University of Western Cape.
- Isaacs M, 2003. Need, greed and politics - Transformation in the fishing industry. Paper presented at the Fisher Hearings run by the South African Human Rights Commission.

- Isaacs M, 2004. Can right-based fisheries management protect coastal sustainable livelihoods, the case of Ocean View, South Africa. Proceedings of International Institute of Fisheries, Economics and Trade (IIFET) 2004 conference, Japan.
- Jackson JBC, Kirby MX, Berger WH, Bjorndal KA, Botsford LW, Bourque BJ, Bradbury RH, Cooke R, Erlandson J, Estes JA, Hughes TP, Kidwell S, Lange B and Warner RR, 2001. Historical over-fishing and the recent collapse of coastal ecosystems. *Science*, 293:629-638.
- Japp DW, 2001. The allocation of harvesting rights in the South Africa hake fishery. In: Shotton R (ed), *Case studies on the allocation of transferable quota rights in fisheries*. FAO Fisheries Technical Paper. No. 411. Rome, FAO. Pp118-135.
- Jentoft S, 2000. The community: A missing link of fisheries management. *Marine Policy* 24:53-59.
- Johannes RE, 1992. Traditional marine environmental knowledge is invaluable for fisheries management, protected areas planning and environmental impact assessment. *SPC Traditional Marine Resource Management and Knowledge Information Bulletin*, #1, July.
- Johnston SJ and Butterworth DS, 2004. The operational management procedure approach used to set TACs for the South African west coast rock lobster resource in the face of uncertainty about future resource dynamics. MARAM, Dept Mathematics and Applied Mathematics, University of Cape Town, Rondebosch, 7701, South Africa.
- Kinnes I, 2000. Controlling the Problem. Published in Monograph No 48, *From Urban Street Gangs to Criminal Empires: The Changing Face of Gangs in the Western Cape*, June 2000
- Kleinschmidt H, Sauer WHH and Britz P, 2003. Commercial fishing rights allocation in post-apartheid South Africa: Reconciling equity and stability. *African Journal of Marine Science*, 25:25-35.
- Lamberth SJ and Joubert AR, in prep. Prioritizing species for research, conservation and management: a case study of exploited fish species.
- Legum M, 2004. Livelihoods, not employment. *South African Economics Network*, 3(22).
- Leung PS, Muraoka J, Nakamoto ST and Pooley S, 1998. Evaluating fisheries management options in Hawaii using analytic hierarchy process (AHP). *Fisheries Research*, 36:171-183.
- Levin M and Greenwood D. 2001. Pragmatic action research and the struggle to transform universities into learning communities, In: Reason P and Bradbury H. (Eds), *Handbook of Action Research: Participative Inquiry and Practice*, Chapter 9, 103-113, Sage, London.
- Mardle S and Pascoe S, 1999. A review of applications of multiple-criteria decision-making techniques to fisheries. *Marine Resource Economics*, 14:41-63.
- Mardle S and Pascoe S, 2002. Modelling the effects of trade-offs between long and short-term objectives in fisheries management. *Journal of Environmental Management*, 65:49-62.
- Mardle S, Pascoe S and Herrero I, 2004. Management objective importance in fisheries: An evaluation using the analytic hierarchy process (AHP). *Environmental Management*, 33(1):1-11.
- Mayekiso M, Tilney R and de Swardt J, 2000. Fishing rights in South Africa. In: Shotton R (ed). "Use of property rights in fisheries management", Vol. 2. FAO Fisheries Technical Paper 404/2. Proceedings of the FishRights99 Conference, Fremantle, Western Australia, 11-19 November 1999, Workshop presentations.
- Mayfield S and Branch GM, 2000. Interrelations among rock lobster, sea urchins, and juvenile abalone: Implications for community management. *Canadian Journal of Fisheries and Aquatic Sciences* 57(11):2175-2185.
- McDaniels TL, Healey M and Paisley RK, 1994. Cooperative fisheries management involving first nations in British Columbia: An adaptive approach to strategy design. *Canadian Journal of Fisheries and Aquatic Sciences*, 51:2115-2125.
- Moloney CL and Johnston SJ, 2002. Using decision analysis to evaluate candidate OMPs for the South African west coast rock lobster fishery. *South African Journal of Science*, 98:461-463.
- Nielsen JR, Degnbol P, Viswanathan KK, Ahmed M, Hara M and Abdullah NMR, 2004. Fisheries co-management - an institutional innovation? Lessons from South East Asia and Southern Africa. *Marine Policy*, 28:151-160.
- Ostrom E, Burger J, Field CB, Norgaard RB and Policansky, 1999. Revisiting the commons: Local lessons, global challenges. *Science*, 284:278-284.
- Pasmore W, 2001. Action research in the workplace: The socio-technical perspective, In.: Peter Reason & Hilary Bradbury (Eds.): *Handbook of Action Research. Participative Inquiry & Practice*. London/Thousand Oaks/New Delhi: SAGE Publications. Pg.: 38-47.

- Paul K, 2000. Transformation of the fishing industry in the new South Africa: Sustainable management of marine living resources and redistribution of access to them since 1994. South African Environmental Project.
- Pauly, D., J. Alder, E. Bennett, V. Christensen, P. Tyedmers and R. Watson. 2003. The Future for Fisheries. *Science*, 302:1359-1361.
- Pauly, D., V. Christensen, J. Dalsgaard, R. Froese, F. Torres Jr. 1998. Fishing Down Marine Food Webs. *Science*. 279:860-863.
- Pauly, D., V. Christensen, S. Guénette, T.J. Pitcher, U.R. Sumaila, C.J. Walters, R. Watson and D. Zeller. 2002. Towards sustainability in world fisheries. *Nature*, 418:689-695.
- Peterson JT and Evans JW, 2003. Quantitative decision analysis for sport fisheries management. *Fisheries*, 28(1). <http://www.fisheries.org>.
- Pikitch EK, C. Santora, E. A. Babcock, A. Bakun, R. Bonfil, D.O. Conover, P. Dayton, P. Doukakis, D. Fluharty, B. Heneman, E.D. Houde, J. Link, P.A. Livingston, M. Mangel, M.K. McAllister, J. Pope, K.J. Sainsbury. 2004. Ecosystem-Based Fishery Management. *Science*, 305:346-347.
- Pollock DE. 1986. Review of the fishery for and biology of the Cape rock lobster *Jasus lalandii* with notes on larval recruitment. *Canadian Journal of Fisheries and Aquatic Sciences*, 43: 2107-2117.
- Pollock DE. 1989. Spiny Lobsters. Chapter 8 In: (eds) Payne AIL and Crawford RJM: *Oceans of Life off Southern Africa*. Vlaeberg Publishers, Cape Town.
- Pollock DE and Shannon LV, 1987. Response of rock-lobster populations in the Benguela ecosystem to environmental change – A hypothesis. *South African Journal of Marine Science* 5: 887-899.
- Repetto R, 2001. A natural experiment in fisheries management. *Marine Policy*, 25:251–264.
- Rosenhead J (Ed). 1989. *Rational Analysis for a Problematic World: Problem Structuring Methods for Complexity, Uncertainty and Conflict*, Wiley, Chichester.
- RSA 1988. *Sea Fisheries Act*, 1998, Republic of South Africa.
- RSA 1998. *Marine Living Resources Act*, Act Number 18, 1998, Republic of South Africa.
- RSA 2003. Government Gazette, Republic of South Africa, Vol 451, No 24313, 31 Jan 2003. “Sea Fisheries Act, 1988 (act no. 12 of 1988) : *Levies on fish and fish products*.”
- Runolfsson B and Arnason R, 2001. Initial allocation of ITQs in the Icelandic fisheries. In: Shotton R (ed). *Case studies on the allocation of transferable quota rights in fisheries*. FAO Fisheries Technical Paper. No. 411. Rome, FAO. p24-31.
- Sauer WHH, Hecht T, Britz PJ and Mather D. (editors) 2003a. *An Economic and Sectoral Study of the South African Fishing Industry. Volume 2: Fishery Profiles*. Report prepared for Marine and Coastal Management by the Department of Ichthyology and Fisheries Science and the Department of Economics and Economic History, Rhodes University, Grahamstown.
- Sauer WHH, Hecht T, Britz PJ and Mather D. (editors) 2003b. *An Economic and Sectoral Study of the South African Fishing Industry. Volume 1. Economic and regulatory principles, survey results, transformation and socio-economic impact*. Report prepared for Marine and Coastal Management by the Department of Ichthyology and Fisheries Science and the Department of Economics and Economic History, Rhodes University, Grahamstown.
- Schiermeier Q, 2002 Fisheries science: How many more fish in the sea? *Nature*, 419, 662 – 665. News Feature
- Schoeman D and van Zyl D, 1999. An assessment of the west coast rock lobster resource east of Cape Hangklip. Unpublished Internal Report for Marine and Coastal Management.
- Scholz A, Bonzon K, Fujita R, Benjamin N, Woodling N, Black P and Steinback C, 2004. Participatory socio-economic analysis: Drawing on fishermen’s knowledge for marine protected area planning in California. *Marine Policy*, 28:335-349.
- Scott A, 2000a. Introducing property in fishery management. In : Shotton R (ed). “*Use of property rights in fisheries management*”, Vol. 1. FAO Fisheries Technical Paper 404/1. Proceedings of the FishRights99 Conference (Mini-Course), Fremantle, Western Australia, 11-19 November 1999, Workshop presentations.
- Scott A, 2000b. Moving through the narrows: From open access to ITQs and self-government. In : Shotton R (ed). “*Use of property rights in fisheries management*”, Vol. 1. FAO Fisheries Technical Paper 404/1. Proceedings of the FishRights99 Conference (Core Conference), Fremantle, Western Australia, 11-19 November 1999, Workshop presentations.
- Shotton R (ed), 2001. *Case studies on the allocation of transferable quota rights in fisheries*. FAO Fisheries Technical Paper. No. 411. Rome, FAO. 373p.

- Soma K, 2003. How to involve stakeholders in fisheries management - a country case study in Trinidad and Tobago. *Marine Policy*, 27: 47-58.
- Stats SA: <http://www.statssa.gov.za/keyindicators/lfs.asp>
- Stewart TJ, 1988. Experience with prototype multicriteria decision support systems for pelagic fish quota determination. *Naval Research Logistics*, 35:719-731.
- Stuttaford M (ed), 1996. *Fisheries Industry Handbook: South Africa, Namibia and Mozambique*. 24<sup>th</sup> edition. Published by Marine Information CC, PO Box 487, Stellenbosch, 7600, South Africa.
- Tarr undated. Manuscript about abalone fishery, untitled, for DEAT.
- University of Guelph, 2004. website: [www.arctic.uoguelph.ca/cpl/organisms/fish/marine/herrings/pacific.htm](http://www.arctic.uoguelph.ca/cpl/organisms/fish/marine/herrings/pacific.htm)
- Walker M, 1999. *Coastal Memories: Muizenberg - St James - Kalk Bay 1870-1920*. Published privately by Michael Walker, St James. ISBN 0 620220 22 8.
- Watson R and Pauly D, 2001. Systematic distortions in world Fisheries catch trends. *Nature*, 414:534-536.
- Wesgro, 2001. The Western Cape Fishing Industry. Cape Sector Factsheet: Business sector information updates from South Africa's Western Cape. Published by Wesgro: [www.wesgro.org.za](http://www.wesgro.org.za).
- World Bank. 2000. *World Development Report 2000/2001: Attacking Poverty*, Oxford University Press, New York





# **Appendices**



# APPENDIX 1: HAWSTON

## Questionnaire - first Hawston meeting (15/09/2003)

Meeting in Hawston

Date: 15.9.2003

Information of interested parties

Naam:.....

Adres:.....

Indicate with an X:

1. You are interested in the following type of quota:

Abalone

Lobster

Linefish

Trek net

2. Indicate your experience in the abovementioned in the blocks below:

1-10 years

10-20 years

20-30 years

30-40 years

3. Have you previously had or do you currently have a quota:

Yes

No

4. Do you think you deserve to have a quota?. Briefly provide reasons:

.....  
.....  
.....  
.....  
.....

5. Indicate with an X if you own or have access to the following type of telephone/s:

Home phone

Cell phone

Public phone

Other

6. Which of the following type of transport/s do you use?:

Car

4 x 4 car

Taxi

Bus

Thank you for your co-operation.

**Post-it session responses - third Hawston meeting, Hawston library (26/11/2004)**

Note that *all* post-its are recorded (therefore there is repetition) in the participants words. They are organised into different sections and where two ideas were joined these are separated and may appear in two separate sections.

<b>Question 1: What does having or not having fishing rights mean to you (personally or the community)</b>		
<b>Group</b>	<b>Post-it comments</b>	<b>Points</b>
<b>Family</b>	Food for children	24
	Generate income for me and my family (crayfish / abalone)	
	If fishers don't have the right to catch lobster or perlemoen within the law, they will have a problem to support their families (lobster, perlemoen)	
	If fishers don't have the right to catch fish from the sea or freshwater, then he has nothing with which to care for himself and his family (fish)	
	It will mean a lot to the community to have fishing rights as it will alleviate poverty within the community (kreef)	
	Fishing rights bring money, money brings security and security brings stability	
<b>Social problems</b>	It is an opportunity for the community to make money in a legal fashion and to stay away from illegal activities	3
	There is a link between fishing rights (having or not having), poaching and drugs in the community	
	Not getting a fishing right makes you skelm [dishonest]	
<b>Empowerment</b>	Co-management (people and government)	13
	empowerment	
	octopus quota to Khoisan / Strandloper BK, opportunities for job creation and women empowerment, sharing of opportunities	
	coastal communities - community quotas to community organisations, churches, schools to share amongst community, pay for study and school fees, upliftment of whole community	
	zonal / area rights	
	one lobster right per person → economic empowerment, family uplifted, food security, make a good livelihood	
<b>Training, information</b>	certificate for involvement with PREM process	4
	Training and empowerment	
	Disadvantaged community fishers should get scientific / management training free	
	Need to know more about how parliament works with fishing rights	
<b>Money</b>	Access to a savings account	10
	The money generated is also a way for the state to make money from taxes etc.	
	MCM funds should be made available for fish / lobster processing factories at the coast. These can be associated with export rights, packing and processing.	
	Generates money for the community	
	<b>Foreign currency earnings</b>	
<b>Marine resource</b>	I am committed to the restoration of our marine resources	6

<b>Question 2B: What should MCM be doing - What process should be followed (committees, final decision-makers, criteria, fees...)</b>		
<b>Group</b>	<b>Post-it comments</b>	<b>Points</b>
<b>Representation, involvement</b>	The community should establish a committee which works with MCM to check the applications and decide who gets.	
	A mandate for all the coast towns to organise representatives [for a?]	
	Those that use the resource make sure that they are heard	
	MCM should pay more attention to people's pleas / appeals (3)	
<b>Joint decision-making, co-management</b>	The community should make decisions with MCM	
	Resource users must be taken into account	
	MCM must decide to the satisfaction of the fisher community and fishers and work together with them	
	MCM mustn't close anyone out of the process, they must consider all groups and communities	
<b>Fees, time</b>	If someone is not successful in their application then they should get their application fee back.	
	MCM should give some rights free (i.e. to traditional fishers)	
	MCM takes too much time to process the applications	
<b>Local knowledge</b>	Scientists should not underestimate our traditional environmental knowledge	
<b>Freshwater fish</b>	What about freshwater fish rights? Nature conservation, MCM and Western Cape Govt. need to work together)	

Question 2A : What should MCM be doing - What should their aims be?		
Group	Post-it comments	Points
Conservation of the resource	Seasons should be respected To protect marine resources	10
Ensuring that allocation is appropriate	What our parents didn't get right in terms of fishing rights, we must get right (for later generations) MCM should apply fair division of rights. There should be no corruption. (1) There are many who have everything, e.g. boat bakkies and they don't get a right. What do they do then? Their should be corrective action (2) Keep wrong people out, get right people in (10) Give traditional fishers preference MCM should give the Khoisan Strandlopers' descendants what they want and in this way give back and reinstate their rights (1) MCM must reinstate the rights that were taken from the Strandlopers' descendants (7) A fishing right is a human right (11) MCM should manage healthily and co-ordinate so that don't give out paper quotas (1) Fees shouldn't be too low (to keep "chancers" out) They should go and look at what every boat actually does, look at if there is fishing everyday and where It is not understandable that there is an overflowing of fishermen but MCM insists on giving women training as fishers [i.e. rather use the people who already have the skills and equipment and are out of work]. (7)	32
Community interests (3)	MCM should work together with the community to make decisions about what should happen in the industry. MCM should put the communities interests in the resource first Fishers should give the necessary training to their sons who want to make a living from fishing and this should be supported by MCM (4) Aims+goals: That the traditional fisher should get his rightful / just share of the fishing resource, and that they are not exploited by factory bosses like in the past (3) The minister can make more quotas available to fishers. Many are dependent on the sea.	18

**Question 3 : Where do you feel you lack skills, knowledge, resources to be able to obtain and benefit from fishing rights ?**

General	}	Training
Training centre		
Management		Access and training
Computer		

Understandability of process

Fairness

Funds                      Access

**Attendees - first, second and third Hawston meetings**

Name	Town	Organisation / CC	Sub- mission	Attended			EoH ltd WCRL?
				15/09	18/09	26/11	
1. Annie Booï			N		Y		
2. John Prins			N	Y	Y		
3. Jakobus JDC Swart			Y	Y	Y		
4. Paul Wyngaard			N	Y	Y		
5. Richard Geweldt	Mount Pleasant	Arrowline Fourteen CC	Y	Y	Y		
6. Adam Meyer	Hawston	Baaigat Visserye CC	Y	Y	Y	Y	
7. Belinda Hess	Hawston		Y	Y	Y		
8. Hans Montague	Hawston	Plankhuis Baai Vissers CC, Hermanus Commercial West Coast Rock Lobster Ass	Y	Y	Y		
9. Riaan J Erwee	Hermanus		Y	Y	Y	Y	Y
10. Calvin Hendricks	Bredasdorp		Y	Y	Y		
11. Hendrick Booï	Bredasdorp		Y	Y	Y		
12. Hendrika Johannes	Bredasdorp	Weltevrede Vissery CC	Y	?	Y		
13. Salie Cyster	Stanford		N	Y	Y	Y	Y
14. Rosie Swartland	Stanford		Y	Y	Y	Y	
15. Robert Groenewald			N	?	N	Y	
16. Yeshuo Sias	Hawston	Khoisan - Strandlopers CC	N	?	N	Y	
<b>TEAM</b>							
<i>Jossette Mathee</i>				Y	Y	Y	
<i>Linda de Vries</i>				N	Y	Y	
<i>Theo Stewart</i>				N	Y	Y	
<i>Alison Joubert</i>				N	Y	Y	
<i>Leanne Scott</i>				N	N	Y	
<i>Ron Janssen</i>				N	N	Y	
<i>Visitor: Arabinda Tripathy</i>				N	N	Y	

## APPENDIX 2: KALK BAY

### Post-it session responses - first Kalk Bay meeting (23/02/2004)

Note that where issues are slightly distinct from the main group, they are separated by “Δ”.

Note that *all* post-its are recorded (therefore there is repetition) in the participants words. They are organised into different sections and where two ideas were joined these are separated and may appear in two separate sections.

#### Question 1: What should aims of MCM be in allocating rights?

##### Group 2: (protect traditional fishers):

- Protect the real / traditional fishermen
- To cater for the needs of traditional fishers in their specific sectors
- To give the traditional fishermen the right to exploit the resource and to earn their living from the sea.
- Allocate rights to real fishing people
- Leave / give the opportunity to long participants to participate in other sectors
- Taking away the boat licences : the crew working on those vessels have no work so MCM is creating poverty

##### Group 3: (manage and protect):

- Manage the resource for present and future generations
- Protect the resource e..g. bank fish.
- To manage the marine industry

#### Question 2: What criteria and processes should be adopted by MCM?

##### Criteria Group 1: (consult)

- To consult with the fishermen about what criteria must be used to prove to MCM that he qualifies to be a fisherman
- To meet with elected fishing community leaders to identify (true) role players in the industry
- Consult with representatives of recognised fishing groups
- Consult with traditional fishermen to jointly manage the resource

##### Criteria Group 2: (investigate)

- To investigate all phony CCs and companies

##### Criteria Group 3: (educate / train)

- To educate users to responsibly manage their newly acquired “wealth”.

##### Criteria Group 4: (protection measures)

- To protect reef fish, put a moratorium on exploiting those that are under pressure for 5 years.

##### Criteria Group 5: (differentiate between ski boats and harbour boats)

- Limit ski-boat entry (i.e. designated harbours)
- Limit launch points for ski-boats
- Make a distinction between ski-boats in yards and boats in harbours
- Harbour-moored vessels should be looked at differently than ski-boats

##### Criteria Group 6: (licenses to traditional fishers' boats in harbours)

- Return the fishing rights of traditional fishing vessels
- To give the boats the licenses so that the crew members can go to sea.
- Give licences to boat owners who had traditional fishing licences
- No licences for individual fishermen (except for switching harbour boats) [???
- Limit the amount of participants in the various sectors (so that we get workable rights / quotas).

**Attendees - first Kalk Bay meeting (23/02/2004)**

TEAM: Theo Stewart , Alison Joubert, Leanne Scott.

<i>Name</i>	Edriees Manuel (ME)	Tony Trimmel	Jacobus Poggenpoel	Sulaiman Achmad
<i>Company Name</i>	Company = Jaffa's Bay		Marion Dawn Fishing CC	
<i>Phone Number</i>	082 8220224 / 7034571	082 564 555 / 788 2827 (ph/fax)	7887421	783 1070 / 084 789 5050
<i>Current rights held if any</i>	Crayfish and pelagic	None	Crayfish and pelagic	Crayfish and pelagic
<i>Previous rights held if any</i>	Crayfish, pelagic, longline, handline	Handline permits x 2, squid permit x 2	Crayfish, pelagic, handline permit x 2	Crayfish, pelagic, longline
<i>Sectors involved with (previous or current)</i>	Crayfish and pelagic	Handline fishing		Crayfish, pelagic
<i>Do you belong to a fisher organisation?</i>	Kalk Bay Lobster & Commercial Linefishing Association	Kalk Bay Lobster & Commercial Linefishing Association	Kalk Bay Lobster & Commercial Linefishing Association	Kalk Bay Lobster & Commercial Linefishing Association



### APPENDIX 3: OCEAN VIEW

***Value tree from post-its: Aims and objectives (Qu 1) and Criteria (Qu 2), first Ocean View meeting (26/04/2004)***

<b>1. PROMOTE CONSTITUTIONAL DIRECTIVES</b>	2. GIVE RIGHTS TO BONA FIDE FISHERS or ARTISANAL FISHERS WHO MAKE A LIVING FROM THE SEA (ALTHOUGH THEY MAY NEVER HAVE HAD FORMAL RIGHTS BEFORE)	HISTORICAL INVOLVEMENT	Record of / proof of / verifiable history of involvement over the years	
		EXPERIENCE	Knowledge of the industry Skill and experience	
		INVESTMENT	Investment in the industry	
		ACCESS TO THE MEANS OF FISHING	Access to fishing vessel Access to gear and equipment	
	3. ADDRESS IMBALANCES OF THE PAST	TRANSFORMATION	Genuine transformation and equity	
	4. EMPOWER WITH A SUSTAINABLE INCOME	DEPENDENCY	Dependency on the resource (Other employment and other earnings count against)	
	5. POVERTY REDUCTION			
	6. ECOSYSTEM MANAGEMENT AND SUSTAINABILITY	COMPLIANCE	How the previous quota was handled No lying on forms	
		7. RIGHTS TO MEN IN PREFERENCE TO WOMEN		

***Process recommendations, first Ocean View meeting (26/04/2004)***

*Process:*

- Consult with community
- Get inspectors more involved
- Fee (or balance thereof) payable if get right
- Give proper information
- Use existing MCM databases
- Take cognisance of the mistakes of last couple of allocations when considering next lot (are those not given rights, new applicants, and paper quotas old?).

### **Post-it session responses - first Ocean View meeting (26/04/2004)**

Note that *all* post-its are recorded (therefore there is repetition) in the participants words. They are organised into different sections and where two ideas were joined these are separated and may appear in two separate sections.

### **QUESTION 1: What should be the aims and goals of MCM for a fair rights allocation**

#### **1. PROMOTE CONSTITUTIONAL DIRECTIVES**

1. Firstly, the present fisheries management model (MLRA) is not conducive to, or promoting of, the aspirations, political, socio-economic objectives and constitutional directives of government:
2. To meet the political and social directives of the constitution of RSA and the Bill of Rights
3. Socially responsible basis.

#### **2. GIVE RIGHTS TO BONA FIDE FISHERS or ARTISANAL FISHERS WHO MAKE A LIVING FROM THE SEA (ALTHOUGH THEY MAY NEVER HAVE HAD FORMAL RIGHTS BEFORE)**

4. MCM must make sure that real fishermen get quotas because in the past they made a mess of the quotas.
5. MCM should first see to the bona-fide fishermen when allocating fishing rights
6. MCM should first identify all the fishermen
7. First look at the fishers who make a living from the sea.
8. Identify first the real fishers in each community
9. The right fishermen.
10. Identify the real fishermen.
11. Give the bona fide fishermen the rights. Fishermen go out to sea, winter and summer, we don't just go out to sea when it suits us.
12. Recognise fishers such as us as not being new entrants, for this is the only skill that we could exercise our entire lives though we may currently hold no formal rights.
13. I've been a fisher half my life.
14. MCM must see to all fisherfolks.
15. MCM must come out and see who are the people who live from the sea before they give out quotas to people. Because there are people who got quotas who have never had anything to do with the sea.
16. Artisanal fishers must be accepted in RSA.

#### **3. ADDRESS IMBALANCES OF THE PAST**

17. We need to address the imbalances of the past by identifying the bona fide fishers.
18. To equalise and democratise the industry, restoring the historical and cultural rights of previously marginalised and currently disadvantaged fishery-dependent sectors. MCM should have facilitated the role of transformation and not created a "rent-a-black" scheme.

#### **4. EMPOWER WITH A SUSTAINABLE INCOME**

19. We need to empower those that derive their income solely from the ocean.
20. Fishing is seasonal and dependent on weather conditions. When allocating a quota, consideration should be given to full year's income, not seasonal.
21. The aim of rights allocation should be to ensure a sustainable income for the fisherman.
22. Rights are to uplift and empower the fisherman.

#### **5. POVERTY REDUCTION**

23. Less poverty
24. If I was in HK's shoes, I would look at the poor fishers.
25. MCM should first help the poor fishermen before giving to the rich.

#### **6. ECOSYSTEM MANAGEMENT AND SUSTAINABILITY**

26. Manage the resources on an ecosystems-based and sustainable fishing concept to meet optimum social and economic needs of present and future generations.

**7. RIGHTS TO MEN IN PREFERENCE TO WOMEN**

27. MCM mustn't even give rights to women while the man is the breadwinner in the house, because then the man is no longer the roof in the house.
28. According to my thoughts, I wouldn't give a fisher's job to women as HK has done. Now we fishermen suffer because of HK.
29. The fisherman in the house should get preference above the women for quota allocations because wherever you look it is just men that are taking their lobster out.

**QUESTION 2: Specific Processes & Criteria (OR: What would you do in HK's shoes?)****SCIENTISTS**

1. HK must give more attention to what the scientists tell him. People such as George Branch.
2. They shouldn't ask the scientists what goes on in the sea. They don't know anything.

**PROCESS**

- **Start afresh with new people and a new process**

3. I feel that if they can't do the job they should leave it to somebody else.
4. Discard the current process and start afresh with the new allocations
5. They should have totally new people there [MCM] to do the job.

- **Obtaining information and Verification of information**

6. Do a survey or get a marketing company like Markinor to do a survey.
7. Appoint an unbiased monitor from MCM to liaise with the fishermen and women to ascertain the needs.
8. Thorough networking with SARS, DTI, DL<sup>26</sup>.
9. Old [MCM] databases can act as guidelines [to provide information about involvement over the years].
10. The verification process is to be improved...

- **Involvement of MCM with the communities and of the communities in the allocation process**

11. HK should pay more attention to what the communities have to say.
12. They should have fishers there at MCM to help them with the new laws that are coming out.
13. Consult with the community leaders to help in the identification process.
14. In order to achieve their aims, MCM must come out to the community and listen to their needs.
15. Through networking ascertain [information regarding other jobs, income etc.].
16. Draft policy must be discussed with fishing communities before final decisions are made.
17. Get more fishers (and inspectors) involved in policy making...
18. The aims of MCM in allocating rights is to come out to the community and find out who the real fishermen are before allocating quotas to anyone in this community of Ocean View.
19. Come to the communities and look at what the problems are there.
20. MCM should first come and hold meetings with the communities
21. Fishers should have a say or an involvement in the decision making
22. Fishers should be able to have their say in who should get rights

- **Involve inspectors in identification of bona fide fishers**

23. Inspectors should be involved
24. Get more (fishers and) inspectors involved in policy making...
25. Inspectors from each community should be involved when rights are awarded.
26. MCM must identify the fishers
27. MCM should ask the inspectors to help in order to make the rights decisions
28. MCM should ask the inspectors to help identify the fishers.
29. And they should find four fishermen out of each fisher community to help MCM to identify the fishers
30. The fisherfolk should first be identified by the local fisher official
31. Get the fishing inspectors involved and let them identify fishers.

- **Feedback**

32. We've been sitting in meetings about HK for the last 2 ½ years but we hear nothing of the results. We would like to please hear of the results of this process.

- **Applications forms simplified**

<sup>26</sup> SARS=South African Revenue Services, DTI=Dept. of Trade and Industry, DL=Dept. of Labour.

33. MCM must make applications easy for fishermen to read and to understand
34. Most fisherfolk are uneducated. Make the applications simpler.
35. Make the criteria easier for fishers to understand.
36. Keep application forms fisher friendly ...
37. There should be simplified application forms.
- **Assistance for illiterate**
38. Room should be made for illiterate people to access information and gain entry into the industry.
- **Provide correct information about criteria and assistance in understanding them**
39. MCM has an obligation to assist people to understand the criteria.
- **Application fee**
40. [Keep] the application fee within the reach of fishermen/ women.
41. Make provision for the poorest of fishermen to apply. Provide the finances and maybe get them to repay it once their allocation has been caught. Something like a levy.
- **Corruption**
42. Corruption must be stopped.
43. Get rid of corruption at MCM.

**Particular comments on the nature of the rights**

44. MCM shouldn't apply 10 to 15 year rights, because they don't know what the seawater will bring in that time.
45. When allocations of quotas are made they should be monitored...
46. Criteria must be well researched...
47. The guiding principles for the allocation process should be looking at individuals.
48. The rights for line fishers should be on their names

**CRITERIA**

49. Check on how many applicants having fishing vessels when applying for a quota.
50. Eliminate proposed candidates with no history records and who assume the role of fishermen / women.
51. MCM should be able to identify:
  - Investment in the industry
  - Access to equipment and
  - Knowledge of the industry.
52. Access to vessel(s), resources, gear, tackle, etc.
53. Genuine transformation and equity.
54. Should ascertain (in order to be fair)
  - what other jobs a candidate holds and
  - what amount of investment he / she has and / or
  - what they earn, if anything, per month,.
55. Involvement over the years.
56. Suggested Criteria: Proof of
  - (i) historical involvement,
  - (ii) knowledge, skill and experience,
  - (iii) dependency.
57. [They should check]:
  - How the previous quota was handled...
  - Investment in the industry...
58. There should be verbal motivation of
  - (a) involvement and
  - (b) dependence
59. There should be physical demonstration of involvement etc.
60. People who lie on application forms should not get rights.

**ADDITIONAL POINTS REGARDING BUSINESS TRAINING and EDUCATION**

1. Educate the fishers as to how to manage their own business
2. MCM should have a support / development process in place that would address the needs of most fishers who perhaps are illiterate or who for the first time would manage their own affairs and the allocated resource.
3. Hold workshops in the communities to ensure applicants have a thorough idea what all is involved in acquiring a quota and managing the resource.

**Attendees (Ocean View 26/04/2004)**

Name	Phone Number	Rights (from attendee)	++	Previous rights held if any	Sectors involved with (previous or current)	Do you belong to a fisher organisation? Or Company
Matthews May	7833 955	LHT Line fishing	**	Subsistence	Handline fishing	Africa's Best 249 Ltd
Charles America	082 2680449	Linefish exemption (2005)	**	Subsistence (1998-2000)	WCRL, linefish	Africa's Best 249 Ltd
Stanley Williams	7835 728	None	**	None	None	Africa's Best 249 Ltd
Peter Melvin May	7832 117	Subsistence	**	None	None	Africa's Best 249 Ltd
Kevin Daniels	7833 955	XLT Linefish		Subsistence WCRL	XLT, linefish	Artisanal Linefishing Association
Donovan Williams	7835 728	XLT Linefish		None	None	None
Johannes Edwards	7832 872	XLT Linefish	**	None	None	Africa's Best 249 Ltd
Devina Christians	7835 728	None		Subsistence	WCRL	None
Gershom Hayward	7833 955	None		None	Handline fishing	None
Phillip Sanders	7832 607	None	oo	None	Handline fishing	None
Mark Daniels	7833 955	None	**	None	?	Africa's Best 249 Ltd
Achmat Davis		None	**	None	None	Africa's Best 249 Ltd
Japie Britz		WCRL, Linefish exemption {snoek, hotnot}	** , oo	Handline fishing		Africa's Best 249 Ltd
Heinrich Stoffels	7834 178	None	**	Subsistence WCRL	WCRL, linefish	Africa's Best 249 Ltd
Alexander Louw	7832 045	None	** , oo	Subsistence WCRL	WCRL, linefish	Africa's Best 249 Ltd
Sharon van Sittert	7830 284	None		None	WCRL, abalone, linefish	3 J Fishing Enterprise
Charmaine Daniels	7833 955	None	** , oo	Subsistence WCRL	Linefish, WCRL	Africa's Best 249 Ltd
<b>TEAM</b>						
Alison Joubert						UCT
Theo Stewart						UCT
Leanne Scott						UCT

+ + Rights information from MCM spreadsheets where these disagrees with attendee:

\*\* Attendee has a west coast rock lobster right as a member of "Africa's Best 249 Ltd. This company got a 2 T right in 2001 as a full commercial applicant. This is to be split between 60 members. This may be why PMM refers to a "subsistence" quota.

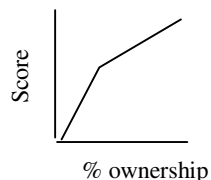
oo Attendee has a linefish exemption ("XLT linefish")

## APPENDIX 4: MARINE and COASTAL MANAGEMENT (MCM)

### Notes - from Stage 3: Scoring systems and value functions (MCM 27/05/2004)

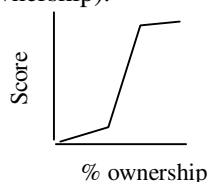
*Access to / ownership of vessel:* Definitions: Bareboat - a boat is hired without crew, Charter - a boat is hired with crew in place. So the order of {100% owned → lower percentage ownership → 100 percentage purchase agreement → lower percentage purchase agreement → bareboat → charter} is in order of increasing exposure to risk and / or increasing involvement, so this is the correct order.

**Sven:** for simplicity prefer linear value tree. Otherwise:



Or % purchase agreement (linear to percentage as for % ownership).

**Craig and Steve** preferred a sigmoid relationship:



### Scores (graphical format and comparison with actual scores in main body of report):

VESSEL ACCESS / OWNERSHIP		HISTORICAL INVOLVEMENT		HDP	
75% - 100% Vessel Owner	100	Experimental Permit	100	HDP Female	100
40% - 74% Vessel Owner	95	Experimental Crew	80	HDP Male	90
25% - 39% Vessel Owner	80	Commercial Crew	60	Non-HDP Female	80
1 - 24% Vessel Owner	75	Subsistence Permit	40	Non-HDP Male	0
50% - 100% Purchase Agreement	50	Processing / Marketing	20		
1 - 49% Purchase Agreement	35	Recreational Permit	10		
Bareboat Charter Agreement	25	No permit / Not crew	0		
Charter / Catching Agreement	0				

### Weights (graphical format and comparison with actual scores in main body of report):

	Vessel access / ownership	Historical involvement	HDP status
Rank order	3	1	2
% weight	60	100	90
Weight normalised to sum to 1	0.2	0.4	0.4

**Post-it session responses - third MCM meeting (27/05/2004)**

“In order to satisfy this goal (a) what factors need to be considered when choosing rights-holders? and (b) How should the extent of goal achievement be measured?”. Specify where necessary if referring to full or limited commercial and new applicants or previous rights-holders. The question applied to **west coast rock lobster**.

- Note that **all** post-its are recorded (therefore there is repetition) in the participants words. They are organised into different sections and where two ideas were joined these are separated and may appear in two separate sections.
- Note that the expansions in square brackets [text text] were added by the team after the workshop.

**1. Goal 1: ECONOMIC: To achieve optimum utilisation and economic growth**

**1.1 Past / potential financial performance and viability**

<b><u>Past financial performance</u></b> ( <i>all sectors</i> )	! Past performance
	! Past performance ( <i>previous limited and full commercial</i> )
<b><u>Potential financial performance</u></b> ( <i>new entrants</i> )	
<i>Both potential and past performance could be measured with:</i>	
<u>.Financial measures:</u>	! Cost incurred per item
	! Revenue obtained
	! Financial viability of applicant
	! Access to funds / cash flow
	! Future - business plan and its credibility, particularly financial capacity
	! Proximity to resource ( <i>mostly limited sector</i> )
	! Viability of allocated amount
	! Marketing
	! Distance to resource [distance is a proxy for one of the cost items - transport]
[ <i>Interpretation: These measures all relate to the financial viability of the applicant which could be indicated by cash flow, calibre of business plan etc.</i> ]	
<u>.Paper quota risk:</u>	! Agreements (processing, marketing, catching).
[ <i>Interpretation: Analysing agreements and shareholding can tell about PQR. PQR affects local economies because local economic benefits of a quota held within a zone not felt if its sold off to big company (which might be outside the zone). A quota sold off only benefits the paper quota holder not the broader community.</i> ]	
<u>.?????????</u>	! Shareholding
	! CC / PTY / Individual
[ <i>Interpretation: It is not clear what is intended by these post-its. Is shareholding “good” or “bad” in terms of economic development? Are CCs better than individuals? Why? Are these other ways of determining PQR? Or of determining financial viability?</i> ]	
<u>.Value adding</u>	! how catch is processed.
[ <i>Interpretation: value adding contributes to multiplier effects in terms of economic development. It could also be seen as indicating “commitment” through investment.</i> ]	
Past <b><u>Compliance</u></b> record ( <i>all sectors</i> ) [ <i>Interpretation: compliance with Employment Equity Act, Customs and Excise, Tax Laws and MLRA. All of these have implications for financial sustainability</i> ]	
Level of <b><u>Investment</u></b> / <u>Commitment</u>	
.Investments per item [ <i>Interpretation: this could be seen as part of the cash flow of the business, but is intended as measures of “commitment” to the industry.</i> ]	
.Employment created [ <i>Interpretation: this can also be seen as a measure of “commitment”.</i> ]	

**1.2 Technical requirements → Ability to harvest**

! Physical ability to catch allocation	! Vessel utilisation (which vessels they'll be using)
! Fishing plan	! Vessel capacity: appropriate vessel ( <i>all sectors</i> )
! Vessel size	! Number of crew

**1.3 General questions arising from this post-it session**

! Economies of scale?	! Unbundling versus monopoly?
-----------------------	-------------------------------

**2. Goal 2: SOCIAL: To achieve human resource development, capacity building and employment and to restructure the fishing industry to address historical imbalances.**

**2.1 Employment performance record**

<u>Employment</u>	
! Number to be employed	! Employment created in relation to local needs
! Duration of employment	! Labour composition
! Salary and how much profits paid to who, where	! Employment by category / skills level, by colour and gender
<u>Skills / upliftment</u>	
! Skills transfer	
! Business plan - upliftment of crew [Could be referring to skills or empowerment plans]	

**2.2 Transformation and empowerment**

! Empowerment agreements and joint ventures (real and apparent)	! Empowerment plan
! Transformation status	! Transformation percentage, equity.
! Ownership structure: who owns what	! Shareholding ( <i>all sectors</i> )
! Shareholding composition	

**2.3 Community development and ownership of resource**

! Distance to the resource	! Geographic community
----------------------------	------------------------

**2.4 Dependence on resource and historical involvement**

Historical involvement in fishing
Reliance on resource / fishery e.g. proportion of income ( <i>limited commercial</i> )
Alternatives to this fishery: involvement in other fisheries or other occupations

**3. Goal 3: ECOLOGICAL: To achieve ecologically sustainable development and protect the ecosystem including non-exploited species**

**3.1 Vessel and gear type appropriateness and effect on environment** [Note: Traps are more damaging than hoopnets, but generally FC use traps and LC hoopnets. Gear may influence decision on TAC split into FC /LC, but can't be used in comparison of applicants. May be more relevant in other fisheries.]

! Vessel type / gear : Gear impact.	! Gear type to be used and Vessel size
! Gear type and is it appropriate ( <i>all sectors</i> ).	! Catching method and Gear
! Vessel size	! Impact of gear on environment

**3.2 Access to fishing grounds**

Access to fishing grounds [ <i>Interpretation</i> : Unclear: If live closer more likely to have sense of ownership and look after resource better?]
---

**3.3 Catch to discard ratios**

Potential catch vs. discard ratios
------------------------------------

**3.4 Responsible fishing record**

! "Responsible fishing": History ( <i>previous rights</i> ), business plan ( <i>new rights</i> )	
! Compliance history : regulations and permit conditions. [includes over- and under-catch?]	! Previous compliance record ( <i>limited and full commercial</i> )
! Track-record in terms of submission of catch returns.	! Previous convictions
! Compliance - previous transgressions	! The capacity of compliance



**Ecological and economic information required arising from all three post-it sessions-** [i.e. these points refer to studies required not to the comparison of applicants. For helping to decide on TACs, zonal TACs, different approaches in different zones]

<u>Spatial and temporal changes</u> [Important for resource allocation; may change over time]	
! Annual fluctuations on global and zonal basis	! Zonal considerations
! TAC for area	! Relevant MPAs
! Difference in resource productivity over distribution range (i.e. differences in TAC on zonal basis).	
! Resource distributions (a) deep vs. shallow, (b) distribution along coast)	

Disparity in resource distribution and distribution of poor communities
Obtain a geographical to local economic profile and look at needs for specific areas - may want to allocate differently depending on needs (west coast especially). All sectors.
TAC / TAE sets limits to number of rights-holders (area based). Global TAC set, but may need flexibility between areas and full commercial and limited commercial.

All sectors: economic value vs. ecological costs
--

**Attendees - third MCM meeting (27/05/2004)**

<i>Attendees</i>			<i>Team</i>
Steve Lamberth	MCM		
Sven Munkejord	MCM		Alison Joubert
Rob Tarr	MCM: Inshore		Leanne Scott
Craig Smith	MCM: Inshore		Theo Stewart
Chris Wilke	MCM: Inshore		
Shamera Daniels	Deloitte		
Shaheen Moolla	MCM		
Danie van Zyl	MCM		
Andy Cockcroft	MCM		
Horst Kleinschmidt	MCM		

## APPENDIX 5: Local Knowledge

### Local knowledge questionnaire

#### Local Knowledge Survey

University of Cape Town, University of Western Cape, Free University of Amsterdam

Thank you for agreeing to do this interview. The University of Cape Town, the University of the Western Cape, and a Dutch university are collaborating on a fisheries project. One part of this is to interview fishers in order to gather local knowledge about fish, fisheries and resource management. We want to try to collate this knowledge and to see in what way this knowledge can be used to augment scientific research and knowledge.

We would like to acknowledge you as a source of information in our reports. But if you would like to remain anonymous please let us know. You may decide later if you wish to remain anonymous or not.

In this questionnaire we specifically want to find out about the **west coast rock lobster**, but please include information about other marine resources if you feel it is relevant.

Interviewer: \_\_\_\_\_ Interviewee: \_\_\_\_\_ Place: \_\_\_\_\_ Date: \_\_\_\_\_  
 Current rights held \_\_\_\_\_ Previous \_\_\_\_\_ Years in fishing in general \_\_\_\_\_

### *The first three sections deal with the ecology of the lobster.*

#### Q 1: Spatial distribution

- 1(i) Where - in what locations - do you find / catch lobster? \_\_\_\_\_ (Indicate on map)
- 1(ii) Where - in which habitats - do you find / catch lobster \_\_\_\_\_  
 (If necessary, prompt with e.g.  
 what kind of rock, reefs or extensions of land formations, \_\_\_\_\_ depth of water,  
 distance from land or from high water mark, \_\_\_\_\_ predominant wave direction,  
 amount / degree of wave action, \_\_\_\_\_ other species present / absent  
 aspect (facing what direction), \_\_\_\_\_ .....
- 1(iii) Can you find lobsters in all locations with this kind of habitat? \_\_\_\_\_ if necessary, PROMPT with map  
 If no, can you suggest a reason why not? \_\_\_\_\_
- 1(iv) Do you find lobsters in different places at different times of the year? \_\_\_\_\_
- 1(v) Are young and adult individuals found in the same area or habitat? \_\_\_\_\_  
 If no, how do habitats differ? \_\_\_\_\_  
 (if necessary, PROMPT: \_\_\_\_\_ e.g. closer to shore, deeper, difference in wave energy)
- 1(vi) Do you think that lobsters are found in different locations than they used to be? \_\_\_\_\_  
 If yes: Why do you think that is? \_\_\_\_\_  
 Only if nec. PROMPT: E.g. climate variability (more storms in some years, colder winters), fishing pressure..
- 1(vii) Do you think there are fewer / more lobsters in some locations than there used to be? \_\_\_\_\_  
 If yes: Why do you think that is? \_\_\_\_\_
- 1(viii) **If the eastward migration is not mentioned then PROMPT:**  
 Do you think there has been an eastward migration of lobster? \_\_\_\_\_  
 Why do you think this has happened? \_\_\_\_\_  
 Only if nec. PROMPT: E.g. climate variability (more storms in some years, colder winters), fishing pressure..
- 1(ix) **If not mentioned above, then:** The quotas have been implemented to prevent overfishing. Do you think fishing pressure has caused a change as to where lobsters can be found? \_\_\_\_\_

## Q 2: Recruitment

Recruitment is a fancy term for when the young of a species joins the adult population, and so can breed but can also be caught. For commercial catches of rock lobster the size limit is 75 mm.

2(i) What proportion (percentage / fraction) of your catch is large enough to keep and what proportion is too small? \_\_\_\_\_

2(ii) Is the number / proportion of catchable size lobster the same each year? \_\_\_\_\_

If not, is there a pattern in how the number of adults change? \_\_\_\_\_

*If necessary, PROMPT: e.g. fewer / more after particular kinds of weather conditions, few/more after a good/bad previous year's catch, etc.)*

2(iii) Has the number / proportion of catchable size showed a trend (getting more and more, getting less and less) over recent years? \_\_\_\_\_

If yes, can you suggest a reason for this trend? \_\_\_\_\_

2(iv) Can you estimate the proportions (or number of individuals) of your catch in the following sizes (in the last season):

75-90 mm \_\_\_\_\_

90-120 mm \_\_\_\_\_

>150mm \_\_\_\_\_

2(v) How long would you say it takes for a very small lobster (say 50mm) to grow big enough to catch?

2(vi) Does this time (to grow to adulthood from 50 mm) vary under different conditions? \_\_\_\_\_

*If necessary, PROMPT: e.g. is growth faster or slower after a cold winter? or after a stormy season? or after a summer that is hotter than usual?)*

## Q 3: Species interactions

3(i) Do lobster affect the presence (whether they are there or not), abundance (how many they are) and growth (how quickly / slowly they grow) of other species? Which? \_\_\_\_\_

In what ways \_\_\_\_\_

3(ii) What other species affect the presence (whether they are there or not), abundance (how many they are) and growth (how quickly / slowly they grow) of lobster? \_\_\_\_\_

In what ways \_\_\_\_\_

### *The next two sections deal with management*

## Q4. Ecosystem-based management

4(i) Are there marine reserves nearby which could have a good-sized lobster population? \_\_\_\_\_

If yes, please indicate where they are in relation to your fishing grounds (indicate on map).

*One possible way of protecting lobsters is to set up sanctuaries, areas where they cannot be fished. The population in the sanctuary would act as a source of breeders to support a larger population over a larger area and outside the sanctuary.*

- 4(ii) Do you think that lobsters in local marine reserves could be supporting your fishery? \_\_\_\_\_
- 4(iii) Can you suggest better or additional areas which could act as sanctuaries? \_\_\_\_\_  
What is the reason for your choice? \_\_\_\_\_
- 4(iv) Are there areas where lobsters might be found but fishermen don't fish there (i.e. excluding reserves)? \_\_\_\_\_  
Why don't fishermen go there? \_\_\_\_\_
- 4(v) Are there areas where locals can't or don't go but more commercial operators can? \_\_\_\_\_
- 4(vi) What kind of gear do you use to catch lobsters? \_\_\_\_\_  
Is your gear ever damaged as a result of fishing? e.g. does it get snagged on rocks? \_\_\_\_\_
- 4(vii) How much time do you spend repairing gear? \_\_\_\_\_
- 4(viii) Is it possible that the habitat suffers damage because of your gear, or when your gear is damaged? \_\_\_\_\_
- 4(ix) Do you ever catch other species in your lobster gear? \_\_\_\_\_  
Which species? \_\_\_\_\_  
What do you do with them? \_\_\_\_\_

### Q 5. Quotas, rights and regulations

- 5(i) Under the quota regulations, how many (number/kilograms) lobsters can you take in a season? \_\_\_\_\_ (kg/#)  
Could you catch more? \_\_\_\_\_  
How much? \_\_\_\_\_
- 5(ii) Could all of the fishermen operating in this area catch this much more? \_\_\_\_\_  
Why or Why not? \_\_\_\_\_
- 5(iii) Do you think that you could catch this much more as well as the other fishers in the area, this year, next year and so on, and still be able to catch the same number in 10 years time? \_\_\_\_\_
- 5(iv) What do you think is the aim of the quota system? \_\_\_\_\_  
Do you think the quota system achieves this goal(s)? \_\_\_\_\_  
If not, why? \_\_\_\_\_
- 5(v) Why do you think some fish species (including lobster) have become very scarce all over the world? \_\_\_\_\_
- 5(vi) Do you think that the prescribed lobster season is appropriate? \_\_\_\_\_  
Why or why not? \_\_\_\_\_  
If not, when would be better? \_\_\_\_\_

**Do you wish to remain anonymous or would you agree to have your name acknowledged as a source of information?** \_\_\_\_\_

**Local knowledge respondents: Questionnaire 1: Hawston/Hermanus**

(Respondents in alphabetical order): Jerome Figaji, Tyron Fisher, Jakobus Gillion, Solomon Gillion, Hilton Marais, Mervin Mathee, Adam Meyer, Hans Montague, Ernest Raaff, Roger Swart, Stephan Francois Smuts. **Responses are not in alphabetical order in order to preserve anonymity**

**Local knowledge responses**

(Note: responses are not in the same order as the respondents above).

**Q 1: Spatial distribution****1(i) Where - in what locations - do you find / catch lobster?**

1. Between Hermanus and Hangklip
2. East of Cape Hangklip to Cape Point
3. West of Hangklip and Danger pt to Quoion pt.
4. Hangklip, Kaap pt, Kleinmond. Hawston, Hermanus, Danger pt.
5. Hermanus, Walker Bay. Hawston to Hermanus in excellent condition. Have heard from others that Gansbaai also good, Danger pt, up to the point.
6. Mudge pt to Hermanus. If make zone bigger can make TAC bigger, get more people.
7. Hangklip to Hermanus
8. Danger pt to Cape pt
9. Cape Pt - Buffelsjag
10. East and west of Cape Hangklip
11. nn

**1(ii) Where - in which habitats - do you find / catch lobster**

1. Long and short kelp
2. 25-30 metres
3. On rocks / banks not too deep (50-60 metre). Could maybe find them deeper, but not generally deeper than 60m. Not all locations. Black mussel is the main food. Look at water temperature, that is an indication for WCRL.
4. Reefs, flat/level places in the sea. Lots of waves. Among kelp. Eat kelp. Among sea urchins - eat sea urchin.
5. Eats bait. Because of commercial boats there is always bait and dead fish in the water, so there are different reasons for them being there. On the reefs, not sand. If you throw your net and come back 20 mins later and you've got white crab you know you are on the sand not rocks and you must move. Creep into holes and caves in rocks. Hide away there when there's danger.
6. On reefs where food is, eats kelp and urchins. Mostly at this time of year is about 20-30 m. Resource is healthy: Many lobster
7. reefs with many other species present
8. Reefs
9. Rocky areas, reefs
10. About 20 m
11. Lots of kelp and a rocky bottom

**1(iii) Can you find lobsters in all locations with this kind of habitat?**

1. N/a
2. n/a
3. n/a
4. Wherever there is kelp and sea urchin.
5. n/a
- 6.
7. Yes and No. You can find lobster in sandy areas too
8. yes
9. yes.
10. No. Temperature of water plays and important role
11. Most.

**1(iv) Do you find lobsters in different places at different times of the year?**

1. Same.
2. Same. [*BUT, from Q1vii*]: From Dec to 15 Feb WCRL still in deep water. Must still come in. [*From comments*]: Could catch more, especially from May to June because there are still plenty [*AND*] In May there weren't many females, mostly male.
3. Yes
4. Summer (Oct - Dec) are further out - when they are moulting. When waters warm again they come in to breed and eat well. More in some locations. Depends on kelp and sea urchin. E.g At Danger pt one month ago got 100 kg in a day, cple days ago only 20kg. Difference is e.g. colour of water, if its cold they don't climb in the net, if the west wind blows then the climb in well, if the south-easter blows then they don't climb in.
5. Same
6. From August lobster move to shallower water, move out from about Feb month when finished breeding.
7. Yes.
8. Yes. [*ADDED from Q1vii*]: Lobsters go more to the bottom after bad storms. [*ADDED from Q1ix*]: Between Dec and Feb there are less lobster. From March on there are a huge amount.
9. No. Found all over.
10. Yes.
11. No

**1(v) Are young and adult individuals found in the same area or habitat?**

1. Same
2. Same
3. Changes, sometimes yes, sometimes no. Young larva drift in Benguela as far as S America (Danie van Zyl)
4. Young are closer inshore than old lobster although no real difference in habitat.
5. Same. Young always sit around a big lobster (like hen with chickens).
6. Adults are more in the shallow water, younger are more in deep water
7. Yes and No. Sometimes smaller lobster are closer to coast. Depends on water temperature. Water temperature plays a definite role.
8. yes. Very dependent on the weather
9. Yes.
10. Yes.
11. Yes

**1(vi) Do you think that lobsters are found in different locations than they used to be?**

1. Different. Moved from places with deep water
2. Soepiesklip (near Grotto Beach). Fishers catching lots of geelbek, WCRL coming onto lines. This shows there is plenty.
3. Yes. Everything changes in nature. Currents (seestrome) change which changes the water temperature.
4. More in some locations. (rest of answer belongs in another section)
5. Complicated. Earlier there wasn't commercial in this area. Last 10 years has been exploited around Hangklip to Gansbaai. Hout Bay, Cape Point Robben Island (al 'n xx)
6. Yes east of Mudge pt. Got lots of lobster. In 1999-2001 with experimental quota, in one day got 970 kg (WHERE?) from 09h00 to 12h30. In Skulphoek area, did experiment in May. Now there aren't so many in that area. Maybe its too early in the year?
7. Yes. They move after food. Food is the primary reason.
8. yes. Lobsters migrate. Depends on change in temperature of currents - global warming.
9. Yes. Food resources
10. Yes. ONGESTEURDE SEELEWE (*ARJ roughly translates: "unbothered sealife"?*) Also move after food.
11. yes. The urchins they eat are less in certain areas and they eat periwinkles.

**1(vii) Do you think there are fewer / more lobsters in some locations than there used to be?**

1. More in some areas. Depends on food like sea urchin
2. Less. Because of strong winds. From Dec to 15 Feb WCRL still in deep water. Must still come in.
3. More and less. Water temperature, currents have changed and more kelp in some areas. Black mussels more in some areas and less in some areas where it was before
4. answered in other sections

5. A bit less everywhere because of exploitation, but stock not in danger yet. Important to control the catch. Important not to think can just take for ever as much as want and also to have a season and a rest period. The legal size also plays a role, mustn't be too small. Must think ahead. Those thrown back are future plan. People used to catch indiscriminately, now regulations have taught us not to.
6. nn
7. Yes - more. Besides food reason, strong regulations restrict overexploitations
8. More in some areas. More food in some areas (perlemoen and urchins). Lobsters go more to the bottom after bad storms.
9. Yes. More lobster in some areas than before
10. More. As a result of better law enforcement.
11. yes. They move with their food

**1(viii) Do you think there has been an eastward migration of lobster?**

1. Yes. Breeding season plays a role. Exoskeleton comes off.
2. yes. Because of red tides and change in sea currents (see strome).
3. Yes. Red tide can have a big influence, not enough oxygen. Just speculation. WCRL was maybe overprotected as a result of the large amount that walked out (Elandsbaai).
4. yes. They moved after their food (kelp and sea urchin)
5. no. Population was here, just grew didn't migrate. Before people didn't care about lobster (just fish) and resource was healthy. Lobster just sometimes for the pot, not commercial. Population grew because of not being exploited. Now many new young fishers have joined the ranks. At first were taken up by linefish industry, now the new ones are more interested in lobster - better finances.
6. Yes, to Buffelsjag, people have got lobster now and every year there are more there. Move after food. Scientists think they eat small perlemoen. Could be. Because Buffelsjag is good for perlemoen. Every year going east, Gansbaai getting better every year.
7. Yes. Lobster move after sea urchins
8. Yes. Currents play a role. Go after food.
9. Yes. Move after sea urchins
10. Yes. Continuous disturbance and exploitation
11. Not sure.

**1(ix) If not mentioned above, then: The quotas have been implemented to prevent overfishing. Do you think fishing pressure has caused a change as to where lobsters can be found?**

1. Not overfished. Thousands of eggs carried by female. WCRL breeds quickly. Won't become too few.
2. Many WCRL before. Poaching took place. WCRL are [beheaded] at sea. Female, male, eggbearing females. Just in some areas are less because of poaching (Mudge pt to Harder Bay)
3. Not as far as WCRL goes. Perlemoen and fish in general (not linefishers) are cause of decrease in species.
4. Too many WCRL. In Elandsbaai thousands washed/walked out, worried that will happen here because there are so many. 500 kg is too little for this area
5. No. Lobster can get out of the way quickly (to avoid trawl nets and other danger etc.) If a school of lobster is out grazing, they can get out of the way of trawl nets, best hiding in rocks and kelp where nets don't get to. Also big water shelters them (wind and waves), because fishers must wait for calm water.
6. Not to be seen over the few years we've been fishing.
7. No.
8. No. Lobster have different times during which movement occurs. Between Dec and Feb there are less lobster. From March on there are a huge amount.
9. Yes. Fewer big lobsters in some places than before
10. Yes. Lobster had tails removed, just tails used, rest thrown in the water.
11. No.

---

## **Q 2: Recruitment**

**2(i) What proportion (percentage / fraction) of your catch is large enough to keep and what proportion is too small?**

1. Recreational
2. For export catch 75-80 mm. Big aren't good for export.



3. 50:50 to 60:40 (under:size)
4. 80:20 (under:size)
5. about 60:40 (under:size) (majority go back). Every female XX.
6. Feb: 70:30, March 40:60 (under:size). At the moment, of the undersize ones, about 70% are female.
7. 40:60
8. From 30 to 70 are less than 75mm
9. 70:30
10. 80:20
11. 90 (? Too big or too small??)

**2(ii) Is the number / proportion of catchable size lobster the same each year?**

1. same, but weather plays a role.
2. If the wind is too strong, then catch is bad. 16-20 metres depth (?WAVES), 20 knots.
3. Changes with time of year. With experimental the numbers of size was better. Can't say if its changed. That was end of May.
4. Undersize getting more and more each year. Size also getting more but not as much. When temperature is higher, get more size, if temperature lower get small ones.
5. Depends on the area; there are more small ones here than on west coast.
6. Maybe the small ones move more inshore? (Have to by law work a certain distance off-shore, whereas recreationals can work close in)
7. No. More after particular weather conditions
8. Changes. There is a pattern. Changes after certain weather conditions.
9. Changes. Adult lobsters getting fewer.
10. No. Lobster get less in some areas if there is too much exploitation
11. no. Less adults.

**2(iii) Has the number / proportion of catchable size showed a trend (getting more and more, getting less and less) over recent years?**

1. More. Because haven't caught more than should
2. More. But must be caught at the right time.
3. More. Don't know
4. More undersize. Answered in previous
5. About the same. Size lobsters are exploited, undersize stay in the water. And hope that next season the ones you threw back will be size. Difficult to say
6. MCM has statistics for those three years.
7. More. More food, less exploitation.
8. More small lobsters than big ones. Grow slowly, breeding season is not disturbed, because recreational season is only seasonal.
9. Yes - adults getting less. Overexploitation by poachers and commercials
10. More and more. Lobster migrating to Hawston and Hermanus area.
11. Less and less.

**2(iv) Can you estimate the proportions (or number of individuals) of your catch in the following sizes (in the last season): 75-90mm, 90-120 mm, >150mm**

1. nn
2. nn
3. Majority in 75-90m mm class
4. 60:30:10
5. mostly 75-90 (more in open sea, not on reefs), 90-120 (recreational can go for these - divers can go among kelp, not common for commercials to go there), >120 (get in some areas, especially restricted areas, specially in kelp)
6. mostly here are 75. Plenty of them, no change. About 60:30:10 (>120 are mostly close inshore in kelp)
7. nn
8. nn
9. nn

10. nn
11. 40:40:20

**2(v) How long would you say it takes for a very small lobster (say 50mm) to grow big enough to catch?**

1. 2 years
2. 3 years
3. Male - about 5 years, female about 6 years.
4. about 6 months.
5. ?
6. nn
7. Don't know
8. Not sure.
9. Don't know
10. Not sure.
11. Not sure.

**2(vi) Does this time (to grow to adulthood from 50 mm) vary under different conditions?**

1. Think weather plays a role, grow faster after stormy weather
2. Same rate.
3. Don't know. Growth time determined by amount of food and water temperature plays a role.
4. Yes: In winter they grow faster because they are eating more.
5. Can't tell unless put in aquarium.
6. Growth follows food, as lobster moults then he doesn't eat so much until the shell is hard again.
7. Come more (NA VORE) after stormy weather
8. Not sure.
9. Unsure
10. Not sure. Don't have scientific knowledge.
11. nn

### **Q 3: Species interactions**

**3(i) Do lobster affect the presence (whether they are there or not), abundance (how many they are) and growth (how quickly / slowly they grow) of other species? Which? In what ways**

1. No
2. WCRL affect perlemoen (small ones). If there is not enough food, then WCRL eats perlemoen.
3. Yes. Sea urchins. WCRL eat urchin. Young perlemoen need urchin for growth, and WCRL eat urchins.
4. No
5. Some say big lobster can eat small perlemoen. I can't say if this is so. But if lobster in a position to take perlemoen off the rock then he WILL eat it, but then it must be a big lobster. So I don't think it's a danger to perlemoen, because there are not so many lobster which are big enough to do anything to a perlemoen.
6. Lobster eat sea urchin and the small perlemoen hide in the sea urchins and if sea urchins gone then eat perlemoen because don't have place to hide away.
7. Perlemoen, crabs, sea urchins. Small perlemoen hide away under sea urchins.
8. Yes. Eats perlemoen and urchins.
9. Yes - completely wipes out sea urchins. Perlemoen.
10. Yes. Small perlemoen and sea urchin are lobster food.
11. yes. There are no sea urchins, so the small abalone are left vulnerable and are eaten by lobster

**3(ii) What other species affect the presence (whether they are there or not), abundance (how many they are) and growth (how quickly / slowly they grow) of lobster? In what ways**

1. Sea urchins. Main food of WCRL
2. When WCRL are carrying eggs then they are attacked by fish. If there is too little food in the water then go for the females.
3. Mussels influence growth of WCRL as they are the basic foodstuff of WCRL.
4. No

5. Octopus eat lots of lobster.
6. We catch linefish too. Used to be lots on kelp 50-60 m water, rocks, bank fish feed there. Bankfish: hottentot, roovivis, silwervis aren't on banks anymore, have moved. I think lobster eat all the food off the banks and so the fish have moved on.
7. Bank sharks, bigger fish eat lobster
8. Yes. Bank sharks, octopus and Hawston inhabitants.
9. Octopus, bank sharks eat lobster.
10. Sharks, octopus. Lobster has its predators in the water, besides the poachers.
11. Shellfish (mussels, abalone). Lobsters food source.

#### **Q4. Ecosystem-based management**

##### **4(i) Are there marine reserves nearby which could have a good-sized lobster population?**

1. Hermanus area not many. BB more.
2. Zone F from Mudge Pt to Hermanus. Very big population of WCRL. With experimental quotas just caught at one place. Three years (2000-2002). Ten men each had 1 T and got it in 2 days.
3. Yes. Betty's Bay, Cape Point, Harder Bay, and from Rietfontein to KraalRock.
4. Betty's Bay (lots) and Groenberg at Cape Point (lots)
5. Hangklip is a healthy lobster area, right in front of lighthouse, get lobster deep and flat / shallow? Betty's Bay is more for perlemoen, big sand areas where don't get lobster, but round lighthouse the reef goes into the water and whole area is under lobster. In rocky areas are schools of lobster.
6. Cape Hangklip. Between RooiEls and Cape Hangklip - commercials get their lobster there (3T etc.) so there must be lots there. BB reserve - must be lots of lobster there, also just in front of Hangklip hotel
7. Yes. Hermanus/Vermont and Kleinmond / Onrus.
8. Yes. Mudge Point, Hermanus, Betty's Bay, Harder Bay
9. Cape point lots - only small lobster.
10. Betty's Bay, Dyer Island and Hermanus (area between old and new harbour)
11. nn

##### **4(ii) Do you think that lobsters in local marine reserves could be supporting your fishery?**

1. Yes. WCRL move and don't stay in one place.
2. No. (it is not necessary to use reserves for catching WCRL).
3. Yes.
4. Yes: As time goes by they move out and into our areas.
5. Not really. Small lobsters are the eggbearers rather than the big lobster.
6. Yes. But also lobsters move.
7. Yes. They swim round
8. Yes.
9. yes.
10. yes.
11. nn

##### **4(iii) Can you suggest better or additional areas which could act as sanctuaries?**

1. No. Good enough.
2. Perlemoen and WCRL [word gemaak). Poaching is still taking place.
3. As far as WCRL go no, Banks where fish are caught there are plenty of WCRL, and the water is too deep to drop the nets there.
4. No - those two are enough.
5. BB not really lobster area. Lobster doesn't need as much protection as perlemoen, because they can move more quickly. They can move overnight to another area, so don't really need areas to protect them. BB wasn't established for ecological reasons, it was a NP sanctuary. OK, but need to also look at the resources that there are. e.g Elephant was protected, then there were too many and had to cull. So shouldn't protect too much, must be protected and used. People must not go hungry.
6. There is a place (in Walker Bay somewhere?) where recreationals can go but not commercials (also because of whales - has been declared a sanctuary?)
7. No. protected areas.

8. No. They're the best.
9. No, just the reserves. Not all areas are reserves
10. No. They are established in good weather conditions, there is enough to live from.
11. nn

**4(iv) Are there areas where lobsters might be found but fishermen don't fish there (i.e. excluding reserves)?**

1. Between Kleinmond and Hawston. No rocks and bamboo. (SO WCRL NOT THERE??)
2. People don't take WCRL at Soepiesklip, but do fish. Haven't noticed the WCRL. Need decision from MCM.
3. Yes. Area between KraalRock and Gansbaai. Banks 40-45 m, plenty of WCRL.
4. No.
5. Yes inshore on the vlak kant van die see. Nets get stuck. Lobster sit in the kelp and redbait heads, nets get stuck there. Especially the big ones sit there. So they are protected because don't want to put nets there. Only divers will get them, but even they can't go everywhere because of currents.
6. Yes, many lobster right out here in 60-70 m but too deep for ringnets.
7. yes. Between Hermanus and Stanford. Far too many reefs and rocks.
8. Beyers Island, Mudge Point to Kleinmond. MCM declares the areas.
9. Harder Bay. Not opened up for fishing.
10. Yes. Zones are closed, so its against MCM's regulations.
11. Strong currents and reefs make them inaccessible

**4(v) Are there areas where locals can't or don't go but more commercial operators can?**

1. Can go everywhere
2. Stanford included in Gansbaai and Hawston can be included with Eof Hangklip. More quotas for Hawston fishers [I.e. why the few Kleinmond fishers got bigger quotas - why not give to Hawstonners). Responsible fishers in the community who don't have criminal records are getting into poaching of WCRL and perlemoen. Can be included in Kleinmond area.
3. Public can use area from KraalRock to Gansbaai but don't, don't know why. Commercials aren't allowed to catch there as its outside the specified zone.
4. Yes. Hout Bay, very deep water.
5. Yes, diesel boats can go to deep areas. E.g. Hout Bay and e.g. a underwater mountain sticking up somewhere before cape point
6. Yes Hangklip area 11 + 8 commercial. In hangklip area 8 where most commercials work and semi-commercials can go but don't because don't have kreefvyk (LOBSTER TRAP). People with ringnets mostly use area 11 hangklip because shallower water.
7. Yes. Between Hawston and Gansbaai.
8. nn
9. Yes. Could fish in areas like Robben Island and Dyer Island where commercial fishers go. Whole year is open for commercials.
10. Yes. Areas where its too rocky to fish.
11. not sure.

**4(vi) What kind of gear do you use to catch lobsters?**

1. Ringnets
2. Ringnets
3. Ringnets
4. Ringnets.
5. Ringnets.
6. Ringnets
7. Ringnets
8. Ringnets
9. Diving gear
10. Ringnets
11. Diving gear

**4(vii) How much time do you spend repairing gear?**

1. yes. 1-2 hours/day
2. Yes. 12 Ringnets. (Takes 1/4 hour to drop the nets with bait etc.)
3. Yes. 1/3 hour per net
4. Yes. A few hours per week, fix and put new ropes on.
5. Yes. Monday got 100kg, lost 3 nets (=R300), yesterday 15kg lost another net (=R100)
6. Yes. about 2hr/day, depends on number of nets.
7. Yes. 20 min/ net
8. Yes. Stuck on rocks, currents, sharks. 1 hour for all the nets.
9. nn
10. Yes. Stuck on rocks. About 20 mins depending on damage.
11. yes. 20 mins

**4(viii) Is it possible that the habitat suffers damage because of your gear, or when your gear is damaged?**

1. No
2. WCRL which hang on the outside can lose legs.
3. It works both ways. If just stick to coral it breaks off and lobsters lose legs. Damage is minimal.
4. No. Don't stick on coral reefs.
5. No
6. No, net tears but it all comes up.
7. No.
8. No.
9. No.
10. No
11. no

**4(ix) Do you ever catch other species in your lobster gear?**

1. No
2. Seeslange, seekatte, hotnotvisse
3. Kelp sharks, crabs, hottentot (latter not often).
4. Bank shark, seekatte, seeslakke
5. Hottentot, silverfish, panga, knorhaan (gurnard).
6. Bank shark, octopus
7. Fish, SEESLANGE, etc.
8. SEESLAKKE, hottentot, SKAAMHAAIE
9. nn
10. SEESLAKKE, smaller fish
11. shellfish

**What do you do with them?**

1. N/a
2. Throw back.
3. Throw back, unless its edible.
4. Throw back.
5. Use for bait. Don't get a lot, maybe 1 / net, then get a gain for your bait.
6. Throw back.
7. Throw back except edible fish
8. Throw back
9. nn
10. Thow back
11. keep them

**Q 5. Quotas, rights and regulations**

**5(i) Under the quota regulations, how many (number / kilograms) lobsters can you take in a season?**

1. Depends on season.

2. 500
3. 500
4. 500 (150/day restriction)
5. 500
6. 500
7. 500
8. 4
9. 4 DIVER
10. 500
11. 4/day/weekend DIVER

**Could you catch more?**

1. No
2. Yes. Especially from May to June because there are still plenty.
3. not answered
4. yes. 1 1/2 to 2 T
5. yes another 500 (total 1 T)
6. yes. 1T
7. nn
8. nn
9. no
10. no
11. yes. 8/day

**5(ii) Could all of the fishermen operating in this area catch this much more?**

1. Yes. Same
2. Not answered
3. Yes.
4. No, it depends on number of nets and bait and if bait is not right then don't climb in. He uses fishheads, stokvis, snoek, sardine.
5. yes
6. yes.
7. nn
8. nn
9. nn
10. no
11. yes

**5(iii) Do you think that you could catch this much more as well as the other fishers in the area, this year, next year and so on, and still be able to catch the same number in 10 years time?**

1. Yes, definitely. WCRL doesn't get wiped out.
2. Not answered
3. yes. Everything indicates that. Industry is still young.
4. Yes. There is still plenty. They have so many eggs so there will still be plenty. It looks like the more you catch the more they breed.
5. Difficult to say. Lobster move from area to area, aren't always caught up. When they move, the move at the top of the water with antennae out.
6. YES. Lobster who moved here in 1992/1993 when we started with recreational in Hermanus and from that time there have been many lobster. The resource can support this amount.
7. Yes. Lobster have shown a tendency to increase in numbers
8. Yes. The resource is healthy.
9. no. Resource being wiped out by commercial rights holders
10. No. Because of too much exploitation in one area.
11. nn

**5(iv) What do you think is the aim of the quota system?**

1. Protect WCRL.
2. To control poaching.
3. To prevent overfishing.
4. To protect lobster from being wiped out. To prevent overexploitation.
5. That everyone gets a fair deal.
6. Income for fishers. That resource doesn't get overused.
7. To protect species
8. To protect the wiping out of the resource.
9. To prevent overexploitation
10. To prevent overexploitation and poaching.
11. To secure the lobster for the future

**Do you think the quota system achieves this goal(s)? If not, why?**

1. Yes
2. They won't get it right. Quota is too small especially for people who live entirely from the sea.
3. No. Not clear that MCM knows what its own aims are.
4. yes.
5. No, Some favoured some prejudiced against. Case in Hawston, took the package, but because had learning could fill in the forms properly, got quota, fishers didn't get, don't have education to fill in forms.
6. yes
7. no. Poaching still happens on a big scale.
8. yes
9. No. Too many commercial rights holders are guilty of wiping out lobster
10. No. Too many quotas land in the wrong hands. MCM does nothing to solve the crisis.
11. yes. [BUT LATER]: No. Sports divers suffer and poaching still continues.

**5(v) Why do you think some fish species (including lobster) have become very scarce all over the world?**

1. Foreign boats in deep water - wipe out.
2. Only in some places
3. Some species scarce. Overfishing by trawlers and big factory ships. Fishing methods that don't regulate the size caught. Trawlers take all species indiscriminately. E.g. If locals bring in one undersize Kabeljou they get a fine etc. but trawlers can take tons of kabeljou of that small size.
4. Because fish are overexploited, take too much out the sea.
5. Too many people. Resource is overutilised.
6. Perlemoen poaching: if people get quotas then poaching will drop a bit. They say linefishers overuse the fish, I say it is the big trawlers, they bring in tons of undersize fish. If we bring in 1 undersize we get a fine. And trawlers are all around the coast
7. Not all species have become scarce. Commercial boats wipe out species. Newspapers speak about that.
8. Foreign boats who poach South Africa's fish resources
9. Overuse by commercial rights holders
10. Poaching and overexploitation
11. poaching

**5(vi) Do you think that the prescribed lobster season is appropriate? Why or why not? If not, when would be better?**

1. Right
2. Not answered. Export to China in Jan, Feb 2004. Best time is from May to June/August, based on experience from experimental quota. Should be Monday to Friday only. And from 08h00 to 16h00. Exclude holidays as with commercial (???) Recreationals should be in holiday time.
3. No. March to June. Lobsters have hard shells, females aren't carrying eggs.
4. no. Should be two months later and two months longer. Say Feb to Aug/Sep.
5. no. Season used to be 15 Nov. I said season wrong, females carrying eggs. Better season March to June/July. Caught this week and there were none with eggs. Size is excellent now.

6. Westcoast begins earlier because lobster ready earlier. Lobster here, should begin in March maybe Feb, more flesh. Now it is December. Ringnets should end in June and big boats end September. Some years moult is earlier, some years later.
7. yes. Lobster skeleton is very hard.. Season can be lengthened - Dec to May.
8. No. Sep to May
9. Lobster could be caught the whole year except the time when the lobsters skeleton is soft.
10. yes (BASED ON REST OF ANSWER THIS SHOULD BE NO). It is breeding time, the shell is still soft. March is an excellent time for lobster harvesting.
11. no. Too short and lobster shells are still soft.

### Comments

1. 4 / day for recreational is too few. Poachers take abalone out of shells and insides eaten by WCRL. Plays an important part. Before there weren't WCRL from Hermanus to Hangklip. WCRL is good spreader. In Gansbaai there aren't a lot of WCRL because of currents. WCRL move like a school of fish, you can actually see it.
2. Could catch more, especially from May to June because there are still plenty. With experimental quota had to record 500 WCRL of all sizes. Only males. Females and undersize had to be returned. Had to give the 500 to the MCM observers who recorded it and then had to return them. In May there weren't many females, mostly male. In excellent condition. Had to pay R650/day to MCM to catch 1500 (?500?) WCRL. Not allowed to take more. Excess over 500 must be returned to Hermanus harbour under supervision of inspector who weigh the WCRL. Soepiesklip not yet included (on map - ?in zone? ). Zone F area.
3. Linefishers: this is their bread and butter. Those that can prove this is their income want to apply for linefishing as a traditional fisher. But can only apply for one species (can't have linefish with another right). I applied for lobster as a previous experimental quota holder. No politics in fishing on the ground between fishers - all colours get the same money for fish. Harmony since the beginning of linefishing because there were not rules and laws. Suggest that: the real fishers decide who are the actual fishers. MCM knows who are the main players in the linefishing industry. That the verification unit appoints traditional fishers to do the allocation of fishing rights. WCRL rights were given to wrong people. In Hermanus the traditional fishers [trek nou dop]. Can't do otherwise. To get work they have to move. People who shouldn't get quotas get preference. Allocation fee is too high. Pay for everything (ongebord) unbounded. Service at MCM is pathetic, unacceptable. Fishers are born or not, you have the interest.
- 4.
5. recreational can take 4/day. Last year only 2 or 3 days a month could go out, the rest too rough. Govt. should say for days you couldn't go out you can take another X amount to make up for that. Not talking of weekend fishers.
6. Not unhappy with 500, but we who did the experiment should have got 1T. People worked with pt system - I got 12 points, and I got 500, people with 6 pts also got 500). Kleinmond got 1 T - should rather have all got 800). Another pt. You have 400 perlemoen or 500 lobster. This is not enough without linefish, but now if get lobster quota then take linefish away. 500 kg doesn't last a year, can get in a couple of days, but if have linefish then can take it throughout the year. without this, after have got the 500 will drift to poaching. I have 2 boats, one (R80 000) with perlemoen 400 kg, three days work and then boat stands. That boat should get linefish, keep the crew going.
- 7.
- 8.
- 9.
- 10.