Meridian Prime

Environmental and Social Criteria for Allocating Access to Fisheries Resources

Case Studies

by Chris Grieve
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This report was commissioned by the Pew Environment Group, on behalf of OCEAN2012, and was written by Chris Grieve, Executive Director, Meridian Prime.

OCEAN2012 is an alliance of organisations dedicated to transforming European Fisheries Policy to stop overfishing, end destructive fishing practices and deliver fair and equitable use of healthy fish stocks.

OCEAN2012 was initiated, and is co-ordinated, by the Pew Environment Group, the conservation arm of The Pew Charitable Trusts, a non-governmental organisation working to end overfishing in the world´s oceans.

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ACRONYMS

CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CCCHFA	Cape Cod Commercial Hook Fishermen's Association
CCFT	Cape Cod Fisheries Trust
CFFA	Coalition for Fair Fisheries Arrangements
CFP	Common Fisheries Policy
CSFC	Cornish Sea Fisheries Committee
DEAT	Department of Environmental Affairs and Tourism, SA
DEFRA	Department of the Environment, Food and Rural Affairs, UK
EC	European Community
EU	European Union
FRS	Fisheries Research Services
GSGSSI	Government of South Georgia and the South Sandwich Islands
HDI	Historically disadvantaged individual
HDP	Historically disadvantaged person
IFF	Integrated Fisheries Foundation
ITQs	Individual Transferable Quotas
IUU	Illegal, unreported or unregulated
MCDA	Multiple criteria decision analysis
MCM	Marine and Coastal Management Branch, DEAT
MSA	Magnuson-Stevens Fishery Conservation and Management Reauthorization Act
MSC	Marine Stewardship Council
NEAFC	North East Atlantic Fisheries Commission
nef	new economics foundation
NGO	Non-government organisations
nm	nautical miles
PACA	Provence-Alpes- Côte d'Azur
PNG	Papua New Guinea
PO	Producer Organisation
PREM	Poverty Reduction and Environmental Management programme
PZJA	Protected Zone Joint Authority
SA	South Africa
SAR	Seas At Risk
SNH	Scottish Natural Heritage
TSPZ	Torres Strait Protected Zone
TAC	Total Allowable Catch
TURF	Territorial Use Right in Fisheries
UK	United Kingdom
USA	United States of America
USD	United States Dollars
VMS	Vessel Monitoring Systems

INTRODUCTION

The well-publicised state of European Union (EU) fish stocks, the challenges facing fishing communities and the industry, along with the opportunity to participate in the public debate about the future of the Common Fisheries Policy (CFP), motivated the formation of OCEAN2012 in June 2009: an alliance of organisations dedicated to transforming the CFP to prevent overfishing and enhance human well-being.

In the interests of creating a principle-centred approach to fisheries management in EU waters and for the EU fleet globally, OCEAN2012 is investigating issues that may be incorporated into a reformed CFP. Some of these issues capture ideas relating to enshrining environmental objectives within in the CFP as a prerequisite to fulfilling social and economic objectives; defining a decision-making framework that ensures strategic and operational decisions are made at appropriate levels; defining instruments and competencies that deliver sustainable fishing capacity at EU and regional level, including legally-binding, time-bound capacity limits per fisher, both in quantitative and qualitative terms; basing access rules on criteria that ensure a transition to, and support for, environmentally and socially sustainable fishing; and creating transparent and participatory decision-making processes.

The Pew Environment Group, on behalf of OCEAN2012, commissioned Chris Grieve of Meridian Prime to further analyse the potential for establishing criteria for access to, and allocation of, fisheries resources that favour those people, organisations or communities who may contribute to the overarching environmental and/or social objectives of a reformed CFP. Thus, this report presents ten case studies where environmental or social considerations have been used for, or have influenced, preferential access to fisheries resources to people, organisations or communities. A discussion of the outcomes of the case studies includes a comparison of the similarities and differences between them, as well as a summary of lessons learned during the process of transition from one access framework to another. This is followed by some proposed elements for designing access or allocation criteria which could be applied within an overarching management framework, on a regional basis under a regional fisheries management framework or more locally in individual fisheries. The report concludes with suggestions for legislative reform.

Background to the case studies

It has become a fundamental principle within modern fisheries management that restricting or limiting access to fisheries ought to be a feature of sustainable fisheries management. Even if one shares the view held by some that fisheries resources are held in common, i.e., that they are not, or should not be, owned by one sector of society to the exclusion of all others, the reality is often that the commons, if not restricted or regulated or managed in some way, will become over-exploited to the detriment of all. So, like most other places in the world facing tough decisions about allocating access to fisheries resources to some while excluding others, this part of the fisheries management process is highly politicised in the European Community.

Dating back to the 1970s, the '*relative stability*' principle guides the division of total allowable catches (TACs) between EU Member States, enshrining fixed allocation proportions based upon each country's historic catches[1]. In theory, the purpose of relative stability is to avoid having annual debates about how quotas should be divided between national interests. In practice, however, it is said to lead to short-term decision-making and has the effect of pushing TACs upwards as each Member State seeks to maximise its interests at the expense of long-term sustainability.

As part of a broader, stepwise approach to returning EU fisheries to a sustainable footing, the OCEAN2012 alliance has suggested replacing relative stability with a system of allocation which

[1] EC (2009) The Common Fisheries Policy: A User's Guide. Luxembourg: Office for Official Publications of the European Communities. 40pp. http://ec.europa.eu/fisheries/publications/pcp2008_en.pdf Downloaded 17 September 2009.

explicitly takes environmental and social performance into account. That is, an allocation system which contributes to environmental sustainability, a more equitable distribution of access to available fishing resources and a culture of compliance. In other words, the right to fish in EU waters should be granted to those who contribute to the achievement of the overarching objectives of the CFP.

OCEAN2012's initial ideas were the starting point for the analyses of the cases in this report. While there are a range of ways to regulate or restrict access to fisheries, including limiting entry through licensing or permits, or creating 'withdrawal', 'use' or 'harvesting' rights linked to territories, effort controls or harvest limits, this study is not about rights-based management tools *per se*. Rather, its aim is to present case studies which demonstrate features that may be adapted or used to inform the development of a framework at European Community level for allocation of access to fisheries resources based upon environmental and/or social considerations.

Case study overview

Six of the ten case studies showcase examples of fisheries in EU Member States, while the four remaining case studies present fisheries in other regions of the world. Each case study has been selected to demonstrate a variety of approaches, frameworks or processes resulting in access to fisheries resources based upon either environmental or social considerations, or both. The case studies begin with the Cape Cod fisheries off the USA's east coast and present several innovative ideas on both environmental and social considerations informing fisheries access. This is followed by the story of South Georgia's toothfish fishery in the sub-Antarctic reaches of the Southern Ocean and its government's use of environmental criteria and a history of compliance to guide decisions about access to the fishery's lucrative resources. The European case studies feature inshore fisheries in Sweden, France, Spain, the UK and The Netherlands, each of which demonstrates how environmental and social considerations can be integrated to determine access to fisheries resources. Each of the European case studies also has a spatial element which informs access criteria or is integrated within the management system. In the final two cases, concepts relating to wealth redistribution and transformation of fishing economies are explored in the Torres Strait's rock lobster fishery and fisheries in South Africa's Western Cape Province.

Each case study begins with a brief overview of the fishery, describing its location, distinctive ecological features, the main species caught and general dynamics of the fishery. This is followed by a short description of the main features of the fishery management system from a governance perspective and the key management measures implemented in the fishery.

A general description of the access arrangements and relevant allocation rules precedes a more detailed exploration of relevant criteria for access to, or allocation of, fisheries resources that may have been used to determine who may fish or how, when or where they may fish. This includes a description of the processes used to determine how access criteria were introduced or continued. For example, whether rights of access may have been granted based on historical connections to fishing grounds or perhaps by drawing lots between pre-qualified individuals. Case studies also describe any conflict or opposition to the processes or outcomes of determining access to fisheries resources, and how these may have been resolved. Practical considerations and any conditions of continued use or access are also investigated. Each case study draws together lessons learned, either from the process or the outcomes, presenting results of evaluations that may point to the success or otherwise of the initiatives and whether there were any unintended consequences. Finally, conclusions are drawn about issues raised by the case study in the context of allocating access to fisheries resources based upon environmental and/or social considerations in a CFP context.

1. Cape Cod Commercial Hook Fishermen's Association, USA

As part of its mission to help protect the ocean, small-scale fishers and their communities, the Cape Cod Commercial Hook Fishermen's Association has led several initiatives that take an environmentally and socially responsible approach to allocating access to fisheries resources and quota through its Cape Cod Fisheries Trust. Three specific initiatives highlighted in this case study include: creating "Sectors" to enable communities to manage their own catch shares; developing "Special Access Programs" for more selective fishing gear to access resources; and creating the non-profit organisation "Cape Cod Fisheries Trust" to purchase licences and quota on behalf of the community in order to protect fisher's livelihoods, their community's local economy and its social ecology. Each demonstrates how both environmental and social considerations could inform the allocation of access to fisheries resources to ensure fisheries are managed sustainably.

Fishery overview

The New England region of north-eastern USA has a fishing heritage stretching back centuries which was supported by "*teeming fishing grounds off its shores*"[2]. Yet its fisheries could be characterised by serial 'boom-and-bust' cycles where overexploitation and stock collapse have occurred relatively regularly[2]. Despite this, the temperate waters of the north-western Atlantic are still home to many species, including valuable groundfish species such as cod, haddock and flounder, as well as sought after invertebrates like lobster and scallop. But with a majority of groundfish stocks now deemed to be overfished, New England's fishers and fishing communities have been facing declining revenues and the possible demise of their industry and livelihoods[2]. However, since 2006, under US federal law, fisheries managers have been required to pursue mandatory sustainable fisheries management for all federally-managed stocks using science-based catch limits in order to rebuild populations and prevent overfishing[2].

Groundfish, lobster and scallop fisheries are exploited by a variety of fishing methods including bottom trawl, longline, gillnet, traps and dredges. Amongst the varied fleet of large and small-scale vessels along the New England coast stretching from the US-Canada border to Long Island off New York and Connecticut, are the members of the non-profit Cape Cod Commercial Hook Fishermen's Association (CCCHFA). They make up a diversified, small-boat fleet of around 60 vessels working mainly out of Chatham, on Cape Cod peninsula, Massachusetts. Using hook and line gear, fixed gear like gillnets and traps, as well as lighter dredges, the fleet catches a variety of groundfish (e.g., cod, haddock, flounder, redfish and pollock), scallops and lobster. Other species of significance to the small-boat fleet, particularly its younger fishers, include monkfish, dogfish and skate.

Like a "*canary in a coal mine*"[3], the small-boat fleet can be considered an indicator for ecological depletion: without vast capital to invest in bigger, faster boats, or heavier 'rock-hopping' gear to access previously unfished areas, the fleet's fate is tied to the ecological health of traditional fishing grounds[3]. This has forced these fisher to become more innovative in their approach to fisheries management policy and politics, more entrepreneurial in their engagement with the market for their catch and more active in their efforts to protect the fish and essential habitats, the source of sustainability of their fishing communities and their livelihoods.[3, 4, 5]

[2] Johnston, R.J. and Sutinen, J.G (2009) *One Last Chance: The Economic Case for a New Approach to Fisheries Management in New England***.** Washington, D.C.: Pew Environment Group. 24pp.
[3] Paul Parker, Director Cape Cod Fisheries Trust, personal communication, 23 September 2009.
[4] CCCHFA (2006) *Cape Cod Commercial Hook Fishermen's Association Annual Report 2006*. 16pp.
[5] CCCHFA (2007) *Cape Cod Commercial Hook Fishermen's Association Annual Report 2007*. 24pp.

Fishery management system features

Fisheries management at the federal level in the USA is regulated by the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (2006) (the MSA). Under the MSA framework, high level objectives and national standards specify how fisheries must be managed by eight Regional Fishery Management Councils under formal Fishery Management Plans. From January 2009, Councils have two years to follow published guidelines about setting annual catch limits and accountability measures designed to end or prevent overfishing[6]. Along with this requirement comes the ability to introduce Limited Access Privilege Programs which enable the allocation of catch shares and limited numbers of fishing access rights to individuals, corporations, communities or regional fishery associations[7].

The federal fisheries off New England's coastal states are primarily managed by the New England Fishery Management Council. Twelve groundfish species, important for CCCHFA members, are managed under a formal multi-species management plan implemented by the Council. Sea scallop stocks are also managed under Fishery Management Plans implemented by the New England and Mid-Atlantic Fishery Management Councils in accordance with bilateral arrangements between the US and Canada[8].

Figure 1: Cape Cod fisher sorting sea scallops. ©David Hills (Source: CCCHFA)

The main features of the northeast groundfish multi-species fishery management plan include a combination of effort controls in the form of days-at-sea, fixed TACs, area closures, trip limits, gear restrictions and special access programs for specific gear such as haddock longlining. Measures are intended to end overfishing for the majority of groundfish stocks whose status is deemed below appropriate limits.[9]

Sea scallops are not considered to be overfished. In order to prevent overfishing from occurring, the New England scallop fishery management plan uses an adaptive spatial management strategy involving cooperative industry surveys and rotation of closed and open scallop areas. The plan includes procedures for limiting access to scallop permits, allocating area-specific days-at-sea and trips, rules for days-at-sea tradeoffs, allocating catch shares to permit holders, specifying gear restrictions and crew limits to reduce fishing time to benefit by-catch species and essential fish habitat. And finally, a designated long-term closure to enable habitat recovery.

The New England Lobster Fishery is prosecuted in both state waters (0-3 nautical miles) and federal waters (3-200nm). Lobster fishing inside three miles is managed by the relevant adjacent state, while fishing in federal waters is managed under the Interstate Fishery Management Plan for American

[6] NOAA National Marine Fisheries Service (2009) *Status of US Fisheries in 2008*. Report to Congress. Office of Sustainable Fisheries, NMFS.

[7] Grieve, C. (2009) *Conference on Regional Fisheries Management: Making it work for fisheries and the environment.* Background Paper. Brussels: OCEAN2012. 16pp.

[8] Pudden, E.J. and VanderZwaag, D.L. (2007) Canada-USA bilateral fisheries management in the Gulf of Maine: Under the radar screen. *RECEIL*, Vol.16, No.1, pp 36-44.

[9] NEFMC (2009) Draft Amendment 16 to the Northeast Multispecies Fishery Management Plan. New England Fishery Management Council. 871pp.

Lobster by the Atlantic States Fisheries Commission[10]. The fishery is divided into seven Lobster Conservation Management Areas, four of which are off the New England states[10]. Management differs between areas and states, but all have limited access permits, minimum size limits and restrictions on landing egg-bearing females[10].

Allocation and access to resources

Description

There are three initiatives of the Cape Cod Commercial Hook Fishermen's Association that are of relevance to the access and allocation context of this report. The first concerns the legally-defined concept of "Sectors" and allocating catch shares (e.g., quotas, days-at-sea, permits) to legally recognised communities rather than individuals. The second introduces the concept of special access to fishing grounds being granted to more selective fishing gears. And finally, the concept of a non-profit trust which acquires permits and quota for the community and links allocation and access to social and environmental leasehold covenants. This section of the paper provides a general description of all three initiatives, the subsequent sections delve into more detail about how the initiatives work.

Harvesting cooperatives – Sectors

A harvesting co-operative, legally defined as a Sector under the MSA, is effectively a co-operative of fishers who, under the law, may be considered a community that is eligible to receive a share of annual allocations of groundfish like cod, haddock and flounder. Annual catch share (quota) allocations to Sectors are then collectively managed by the community of fishers who decide how and when to catch their fish, thus exempting them from some of the less efficient common pool days-at-sea effort controls applied to individual recipients of catch shares under the multi-species groundfish management plan. This does not mean that the Sector's members are less 'strictly' managed by being exempt from the effort controls applied to individual fishers. Rather, the Sector itself, as a collective, determines how to manage within the limits of it a fixed quota, which may include effort controls which are more appropriate to the more selective gears used by the Sector's members.

Until recently, there were only two such Sectors in New England fisheries: the Georges Bank Cod Hook Sector and the Georges Bank Cod Fixed Gear Sector, both of which are managed by the Cape Cod Commercial Hook Fishermen's Association[11]. In 2008-09, the New England Fishery Management Council proposed an amendment to its groundfish management plan to include 17 additional Sector co-operatives throughout New England representing more than 600 fishing enterprises.

In exchange for designation as a Sector, members must comply with Sector TACs and catches must be monitored both at-sea and on the dockside.[9] The CCCHFA's Sector groundfish monitoring programme collects landing and by-catch data from local vessels using both people and video cameras to observe and monitor fishing activity. The Association plans to expand its Sector monitoring programme to include the collection of data from skate, monkfish and scallop fishing operations[12].

[10] GMRI (2008) *Taking the Pulse of the Lobster Industry: A Socioeconomic Survey of New England Lobster Fishermen*. Gulf of Maine Research Institute. 36pp.
[11] CCCHFA (2007) *Cape Cod Commercial Hook Fishermen's Association Annual Report 2007*. 24pp.
[12] CCCHFA (2009) *Cape Cod Commercial Hook Fishermen's Association Annual Report 2008*. 16pp

Special access granted for haddock longliners

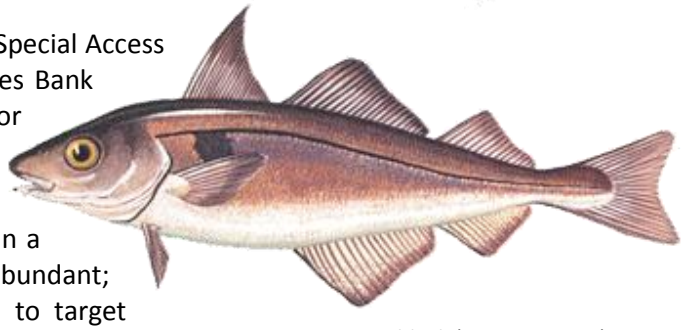

Figure 2: Haddock (Source: NOAA)

Under the New England groundfish management plan, a Special Access Program has been approved for members of the Georges Bank Cod Hook Sector, i.e., the Cape Cod fishers, to fish for haddock in an area closed to targeted cod fishing.

Using their own initiative, Hook Sector members drew on a private research grant to attempt to demonstrate in a robust, scientific survey that: 1) haddock stocks were abundant; and 2) that longlining with specific bait enabled them to target haddock with low cod by-catch[13]. Hook Sector members were thus able to mount a credible, science-based case and persuaded the government to grant the Sector's members special access for longliners to the closed area and exemptions from some of the restrictions still placed on cod trawlers. Subsequently, the Fishery Management Council agreed to: extend preferential access to non-Sector fishers who also use hook and line gear; enlarge the special access area to three times its original size; and, extend the season from six weeks to nine months for all longline fishers. In exchange for special access to haddock resources, hook and line fishers are subject to additional measures including limits on catches of other species and daily catch reporting through Vessel Monitoring Systems (VMS).[9,12]

Cape Cod Fisheries Trust

The CCCHFA watched with growing concern the moves in US fisheries governance to create 'catch shares' (individual quotas) for the rights to harvest resources in US fisheries. Members' experience told them that in the initial stages of a quota market, big businesses are able to buy their way into quota markets with the benefit of capital, whereas small fishing businesses could not access the capital needed to buy into quota markets. This was especially true for younger fishers who did not have enough catch history to make their share viable and who therefore needed to top up their share, or buy their way into a fishery. Conversely, older fishers seeking to retire and cash out of the industry faced a dilemma: who would they sell to? An outsider, big business, or someone within their close-knit fishing community? If the latter, which many preferred, where was the money going to come from?[3].

So in 2008, the CCCHFA created the ***Cape Cod Fisheries Trust***, a non-profit organisation. By buying fishing permits and quota at below current market rates, the Trust aims to provide affordable access for local fishers to fisheries resources, while providing important community, socio-economic and environmental services. Permits and quota will be priced at levels that will create financial incentives for fishers to adopt the attached leasehold covenants (conditions) that are aimed at ending overfishing, minimising habitat impacts and by-catch[12].

At present, the primary source of permits and quota is the older Cape Cod fishers who are seeking to retire and leave the fishing industry. The Trust's secondary source of permits and quota are larger "off-Cape" vessels such as bottom trawlers or heavier scallop dredges in order to lease back to CCCHFA members, who use smaller vessels and lighter, more selective gear[14]. Permits and quota are purchased on the open market by the Trust through brokers trading in New England fisheries. The Trust has partnered with the Sectors and Cape Cod fishers to implement "Rights of First Refusal", which means that local fishers will be able to bid first on any permits put up for sale by retiring fishers. If no local fishers are interested or able to buy the permits, the Trust then has an option to buy the permit to keep it in the Cape Cod fishing community[14]. Thus, the Trust is the buyer of last resort. However, while prices for permits and quota are relatively high for the average local operator, the Trust is able to acquire them with funds already raised through grants, donations and

[13] Ritt, G. (2004) *Cape Haddock*. Cape Business, Vol.1, Nov/Dec.2004, pp 32-36.

[14] Paul Parker, Director, Cape Cod Fisheries Trust, personal communication, 5 November 2009

other income. The value of permits is expected to appreciate up to three times their current value over ten years and contribute to the generation of Trust revenues.

While the Trust is not yet making loans, the intention for the future is that those fishers who do receive loan financing from the Trust to purchase permits or quota must agree to abide by the social, environmental and economic performance standards and covenants set out by the Trust. In addition, they also have to agree to give the right of first refusal to the Trust should they wish to sell in the future. The Trust is contemplating capping resale values back to the Trust at around 110 percent of the original purchase price and charging interest on loans[15].

In its first year of operation, the Trust purchased 45,000 pounds of scallop quota and six groundfish permits for USD$1 million, secured a further $1 million loan, provided assistance to scallop businesses to stay viable and leased days-at-sea to local ground-fishers at affordable rates. Between 2009 and 2011 the Trust aims to raise up to $10 million from loans, grants and individual contributions[12]. The Trust intends to become self-sustaining by reinvesting revenues from leases and loans to community fishers.

Allocation criteria and process within Sectors[16]

The first and only allocation by the U.S. government allocated catch shares as a proportion of all shares to each of the two Sectors administered by CCCHFA[17]. The Sector shares were calculated by summing the members' individual catch shares based on each Sector members' catch history between 1996 and 2001. Internally, the Sector groups behave much like an autonomous fishery management authority, creating their own rules for members and allocating catch quotas within each group.

Initial allocations to members within each Sector group were also based on catch history. This created some conflict between some of the older and younger members as the younger members have been targeting monkfish and skate for the last 5-10 years, therefore having lower catch histories for desirable species like cod, haddock and pollock. Given that monkfish and skate are not subject to allocations, the younger fishers perceive that without groundfish allocations they have less stability around access to the fishery. Efforts to overcome these issues involve members meeting every week and using a consensus based decision making process. Through this process the fishers are able to work out their differences – however long it takes. Rather than delegating their decisions and conflict resolution to 'representatives', the fishers take responsibility for their own futures. Quota is leased for cash or bartered between members for other things of value. Ultimately, the Trust and CCCHFA will aim to maximise 'occupancy' of quota and minimise 'vacancy' of quota. With these aims guiding them, they hope to ensure that leasing between members continues to make the needed quota available.

The Sector groups also set some rules about uptake or use of catch quotas. These are generally based upon suiting members' monthly fishing plans to suit certain fishing methods, like gillnetting. The Sector group has also established an Infractions Committee to deal with issues of non-compliance with their internal quota rules.

Allocation criteria for permits or quota from the Trust

The allocation criteria to be used by the Trust for permits and quota leases, loan assistance or loan guarantees have been evolving since the Trust began operating in 2008. Three different models have been used as part of an adaptive approach to learn what works and what is needed. Initially, a set of qualifying criteria were developed. The Trust's initial intention was that any applicants first met

[15] CCFT (2009) *Trust Services and Participation Criteria*. Chatham: Cape Cod Fisheries Trust. 1pp.

[16] Paul Parker, Director Cape Cod Fisheries Trust, personal communication, 23 September 2009.

[17] Each year the value in weight of fish may go up or down according to the total allowable catch, but the percentage value of the catch share as a proportion of the whole remains constant.

qualifying criteria to determine their eligibility for Trust assistance[15]. Then in 2009, the Trust started developing ranking and scoring criteria to use once applicants had met the qualifying criteria (see Table 1). These would enable the Trust to rank and score applicants should the applications for permits or quotas from the Trust be oversubscribed. The third model being contemplated for 2010 is the use of an auction to allocate catch quotas (see next section for more information).[16]

The Trust also contemplated including ranking criteria related to an applicant's business acumen and character. That is, developing criteria to rank an applicant's performance as a good business person and whether they're of good character. Examples of such criteria might include whether the applicant complies with CCCHFA rules and government regulations, pays their taxes, and does not employ (or exploit) illegal immigrants for personal or other gain. Similarly, whether the applicant has submitted a strong business plan. In the future, criteria may link to how compliant an applicant has been to the Trust's lease covenants relating to environmental, social and/or economic performance.[16]

Qualifying criteria	Ranking criteria
➢ Cape Cod resident ➢ CCCHFA member ➢ Own fully insured fishing vessel ➢ Sole operator of fishing vessel ➢ Valid commercial fishing permits ➢ Willing to participate in sustainable fishing practices ➢ Utilise traditional revenue sharing principles to compensate crew	➢ Longevity in Cape Cod commercial fisheries ➢ Experience in local fisheries ➢ Letters of reference ➢ Active involvement in CCCHFA ➢ Participation in Trust meetings ➢ Participation in financial planning, business operations and management capacity training.

Table 1: Qualifying and ranking criteria developed for 2009 Trust applications.

Allocation process for permits or quota from the Trust

Applications from fishers for leases, (and in future possibly loans and loan guarantees) are evaluated by a Credit Committee established by the Cape Cod Fisheries Trust. The Committee includes members of a Community Development Partnership Credit Committee and two non-fishing members appointed by the Cape Cod Commercial Hook Fishermen's Association Board of Directors.

Fishers will be able to lease scallop and groundfish permits and quota, including by-catch species quota, at a short-term lease rate of 10 percent of the value of the gross landed catch. Initial leases will be for a single year, but this may change based on the needs of the fishing fleet.

As the Trust only began operating in 2008, the process to allocate permits and quota has been evolving, with only Days-At-Sea permits being allocated by the Trust. In both 2008 and 2009, there was no conflict over such allocations within the community, nor a need to use the ranking and scoring criteria to decide between applicants, because the supply of permits exceeded demand. Every applicant received what they needed in both years. As the initiative is new and not yet oversubscribed, the Trust has been fortunate enough to be able to continue developing and experimenting with different approaches.[16]

In 2010, the Trust will make its first allocations of permits *and* quota, experimenting first with a relatively simple single species fishery, sea scallops, before attempting to implement an allocation process in the more complex multi-species groundfish fishery. Lessons learned from the sea scallop experience will inform the Trust about how to develop allocation systems and processes for more

complicated fishery scenarios. In the meantime, the Trust is working with Harvard Business School researchers and economists to develop an auction model within a lease market context. This may become a part of the allocation process in 2010-11.[16]

Conditions of use– abiding by the Trust's social and environmental leasehold covenants

All fishing businesses leasing permits or quota from the Trust must fish sustainably, but those who can demonstrate their fishing businesses are more sustainable will be selected to receive higher quota allocations from the Trust. This is expressed as an intention and the practicalities and specific criteria to guide decisions have not yet been established within the programme.

All leases are conditional on reporting back to the Trust and/or the CCCHFA. The reporting requirements include:

- Total fish catch, i.e., total landings and discards.
- Value of landings, days-at-sea and payments to crew.

This information and data will be evidenced by supplying ex-vessel receipts, royalty reports, logbook data and independent audits of accounts books.

- Any changes to fishing practices must be reported to the Trust.
- Leaseholders and loan recipients are required to submit monthly summaries of their activity, along with a statement that Trust restrictions and conditions have been observed.

Defaulting on payments or failure to use the permit may lead to restructuring or termination of arrangements by the Trust.

Practical considerations

There are a number of practical considerations that the Trust is well aware of and working to develop solutions. For example, the need to develop and articulate credible criteria which will enable a practical and just way of determining higher allocations for fishing enterprises that are demonstrably 'more sustainable' than others.

As the scheme becomes successful and the Trust increases its asset base, one challenge to overcome will be deciding the most appropriate allocation of permits and/or quota between a growing number of applicants. So there may be a need to develop performance-related indicators or measures for the ranking criteria cited earlier: means testing; business acumen and business plan strength; compliance with Trust lease covenants. Alternatively, the auction or bidding mechanisms require further development.

Other practical challenges include setting leasehold prices at levels that will remain affordable but also to contribute revenues to ensure the Trust's longevity in the community. Additionally, there is a need to create a framework of permit governance and management under which market design and pricing methodologies are developed that enable the Trust to achieve its embedded social, environmental and economic objectives and to ensure that CCCHFA's broader values and these objectives are honoured. The Trust is clear that its aim is not to ensure that every fisher survives. Board members are realistic, understanding that some fishers may not be viable because some applicants may be weaker at running a business than others, or they employ or exploit illegal immigrants, or do not pay their taxes. The Trust is seeking to establish clear risk management strategies to ensure that revenues are realised (that lessees meet their financial obligations) and that infractions at sea do not compromise the social and environmental integrity of the Fishermen's Association's goals.[16]

Conclusions: Lessons learned

The CCCHFA has learned many lessons and attempted many innovative solutions to the dilemmas they face as a community of local fishers trying to maintain their livelihoods, create a sustainable local economy and protect the social ecology of their community. In the context of their Sector approach, the members have learned to use a consensus-based approach to resolving their conflicts, which often means members simply keep on talking to settle their differences, meeting frequently if necessary. The Sector arrangement is evolving through this process. In 2009, the CCCHFA decided to combine the two gear Sectors into one to enable greater flexibility around the division of quota between group members, particularly for those who do not have the necessary catch history of their own[16].

The CCCHFA has not conducted an evaluation of the Cape Cod Fisheries Trust programme yet as it is too early to tell whether it is working. The Trust continues to develop and evolve its models for allocation since its first permit and quota acquisitions for the 2008 fishing season. As already described, in the first two years the Trust has been able to give applicants whatever they wanted. But the challenge the Trust has put to CCCHFA members is to develop more sophisticated allocation processes and methodologies, because once the Trust becomes more successful, there may be some more difficult decisions to make about who may be allocated what quota or permits[16].

Turning to the EU context, there are lessons that may provide useful learning for reform under the CFP. The different approaches the CCCHFA has taken towards allocation of access to fisheries resources demonstrate how both environmental and social considerations can be taken into account at a principle level, and could be applied at any scale fishery, large or small. Under the current CFP, something is occurring that is similar to the CCCHFA Sector approach which enables the use of more selective fishing gear along with a relaxing of some of the more stringent effort controls designed for less selective methods. That is, under the Cod Recovery Plan, Scottish government and fishers have created a Conservation Credits Scheme using real time closures and gear modifications to help boost the recovery of cod stocks, in return for additional days-at-sea. While there are some obvious differences, the concept is clearly an option under the current CFP framework, with the scheme having approval from the Commission.[18]

A future CFP could establish frameworks that enable:

- Creating Special Access Programmes, or preferential access, for gear methods that are proven to fish more selectively, with lower by-catch rates of sensitive species and have lower impacts on important habitats, after first establishing overall mortality levels.
- Creating the concept of Sector-related allocations. This concept is similar to the Producer Organisation concept under the CFP for allocating TACs and quotas to Member State fishers. However, these Sectors are arguably much more closely connected to specific communities and were developed from the bottom-up by fishers who have strong bonds and cohesiveness within the community, a shared vision and sense of purpose around their approach to fisheries management and a driving force for getting agreement with one another for strategies and measures that forward their social and environmental vision.
- Creating the concept of incorporated Non-profit Community Trusts. Should the reformed CFP seek to establish Individual Transferable Quotas (ITQs) or allocate other transferable rights-based measures, a framework to guide the establishment of such Trusts may help fisher or local community organisations set up trusts to buy tradable rights (either quota or licences or both) for fisher communities, establish leasehold covenants related to social and environmental objectives for locally based fishers, with those who have lower impacts being eligible for higher allocations.

[18] http://www.scotland.gov.uk/News/Releases/2009/02/03095141 Accessed on 28 October 2009.

Each of these mechanisms related to allocating access to fisheries resources are not stand-alone arrangements outside an integrated, strategic management plan for multiple stocks within a regional fisheries management system. Co-management, or stakeholder participation in the decision-making process, is a strong component of the success of the Fishermen's Association's arrangements: the members share a common purpose, they interact and talk to each other at the community level, and they have formal routes into the policy and decision-making process with a seat at the Regional Fisheries Council decision-making table.

The Association's measures and initiatives are also closely linked to research, monitoring and evaluation involving observers and on-board scientific monitoring programmes. These are also integral to the conditions connected with the ability to create or participate in some of the innovative access measures that have been devised.

The innovation, creativity and flexibility of the Association's approach offers a model for similar schemes to devise management and access arrangements. One of the key lessons the Association has learned and applied is the idea of not 'carving everything in stone' immediately, they have learned that it takes time to adapt and improve as more experience is gained. Thus, the more flexible the approach, the more measures can be shaped to better achieve one's overarching objectives.

Finally, while the CCCHFA has demonstrated thought-leadership and pioneered some innovations in U.S. fisheries access, the Association itself has benefited from the leadership of an individual whose vision and entrepreneurial drive have helped bring the community together as a strong and cohesive force. The community's willingness to embrace creative solutions and create a shared vision about sustainable community, sustainable local businesses co-creating a thriving, diverse local economy means that the fishers themselves seek to add value to their catches and strive to create niche markets for freshly caught, premium products.

Figure 3: Cape Cod fisher rigging hooks.
©David Hills (Source: CCCHFA)

2. Fishing in the Freezer: South Georgia's Toothfish Fishery

The Government of South Georgia and the South Sandwich Islands (a UK external territory) sets strict access criteria for licences for the international fishing companies sending their longliners to fish in the extreme Southern Ocean for the 'white gold' known as Patagonian toothfish. The government's twin needs of ecological protection and to understand the marine ecosystem of the South Georgia Maritime Zone led to the development of access criteria based upon environmental and history of compliance considerations. Even though the overall tonnage available is relatively small compared to other large-scale fisheries, the value of the fisheries resources in global markets to individual fishing companies ensures that licence applications are fully subscribed. This means South Georgia's government can charge sufficient fees to cover its research, management and enforcement costs, as well as ensure that only those vessels that contribute the most to the pursuit and achievement of the government's overarching objectives are allocated access to the fishery. The toothfish fishery was an early fishery to be independently certified against the Marine Stewardship Council's (MSC) Principles and Criteria for Sustainable Fishing. In September 2009, the fishery was again certified for another five year term, adding high levels of traceability to the toothfish products emerging from this fishery into international markets.

Fishery overview

The island of South Georgia has a unique fishing zone in the Southern Ocean: it is the only one that supports both major finfish and krill fisheries[19]. The island itself is home to vast populations of breeding seabirds and marine mammals. The productivity of the Scotia Seas around South Georgia is affected by the mixing of oceanographic currents approaching from various directions and steep-sided underwater mountains forming ocean abysses of up to 5,000 metres. These create the conditions for a highly productive krill-based ecosystem, with abundant phytoplankton supporting krill, which in turn support a complex web of fish, seabirds, seals and whales[19]. With no indigenous human population, fishing in South Georgia's waters has always been an international affair[20,21].

Annual TACs for South Georgia toothfish are set at around 3,500 metric tonnes with around ten foreign fishing vessels being licensed each year to fish for this quota by the Government of South Georgia and the South Sandwich Islands (GSGSSI).

The fishing season spans the southern hemisphere's autumn-winter months between April and September. Baited bottom-set longlines target toothfish at depths between 500 and 2,000 metres[22]. Vessels remain at sea throughout the season, processing and freezing their catch on-board. Pre- and post-season inspections and weigh-ins verify toothfish landing figures from the South Georgia Maritime Zone. Catch figures, including location, are also compiled by on-board observers who remain on the fishing vessels collecting catch, by-catch and other research and compliance data for the entire fishing season.

Heavy fishing pressure, including illegal, unreported or unregulated (IUU) fishing, led to grave concerns about the collapse of toothfish stocks throughout the Southern Ocean[19]. Policing of South

[19] Agnew, D.J. (2004) *Fishing South: The History and Management of South Georgia Fisheries.* Government of South Georgia and the South Sandwich Islands. St Albans: Penna Press. 123pp.
[20] Carey, C. (2008) *Governmental Use of Voluntary Standards Case Study 8: South Georgia and South Sandwich Islands and the Marine Stewardship Council*. ISEAL Alliance and Trade Standards Practitioners Network. London: ISEAL Alliance.
[21] Purvis, A. (2009) Net Benefits: The first ten years of MSC certified sustainable fisheries. London: Marine Stewardship Council. 37pp.

Georgia's waters from the mid-1990s led to arrests, vessel and catch seizures. With continued visible enforcement presence, IUU fishing in South Georgia's waters has since been estimated to be zero, except in 2005 when a single illegal vessel was captured[22].

Fishery management system features

South Georgia is an overseas territory of the United Kingdom governed by the GSGSSI. Fisheries in the South Georgia Maritime Zone are regulated under a national regime, in accordance with, or more conservatively than, the international fisheries management framework set out by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)[20] which is based upon implementing an ecosystem approach to fisheries management. CCAMLR's main principles include: preventing harvested stock levels from falling below those which ensure stable recruitment; maintaining ecological relationships between harvested, dependent and related species; and preventing changes in the marine ecosystem that are not potentially reversible over two to three decades[22].

Toothfish management focuses on setting TACs in accordance with CCAMLR's harvest control rules, limiting the number of vessels to match the available TAC, by-catch limits and conservation measures for other species, seabird mitigation measures and precautionary banning of fishing in key benthic habitat areas[22]. Comprehensive research, data collection and modelling of the toothfish fishery within the Scotia Sea/South Georgia shelf ecosystem are conducted, adding to the knowledge base from which management decisions can be made. Continuous monitoring and reporting of the catch throughout the season enables GSGSSI to close the fishery in real time when the TAC is reached[22]. Combined with observer catch figures, the weighing of landings at post-season inspections allows GSGSSI to calculate, within a few kilograms, the exact toothfish catch taken by the entire fleet. Thus providing accurate data for stock assessments and verifying vessel compliance with their allocated quotas[21].

There is a seemingly symbiotic relationship between the GSGSSI and fishing companies licensed to fish in South Georgia's maritime zone because the majority of South Georgia's revenue comes from licence fees. This raises the income needed to ensure regular surveillance and enforcement presence, as well as the revenue to pay for research on the fishery and its ecosystem[19,20]. Licence fees in 2008 raised 80-90 percent of the government's total annual revenue, around £4m[20,21]. Managing the fishery, including enforcement and research, costs approximately the same amount each year[21(p.22)].

In 2004 and again in 2009, the fishery was independently certified against the MSC's *Principles and Criteria for Sustainable Fisheries*, earning the right for their toothfish products to carry the MSC's blue eco-label. It is not compulsory to do so, but licensees who voluntarily choose to market toothfish product through the supply chain using the eco-label must also be independently certified against MSC's traceability standard and join GSGSSI's Chain of Custody group. Such fish that enter supply chains will not only have been observed on-board by GSGSSI observers and verified at the post-fishing inspection in Port Stanley, but also boxed and double-labelled using a unique traceability code, the details of which are transmitted to a secure database held by a government sub-contractor[22]. Thus ensuring the integrity of the supply chain and preventing IUU caught fish from being fraudulently identified as coming from the South Georgia fishery. In 2009-10, nine of the ten licensed vessels chose to join the GSGSSI's Chain of Custody group and comply with MSC's additional traceability requirements over and above those mandated by the CCAMLR management system[22].

[22] Medley, P., Pilling, G., Rice, J., Combes, J. and Hough, A. (2009) *Re-certification Public Certification Report for South Georgian Patagonian Toothfish Longline Fishery.* Derby: Moody Marine, Moody International Certification. 164pp.

Figure 4: Fishery Patrol Vessel 'Dorada' and king penguins by David Nicholls.
© Project Atlantis (Source: GSGSSI)

Allocation and access to resources

Description

On an annual basis, the Government sells the much sought after toothfish longline fishing licences granting access to the fisheries resources. The number of licences is limited by the TAC set each year by CCAMLR: in 2008 and 2009 ten licences were granted[20,22]. In the 2008 fishing season, the licence fee cost fishing companies GBP£93,215 per 100 metric tonnes of quota[20].

The GSGSSI has created a Government Licensing Policy linking CCAMLR's overarching conservation and ecosystem management objectives and the government's commitment to maintaining, and raising, the standards of management, research and operation in the fishery which led to MSC certification[23]. Access to the fishery is based upon a set of criteria (described below) which enable the government's Director of Fisheries to weigh-up the relative merits of each applicant based not only on their individual contribution to the achievement of the objectives set out in the Licensing Policy, but also to exclude those applicants whose history of compliance within or outside the fishery is questionable[23].

Allocation criteria[23]

Allocation criteria are set out in the Government Licensing Policy. The Policy's objectives establish that the Director of Fisheries *will not* licence any vessels that have been involved in IUU fishing, or are owned, chartered or operated by a company, individual or other entity that has been involved in IUU fishing. When assessing applications, the Director may take into account any information relating to IUU fishing provided by CCAMLR's Contracting Parties and the CCAMLR Commission, including CCAMLR's IUU fishing vessel list[23].

[23] GSGSSI (2007) *South Georgia Toothfish Licensing 2007: Information for Applicants*. Stanley: Office of the Commission, Falkland Islands. 10pp.

The criteria also take into account the compliance record of the vessel, the owners, charterers or operators based upon CCAMLR tables, scientific observer reports, inspection reports and any other relevant documents, records or publications. Applicants are given an opportunity to comment upon their compliance record if the Director of Fisheries is of a mind to refuse an application[23].

The criteria include some mandatory basics which relate to the vessel, various forms of documentation and provision of written undertakings about certain operational features:

- Vessel must be flagged to a CCAMLR Member State; have valid flag state licences and safety certificates; be certified free of rats (to prevent introductions to rat-free ecosystems); and have an operational VMS.
- Documentation must be in order. In addition to valid licences and certificates, applicants must provide verifiable VMS records for the year preceding the upcoming season, full disclosure of the legally registered owners' details, information about charterers or operators of the vessel if different from the owners, and details and experience of the Fishing Master.
- Applicants must undertake in writing to have an English speaker on board while in the Maritime Zone, and provide accommodation for international scientific observers at officer-standard and enough workspace to enable observers to carry out their duties.

The mandatory basic criteria are supplemented by additional criteria that are considered by the Director of Fisheries when assessing and comparing applications from fishing companies. These make more explicit links to the objectives of the government's stated policies and include not only basic compliance with fisheries management measures, but also how the vessel might actually go above and beyond minimum requirements to make an active contribution to furthering the fisheries management and conservation objectives. The assessment criteria include consideration of:

- The likelihood of vessels complying with their licence conditions. Applicants can support their applications by describing equipment, facilities or practices aboard that will help compliance.
- How participation in the fishery is likely to contribute to raising the fishery's standards, for example by using equipment or gear, or adopting working practices, that exceed CCAMLR Conservation Measures.
- How well applications demonstrate willingness and ability for vessels to participate in relevant fisheries research in South Georgia's Maritime Zone during the forthcoming fishing season.
- Whether applications include good quality proposals to actively engage in new or experimental fishing or mitigation methods during the forthcoming season.
- How well applicants support of their applications about vessel capability or likely performance in the fishery with verifiable, well-founded and reliable statements.
- Historical involvement in the fishery by applicants, vessels, vessel owners, charterers or operators.

Finally, before being granted a licence, the vessel must undergo a pre-fishing inspection. This means that a company or individual may have been provisionally granted permission to fish for toothfish in the zone, but the vessel itself must undergo a physical inspection to ensure it complies with all the criteria. In theory, it is possible that a vessel may not pass inspection and thus the provisional licence would be suspended and the vessel could be turned away unlicensed until such time as the grounds for failing inspection are rectified. Thus, given the remoteness of the fishery, incentive is high to comply with all the mandatory access criteria and licensing conditions. GSGSSI also withholds some quota year until midway through the season to create an incentive for continued compliance by licensed vessels. If there are no indications of illegal fishing, an additional allocation of quota may be made to vessels based on consideration of the following criteria:

- Compliance with licensing conditions.

- Toothfish catch rates during the first half of the season.
- Successfully mitigating seabird by-catch and mortality and keeping grenadier and skate/ray by-catch within the 5 percent limit set by CCAMLR.
- Continuing to meet any relevant research activity requirements[20].

Allocation process

Fishing companies apply to the government by completing a three-part application form detailing how they meet the above access criteria and how they will meet and advance the government's fisheries policy objectives. Clearly articulated in the licensing application are the two overarching fisheries management objectives, to which vessel owners will need to describe their contribution: 1) to regulate fishing to conserve fish stocks and other marine living resources in line with CCAMLR; and 2) to maintain a sustainable fishery.

As previously indicated, the allocation process involves the Director of Fisheries weighing and assessing every application against the Government's Fisheries Licensing Policy, as well as each other. The Government's aim is to allocate licences to those vessels that, in the opinion of the Director best meet the Policy's objectives and criteria and are most likely to be able to successfully advance them during the upcoming fishing season[22]. Thus, the Director of Fisheries is the delegated decision-maker and he or she has the discretion to call upon a wide range of documentation and sources of information when performing due diligence background checks on each application to assess its relative merits against all the other applications.

The competition process for licences, coupled with the achievement of the MSC eco-label, have resulted in increased co-operation and consultation between the government and stakeholders[24]. Annual consultation meetings are conducted between fishery participants and the government to discuss and review the performance of the fishery, new information and advice from CCAMLR, the management objectives and any proposed changes to management measures, as well as any concerns fishery participants may have about management measures or licensing conditions and criteria[22].

According to the expert scientists contracted by the independent certification body to assess the fishery against the MSC standard, the licensing procedures and processes have become more transparent in recent years and the consultation meetings mentioned above serve as an effective consultation forum. Ad hoc meetings between the government, industry and scientific advisers also enable less formal consultation about licensing requirements[25].

Conditions of use

Licence conditions common to all fishing vessels gaining and maintaining access to the fishery include the following:

- Submission for inspection before beginning any fishing.
- Maintaining compliance with the mandatory criteria set out in the application, i.e., vessel, documentation and undertakings.
- The amount of quota specified in the licence must not be exceeded, but all efforts must be made to catch the quota specified in the licence.
- All relevant CCAMLR Conservation Measures, such as bird and other species by-catch mitigation measures, must be complied with.
- Daily catch and position reports must be made to the Government.

[24] Grieve, C. and Hall, H. (2008) *South Georgia Patagonian Toothfish Longline Fishery: MSC Certified!* Keynote presentation to the international conference on Governmental Use of Voluntary Standards, 16-17 October 2008, Geneva, Switzerland.
[25] Medley, P., Pilling, G., Rice, J., Combes, J. and Hough, A. (2009) *Re-certification Public Certification Report for South Georgian Patagonian Toothfish Longline Fishery.* Derby: Moody Marine, Moody International Certification. 164pp.

- Conversion factors for processed toothfish must be applied (these are specified in each licence).
- No fishing shall take place in depths shallower than 500m.
- No hooks shall be discarded.
- All catch is subject to weighing/verification procedures in Stanley.
- An observer appointed under the CCAMLR scheme of international scientific observation must be on board while fishing and all reasonable efforts must be made to facilitate the completion of his biological sampling and tagging tasks.
- The observer must be permitted to tag at a rate of 2 fish for every 3 tonnes caught.

As well as complying with the standard licensing conditions and any additional requirements operators have agreed to meet in relation to any research activity being conducted within the fishery, should operators wish to display the MSC eco-label they must agree to join the South Georgia Group Entity and abide by its Chain of Custody or traceability conditions. Thus, supplementary licence conditions include automated labelling of fish boxes to certain specifications, daily uploading of data onto a central database operated by a government sub-contractor and the sealing of South Georgia catches in the hold by government or fisheries officers.

Practical considerations

The relatively small number of fishing vessels, coupled with the relatively short fishing season suggests that the administrative and inspection processes are manageable by the government.

The independent experts assessing the fishery against the MSC standard observed that the government's investment in research and management is very high compared to other fisheries, considering the number of vessels and total catch. However, they also concluded that the investment is justified given the sensitivity of this higher latitude marine ecosystem to perturbations, the long recovery times from harm, and commitment of both CCAMLR and GSGSSI to applying precautionary and ecosystem approaches to management[25].

Conclusions: Lessons learned

GSGSSI's licensing policy almost perfectly demonstrates how a preferential licensing policy can link the pursuit of government conservation and fisheries management objectives and history of compliance with the allocation of access to fisheries resources.

Arguably, access and licensing are a competitive process that the government has developed to its advantage, creating a kind of '*race to the top*', as those vessels that are demonstrably compliant with fisheries regulations, and those operators who are willing to achieve or exceed conservation and management goals and have a history of doing so, may be given preferential access to this lucrative fishery.

One of the benefits of the fishery's successful certification against the MSC standard has been the ability for the government to leverage more stringent access criteria to serve its conservation ends. Both the certification and competition for licences are said to have led to higher awareness and sharing of good fishery management practices within the fishery[20].

The MSC re-certification process every five years, which the fishery successfully achieved in September 2009, creates an opportunity for government managers and the industry to continue to discuss and improve their performance. This may lead to new or improved criteria for accessing the toothfish resources of the South Georgia Maritime Zone in the future.

In the context of the EU's CFP there may be lessons to learn and apply. The linking of access to high level objectives could be successful within a broader, ecosystem-based management framework, arguably regardless of the size and scale of the fishery. While the principle seems sound, the practical implementation may present different challenges to overcome, particularly in terms of complexity and cost.

As noted in the Cape Cod case study, the access criteria themselves are not separate arrangements outside an integrated, strategic management framework; which suggests that the overarching management or policy framework and its principles should not be developed in isolation of policies relating to access that would nest within such a framework.

While the toothfish stock is managed in accordance within CCAMLR's international, ecosystem-based approach, the fishery itself is the sole responsibility and jurisdiction of a single government to implement and enforce the regulations. This may be a factor that simplifies or facilitates the ability to implement such principle-led access criteria.

Both the access criteria and the management approach contain strong links between research, real-time fishery monitoring, data collection and evaluation involving observers, researchers and the fishing industry collaborating together on-board during fishing campaigns.

Finally, while there is some dialogue with fishing interests, it is the government that is the driving force behind the access criteria and their attendant conditions. Broader engagement and dialogue, involving a wide spectrum of stakeholders happens at a higher level within the halls of CCAMLR, rather than in a formalised stakeholder or co-management forum at fishery level. However, some might argue that nature of the fishery may render this issue somewhat irrelevant, given its high standard of management and the outcomes that are achieved: stock biomass above target reference points, little to no seabird by-catch, little to no IUU fishing, mitigation of other species by-catch, protection of vulnerable benthic habitats and traceability of legally-caught toothfish through supply chains to the consumer.

Figure 5: Wandering albatross chick, Willis Island in the background by David Nicholls. ©Project Atlantis (Source: GSGSSI)

3. Trawling in the Koster-Väderö fjord, Sweden

Sweden's first national marine protected area and local trawling have found co-existence. After conflict-ridden processes spanning years, the Swedish government developed a co-management initiative for managing the country's inshore fisheries. As one of six pilot projects, the Koster-Väderö fjord shrimp fishery became the focus of co-management initiative between local fishers, the Swedish National Board of Fisheries, the regional County Administration and other stakeholders. Under the co-management initiative continued access to northern shrimp, lobster and Norway lobster resources was allocated to a limited number of local fishers. The fishers participated in developing the area's management framework, assisted researchers and helped develop specific environmental protection and fisheries management rules, within the deep sea marine park in Sweden's north west. This case study demonstrates how both environmental and social considerations can be integrated and can inform the allocation of access to fisheries resources.

Fishery overview

Off Sweden's northwest coast, in a corner of the Skagerrak Strait dividing Sweden and Norway from Denmark in Sweden's Northern Bohuslän region, is the Koster-Väderö fjord. Dotted with islands, the fjord's defining feature is a deep, coldwater marine trench which is rich in biodiversity, ranging from deep-sea corals to valuable shrimp. Covering a large marine area with sheltered bays, islands and rocky outcrops in open sea, the Koster-Väderö fjord has several unique habitats. These include rocky sea beds, coral reefs, shallow sediments and deep, soft bottom, the ideal habitat for gardens of sea-pen. The fjord is home to Sweden's highest diversity of marine life of between 5,000-6,000 species, including 200 animal species and nine algae species thought to be unique to the area.[26, 27]

After years of conflict, negotiation and collaboration between authorities and stakeholders, including members of local fishing communities, resulted in the area becoming the first marine National Park, called 'Kosterhavets', to be declared under Swedish law in September 2009 [26].

Shrimp, lobster and Norway lobster (Nephrops) have been the principal species for a fleet of local trawlers fishing the fjord for around 100 years using mainly local management and informal rules. Using light trawl gear, 30 vessels, between 10-26metres in length, catch around 200 tonnes of shrimp a year[27]. Around 50 local fishers are employed in the fishery which has a turnover of approximately SKr80 million each year (about €8million).[26]

The Koster shellfish fishery is considered to be within safe biological limits, to the extent that WWF Sweden and the Swedish Nature Conservation Association consider it to be a good example of a sustainable, small-scale fishery[26,27].

Fishery management system features

Sweden's fisheries are managed by the Swedish Board of Fisheries under the Fisheries Law of 1993. Management of national parks and conservation areas falls under the administrative authority of both national and regional nature conservation agencies, including the Swedish Ministry of Environment, the Swedish Environmental Protection Agency and County Administration Boards (regional governments)[26].

[26] Lawett, E. (2009) *The Koster-Väderö Fiord: Experience of nature conservation in a marine Natura 2000 area.* Presentation. Dept. Nature Conservation, County Adm. Board of Västra Götaland. 45pp.
[27] Anon (2008) *Background information: SAFMAMS Workshop, 2008.* The Fisheries Secretariat, Sweden. 3pp.

Marine conservation in the Northern Bohuslän region of Sweden has been a hot topic since the late 1970s, generating conflict between fishers, authorities and nature conservation NGOs. This rumbled on throughout the 1980s and 1990s through various consultative processes, until in 2000 agreement was reached between fishers, local communities, authorities and the regional government about the possibilities of co-existence for both nature conservation and fishing.[26,27]

Since 2005 the Koster shrimp fishery has been managed under a co-management initiative that seeks to integrate fishery resource management, economic development and environmental protection into a sustainable fishery within a defined zone in the Koster-Väderö area[26]. Entitled the "*Swedish Fisheries Co-management Initiative*" and established within six fishing areas, including Koster-Väderö, the initiative uses fisheries regulations rather than nature protection laws in a multi-stakeholder process to manage fisheries and conserve the marine environment[28]. Very early on in the process one of the principal aims was established between the actors in the co-management process: to create a multiple-use, marine protected area in the Koster-Väderö fjord which enabled sustainable fishing to continue[26,27].

Based on a participatory approach, the co-management initiative established dialogue between stakeholders, including fishers, scientists, NGO representatives, islanders, local, regional and national government officials and others. The management plan development process involved:

- establishing key goals of the fishery management and nature conservation process;
- setting out the roles of the various actors;
- an inventory phase to gather data and information about the ecology of the area and the fishery;
- fishers and scientists collaborating on research into fishing methods to develop more selective and less impactful gear;
- a dialogue phase between the stakeholders to develop management and conservation arrangements that balanced the co-objectives of sustainable fishing with nature protection of sensitive habitats and ecological features; and finally,
- a follow up phase involving communication and education for the fishers about the ecology of the area and their responsibilities when fishing.[26]

The result was the Koster-Väderfjord fishing agreement which promotes mutual understanding of nature protection and fishery regulations. The main fishery management features now involve limiting access to only local trawlers, who must use smaller, lighter trawl doors that are less damaging to habitats, the design of which is based on results of collaborative research, and sorting grids to reduce by-catch of species like haddock and plaice. There are also trawling bans in sensitive habitats, restrictions on the shallowness of trawling depths, e.g., trawling is only permitted in depths greater than 60m, and fishing is limited to three fishing-days per week. Fishers use checklists and documentation to record their activities, helping self-management. Relevant fisheries information, such as seabed charts showing protected sites, is provided to fishers in a usable visual format. Finally, the agreement also incorporates continued development of more environmentally friendly fishing gear by the fishers and the mutual commitment to the marine ecology education programme.[26,27,29] A marketing strategy was also developed to help increase profitability without

[28] Höj Larsen, C., Ojaveer, H. and Sporrong, N. (2006) *Review of the Role of Science in Cooperative Fisheries Management.* Deliverable No.3 for SAFMAMS: Scientific Advice for Fisheries Management at Multiple Scales. Project No. 013639. 40pp.

[29] Piriz, L. (2006) *Linking local co-management to the implementation of the European Fisheries Fund and the Role of NGOs.* Presentation. Swedish Board of Fisheries. Downloaded on 24 September 2009 from: http://www.fishsec.org/downloads/1161692959_09947.pdf

increasing fishing effort, leading to the creation of a local brand for shrimps and the awarding of the KRAV eco-label[30] to two of the fishing vessels[26,29,31].

Allocation and access to resources

Description

In Swedish fisheries, in general, access to fishing is limited by vessel permits issued by the Swedish Board of Fisheries, along with professional fishing licences granted to individuals[32]. In the context of classifying the access that is allocated to the local fishers of the Koster-Väderö, MRAG *et al* [32] describe such an arrangement as a Territorial Use Right (TURF), i.e., "*an allocation of a certain area of the ocean to a single user, usually a group, who then undertakes fishing by allocating rights to users within the group. Usually of long duration and with high degree of formal and informal transferability within the group*" (p.13).

Access criteria

Access to the Koster-Väderö shrimp fishery is strictly limited to the smaller, lighter trawlers based in the local area and subject to the management arrangements described above. Large trawl vessels and other vessels from outside the area are prohibited from fishing in the Koster-Väderö fjord. A TAC is set for shrimp, which is divided informally by the fishers between of the 30 vessels permitted to fish in the area[27].

A pre-requisite for professional fishers to be permitted to fish in Koster-Väderö marine park involves active participation in specifically designed education and training. Three training courses have been developed relating to marine ecology of the area, fisheries research and stock assessment and product quality control.[33] However, the training is intended to be two-way, with fishers also conveying their knowledge about fisheries and marine ecology to government officials and researchers[34].

Vessel permits are said to be non-transferable[32] which may help to limit access to the fishery, but may also prove to be a challenge given the general decline in participation in Swedish inshore fisheries over the last decade. A recent report about the structure of Sweden's west coast fishing fleet analysed the overall decline in the fishing fleet between 1998 and 2008. A key conclusion about the reason for the decline was that the average age of fishers is increasing and as older fishers retire, fewer younger people are taking up fishing. This trend appears to be true for fishing in the Koster-Väderö shrimp fishery, despite there being some evidence of renewal and modernisation of fishing vessels[35]. Against this backdrop, the co-management initiative is seeking to attract younger people to the fishery and create a viable fishing industry in the area that provides more employment, by

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[30] KRAV eco-label is a Swedish programme, geographically limited, that certifies individual fishing vessels against a standard that is concerned with fish stocks being within ICES' safe biological limits and minimising the environmental impact of individual vessels (use of fuel, waste handling, bottom paints, maintenance) and activities (fishing gear, production processes, transport). http://www.krav.se/Documents/Regler/englishEditions/Standards_July_2008.pdf Accessed on 30 October 2009.

[31] Thrane, M., Ziegler, F. And Sonesson, U. (2009) Eco-labelling of wild-caught seafood products. *Journal of Cleaner Production*, Vol.17: 416-423.

[32] MRAG, IFM, CEFAS, Azti and PoIEM (2009a) *An analysis of existing Rights-Based Management (RBM) instruments in Member States and on setting up best practices in the EU. Final Report: Part II: Catalogue of Rights-Based Management Instruments in coastal EU Member States.* FISH/2007/03. 249pp.

[33] Knigge, M. (2007) *Smart Investments: Promoting Sustainable Fishing Initiatives under the European Fisheries Fund.* Brussels: WWF European Policy Office. 60pp.

[34] Anon (2007) *Uthålligt yrkesfiske i Norra Bohuslän: en samförvaltningsplan med focus på långsiktighet, ansvar och framtidstro.* In Swedish. 40pp. https://www.fiskeriverket.se/download/18.2fd63c72114a6399bf680001232/SFI-NBohuslaen_forslag-frvaltnplan.pdf Downloaded on 30 October 2009.

[35] Ask, L., Gustavsson, T. and Åsgård, B. (2009) *Analys av det kommerciella västkustfisket åren 1998-2008.* Fiskeriverket. 43pp.

developing and marketing a strong local brand and supporting young people who want to invest in fishing financially, as well as with training, mentoring and apprenticeships[34].

These criteria combine and integrate both social and environmental considerations, demonstrating that social cohesion and preserving fishing communities can co-exist with protecting marine environments using formal nature conservation mechanisms.

Allocation process

Tradition and custom suggest that 100 years of fishing by small-scale trawlers for the shellfish in the area meant that the conflict that arose about allocation of access to resources (i.e., the threatened expulsion or exclusion of access to local trawler fishers) was a driving force in the process to first enable a participative process, i.e., the engagement of all the stakeholders in the discussion and debate. Arguably, it could be said this led to the high levels of commitment to the co-management initiative.

Access rights were not so much introduced as preserved for a select group of fishers – underpinning the social ecology of the community by enabling those who had traditionally fished to continue to do so. In that sense, the access criteria could be said to be socially based. Continued access has been based on both the participative process between fishers and authorities and more expansive co-management initiative between a wider range of stakeholders yielding an integration of fisheries and environmental management through research into the ecology of the area and adaptation of fishing practices (gear, timing, location) to take account of both fishing and environmental protection objectives. In this sense, criteria for access could also be said to have an environmental dimension.

As described earlier, marine conservation in the Northern Bohuslän region of Sweden has been a source of conflict since the late 1970s between fishers, authorities and nature conservation NGOs. Fishers protested about losing access to their fisheries and actively used the media to publicise their cause. Various participatory and consultative processes to resolve the conflict were attempted during the 1980s and 1990s. In 2000 an agreement was finally reached between fishers, local communities, authorities and the regional government about the possibilities for co-existence of both nature conservation and fishing. However, it was not until 2005 when the Swedish National Board of Fisheries initiated a pilot co-management project that a model for cooperative fisheries management really began.[26,27] One conclusion that was drawn by a researcher in the co-management initiative was that the fisher would actively engage with these kinds of processes if they could see clear benefits. In this case, continued access to their traditional fishing grounds was balanced by their commitment to have a lighter impact in the area[29].

Conditions of use

Fishers who comply with the management plan for the area continue to enjoy access. Proposed sanctions for those who fail to comply suggested that fishers who failed to comply with the plan should be excluded from the fishery area for specified periods of time[34].

Conclusions: Lessons learned

One of the main lessons learned by the developers of the co-management initiative reported that these processes take time. The co-management initiative was ultimately successful in integrating fisheries access and management objectives with the objectives of nature conservation, but each case is unique and should be understood as a continuous problem-solving process[29] that should proceed at the pace that is right for the participants involved.

"*The larger the number of user groups and stakeholders, the more likely it is that the development of alternative strategies for resource allocation within commercial fisheries will be blocked. This is an issue that the professional fishers apparently do not want to share authority about.*" [29]

Another important lesson was that project leaders are needed to lead processes, hold the vision for the project, help facilitate the maintenance of connections between participants and to continue to push forward to achieve the goals and aims of the project.

It is too early to have conducted any evaluation of whether the initiative has been successful in achieving the objectives which guide the management of the fishery and the national park. Similarly, it is also too early to determine whether there were any unintended consequences. Regular monitoring of the management plan and fishing activity in the fishery continues, with full evaluation reports intended to be completed by the co-management initiative every three years[34].

In the context of the Common Fisheries Policy there are some useful insights:

- Co-management and participation have much to offer. It is important to keep talking, keep dialogue channels open and to allow the process to take the time it takes. As long as participants are committed to making co-management and integrated management work, rather than dragging issues out to avoid decisions or perceived negative impacts. It would be important to try to prevent the politics from getting in the way of making choices that lead to achieving the goals of environmental and social sustainability.
- The integrated approach to fisheries management and access means that one aspect of the management approach is not separate from the other. In other words, the access issue for fishers was the issue that provided a focal point leading ultimately to co-management of the fishery, therefore the issues relating to access were always an integral part of the overarching management or policy development process.
- By using fisheries regulations to co-manage fishery and marine reserve, there is the potential to achieve economies of scale, efficiency and consistency of management approaches, transparent decisions and resolution of issues around resource use and conservation of marine spaces, particularly when objectives may be in conflict.
- Thus multiple objectives can work. One single management or resource allocation philosophy took over, in this case the conservation agenda from the 1980s did not overwhelm the fishers agenda to keep fishing, rather over time the two were able to be realised together, with some compromises made on both sides to the longer-term benefit of all. Therefore, conservation and fisheries can co-exist. Access can be allocated on the basis of social continuity, as well as linking environmentally sensitive management to that access.
- Leadership is an important consideration in successfully achieving the objectives and goals of ambitious change initiatives.

4. Languedoc-Roussillon region of the French Mediterranean

Centuries old fisher's guilds, called Prud'homies, occupy a unique place in fisheries management in the French Mediterranean. They serve to maintain and protect fisher livelihoods and fishing communities using principles that centuries later became the founding principles of the French revolution: democracy, equal opportunity and the rights to both work and to earn a living from one's profession. The Prud'homies use a unique and egalitarian lottery process to determine which member has access to which fishing grounds within their overall territory for the coming fishing year. This case study, focussing on the fisheries in the Languedoc-Roussillon coastal region, demonstrates the potential for using social considerations to inform the allocation of access to fisheries resources. To a lesser extent, environmental considerations figure in accessing the region's fisheries resources due mainly to the exclusion of trawling within three nautical miles of the coast and the use of selective, small-scale fishing methods within the coastal lagoons and lakes.

Fishery overview

Fisheries along the French Mediterranean coast use a diverse range of fishing gear to target many different species. With bottom-trawling banned within three nautical miles, around 86 percent of fishers fish in territorial waters, with a predominance of small-scale boats working inside three or six nautical miles limits, or within coastal lakes and lagoons[36]. The Rhone River serves as a boundary between the two main fishing regions along France's Mediterranean coast: the Languedoc-Roussillon region and the Provence-Alpes-Côte d'Azur (PACA) region.

While the majority of fishers in the PACA region are small-scale artisanal fishers, who use their networks to market daily catches directly within the local region, those in the Languedoc-Roussillon represent greater sector variety. While many Languedoc-Roussillon fishers are small-scale artisanal fishers, there are also a much higher proportion of offshore semi-industrial trawlers and seiners, and a large-scale sector that targets tuna in the open Mediterranean. Sète, in the Languedoc-Roussillon region, is one of France's major fishing ports and is the largest in the Mediterranean, caters to all three sectors. In 2007, approximately 1,900 Languedoc-Roussillon fishers worked 677 fishing vessels across the region's waters to land 17,000tonnes of fish and shellfish worth about €40million[37]. Species targeted include eels, molluscs, crustaceans, sea bass, sea bream, flatfish, hake and other groundfish, small pelagics such as mackerel and large pelagic species like tuna.

Fishery management system features

Fisheries in France are regulated under national law which holds that fisheries resources are non-tradable, common pool resources with the state responsible for sustainable use, allocation of access rights, avoiding privatisation of fishing rights and maintenance of economic and social balance in the coastal zone[36]. Under the Act, regulatory authority for fisheries management has been decentralised to regional level, as well as, with State supervision, delegated to the fishing industry[36].

Administrative bodies, which are effectively joint agencies involving professionals (fishers, crew, merchants and processors) and administrators in the management of French fisheries, include[36,37]:

[36] MRAG, IFM, CEFAS, Azti and PoIEM (2009a) *An analysis of existing Rights-Based Management (RBM) instruments in Member States and on setting up best practices in the EU. Final Report: Part II: Catalogue of Rights-Based Management Instruments in coastal EU Member States.* FISH/2007/03. 249pp.

[37] Woodsworth, S. (2009) *Regional fisheries management : seeking sustainability in coastal fisheries: the example of the Languedoc-Roussillon region in France.* Presentation to the Ocean2012 Regional Fisheries Management Conference, Brussels, 29 September 2009. http://www.ocean2012.eu/channel/view_resource/id/12244

- A national committee for fisheries and aquaculture which has competence for regulating and licensing some fisheries (which may be brought into law by the State); liaising with the State about EU and international-level fisheries regulations and policy; and harmonising rules between adjacent regions.
- Thirteen regional committees responsible for developing and implementing fisheries management regulations within their regional boundaries (which may be brought into law by regional prefectures or the regional Maritime Affairs directorate); taking advice and seeking proposals from local committees; harmonising rules between local territories; and harmonising interests of the different sectoral groups.
- Thirty-nine local committees which do not regulate, but serve as consultative forums for local fishers and develop proposals to submit to regional committees.[38]

In addition, but unique to the Mediterranean, fisheries administration and management is sub-divided into 33 *prud'homies*, 11 of which exist in the Languedoc-Roussillon region. These are ancient guilds, protected by French law since the mid-1800s. Among other powers of management, enforcement and arbitration, professionals from fishing communities may regulate, licence and allocate access to certain fisheries within established territories[39,40]. Historically, all fishers in the Mediterranean, by French law, must be members of a *prud'homie*[38].

Where a *prud'homie* and the relevant regional committee have a good, communicative relationship, often the *prud'homie* regulations are taken up by the regional committee to the State (either the regional prefecture or regional Maritime Affairs directorate) to be given the force of French law. This enables harmonised measures to be applied across *prud'homie* boundaries, meaning that members of all other *prud'homies* are subject to those laws. Conversely, where *prud'homies* have decided to self-regulate (which is their right) and not seek a relationship with regional committees, their regulations are not applicable to members of other *prud'homies* (who might stray into their territory) nor beyond their territorial boundaries. This also implies that such *prud'homies* must enforce their rules without State support.[40]

Both State, via the regional committee, and *prud'homie* regulations can and do include: determining vessel numbers, length or size; fishing times or zones; limiting access to certain times of the day or season by method; or gear configuration and other technical measures. *Prud'homies* may regulate fishing operations out to the three nautical mile limit and beyond, depending on the species, and cover any activity for any vessels attached to the relevant port.

Allocation and access to resources

Description

There are two aspects of relevance to the access and allocation context of this report. The first concerns licensing allocation arrangements at national, regional and local levels. The second relates to an age-old lottery system used by *prud'homies* in the Languedoc-Roussillon region to allocate fisher access to fishing grounds in their territories.

Access licences

There are several layers of licensing for Mediterranean fishers to navigate in order to gain access to fisheries resources according to which layer of governance the species is managed. In the first

[38] Frangoudes, K. (2001) France. In Symes, D. & Phillipson, J. (Eds) *Inshore fisheries management in Europe*. Dordrecht: Kluwer Academic Publishers. Pp: 139-155.

[39] CRPMEM Languedoc-Roussillon (2007) *Recensement des mesures de gestion locale du stock d'anguilles en Languedoc-Roussillon*. Sète: Comite Régional des Pêches Maritimes et des Elevages Marins du Languedoc-Roussillon. 84pp

[40] Simon Woodsworth, Charge de Projet, Biodiversité et Territoires, Région Languedoc-Roussillon (2009) Personal communication.

instance, every fisher must pay a fee and receive a "*bon de prud'homie*", i.e., a licence granted by their *prud'homie*. Then, in many cases, an exploitation authorisation and a European Community fishing licence, or perhaps a trawl licence[36]. Finally, for every species or activity managed at regional or national level, fishers must also have a separate licence. This means that each fishing vessel, depending on its gear, species and areas of operation, may have up to five to six licences or more[40]. Indeed in 2009, MRAG *et al*[36] reported that at national level over 120 licensing systems have been established in French fisheries.

Lottery for fishing grounds

Separate to the licensing process, allocating access to particular fishing grounds (either in the coastal lakes and lagoons or in coastal waters) is the responsibility of the relevant *prud'homie*. Similar to a communal marine tenure system or quasi-territorial use rights (TURFs), on a yearly basis *prud'homies* allocate access to specific zones within its territory where individual fishers may set their nets or traps[38]. Each *prud'homie* conducts an annual lottery to determine who will have access to which fishing grounds throughout the coming fishing year[40]. By conducting the lottery draw annually, fishers rotate and change fishing grounds and have an equal chance of drawing the best fishing spots each year.

Figure 6: Storing nets in the Languedoc-Roussillon region. ©Nicholas Woodsworth.

Allocation criteria

Criteria for allocating access to resources, whether they relate to granting licences or determining a fisher's eligibility to participate in a prud'homie lottery draw for fishing grounds are underpinned by distinctly social and democratic principles and considerations.

Licences

While allocation of access through licensing may be guided by the priorities and objectives of the management regulations or rules of the relevant *prud'homie*, under French law those agencies allocating access licences must respect the concept of «*Droit de travail*», the right to work or earn a

living. So, if scientific advice suggests licence numbers must be reduced by 30 percent due to resource status, the National or Regional Committee will use certain criteria to determine who may have access.

For example, if applications are oversubscribed with 400 applicants for 300 eel licences, the Regional Committee will use a scoring system to rank and prioritise applicants by taking into account information about the individual and their dependence on the particular licence to earn a living. As well as financial information and proof that an applicant is a professional fisher, these allocation scoring criteria may include an applicant's age and how experienced or well-trained the person is; the number of other licences or endorsements a fisher may have; or how many species they target and the gear they have available. So, one fisher may have four other licences and a variety of nets and traps enabling him to catch other species in other fishing areas, while another fisher may be applying for a single licence, this one. In which case, the second is likely to be allocated access over the first. Thus, the *droit de travail* principle will be upheld. [36, 40]

New entrants to fisheries may apply for licences, but whether they will be granted or not will usually depend on the principles and priorities determined by at regional level by the relevant Regional Committee for a particular fishery, taking into account the local social and economic conditions and the structure of the fleet[36].

Lottery participation

In terms of criteria to determine who is eligible to participate in lotteries for the right to claim and fish in a specific fishing zone each year, each prud'homie may establish different criteria. Examples from a 2007 inventory of eel management measures across all 11 prud'homies in the Languedoc-Roussillon region included[39]:

- Membership dues must be paid in full prior to lottery draws.
- Fisher must often be an owner-operator.
- In some cases, a crew member may participate in lottery draws but numbers of nets, i.e., zones they may be allocated, may be limited.
- In some cases, a fisher must have fished in the *prud'homie* territory for a minimum of nine months in the previous fishing season.
- In some cases, *prud'homies* exclude a member from participating in the draw if they've already successfully drawn a fishing zone from another *prud'homie*.

Allocation process

Lottery draw[40]

The lottery draw for each *prud'homie* is an important annual affair. Its very existence indicates an egalitarian approach to the sharing of common space and avoiding conflict: not only in the allocation process about who is allocated which space/zone, but the very mechanism of dividing space and time between fishers also literally helps fishers avoid actual gear conflict with each other on the water.

Each *prud'homie* territory, for example a coastal lagoon or an expanse of open sea, is divided into a fixed number of zones, each of which will become an allocated space for one member for the coming fishing year. The total number of zones will depend on the size of the overall *prud'homie* territory.

The total number of zones is divided by the number of *prud'homie* members participating in the draw to give the number of zones each fisher will be able to fish. There may be five or six times as many zones in a territory as there are fishers, which means it is possible for each member to have

five-six or more zones in which to fish. And that there may be five or six selection rounds within the draw.

The zones themselves are listed in columns on large boards according to the number of selection rounds there are to be. So, if there are to be five selection rounds, there will be five columns listing the relevant zone numbers down one side and a space for the fisher's name. Each column lists the zones in descending order, beginning with the 'best' rated zone at the top. Each selection round, therefore each column, has a combination of best, good and not so good zones.

The lottery draw consists of each eligible fisher drawing a single number (from a bag, a box, etc). This number signifies the order in which each fisher will choose his preferred zone. Therefore, if a fisher draws the number one, this means he will have first choice of zones. The fisher, who draws the number ten, goes tenth. And so on, until the first round is complete.

To ensure fairness and the possibility of everyone winning good fishing grounds, in the second round the order is reversed. So, the fisher who drew number one now has to choose a fishing zone last, while the fisher who drew the last number now chooses first. This reversal of order continues until all selection rounds are complete, thus spreading the chances of each fisher gaining access to productive fishing grounds of his choice.

Conditions of use

Licences

French fishing licences are not transferable[36]. The conditions attached to licences or obligations to fulfil by members of *prud'homies* will depend on the fishery, its regulatory requirements and the priorities of the administrative agency involved in implementing the management measures. Many require the declaration of individual landings, but beyond that there does not appear to be uniform or consistent conditions.

Lottery system

Each zone allocated through the lottery system is generally required to be clearly signposted or marked in some way with initials or name of the person fishing there for the year. In some zones, *prud'homies* set conditions and limits on the number of nets or traps that may be set within the zone, or the times of day that nets or traps may be set, or indeed the soak time for nets or traps. In addition, total bans on all fishing during certain times of the year may be considered a condition of access during open times. Generally, conditions will be particular to the area of water, the species targeted and other considerations unique to the *prud'homie* territory and its management priorities.

Practical considerations

Given the layers of licensing and the complexity of the fishery management administration from *prud'homie* level up to the national level, there seems to be a great deal of bureaucracy for fishers to deal with: many annual licences to apply for and forms to complete, and rules and regulations to keep track of and abide by. There is significant potential for confusion about activity that may or may not be authorised, as well as significant potential for the inconsistent and iniquitous application and enforcement of fisheries regulations.

In practical terms for allocating access through the licensing systems, while the democratic and equity principles governing their application may be socially desirable, specific decisions and scoring considerations (i.e., what was taken into account and how they influenced the outcome) may be less than transparent. Tradeoffs may not be readily apparent to a broader stakeholder constituency, especially when it comes to considering the environmental sustainability of resources.

The lottery system appears to be a very egalitarian means of granting access to fishers in a fair and transparent manner, conducted in the open with all affected parties involved. This contrasts to the

less than transparent allocation mechanism for licensing decisions described earlier, the *prud'homie* approach seems a very practical solution to a process that is so often fraught with conflict and difficulty. While its outcomes are not particularly focussed on environmental considerations or improving environmental performance (for the purposes of this report), the social goals relating to equity and equal opportunity strongly influence the choice of allocation mechanism. Ultimately, the lottery process is relatively straightforward with immediately transparent outcomes for fishers and stakeholders alike.

Conclusions: Lessons learned

The upcoming 'Mediterranean CFP', i.e., a new EU regulation to manage fisheries and define technical measures in the Mediterranean may bring to the French Mediterranean a streamlining of regulations and management measures. Alternatively, it may well simply add another complex layer to the licensing and management of fisheries in the region. It is too early to say.

Thinking more broadly about the applicability to the EU and Member States of these approaches to allocating access to fisheries resources:

- Despite this case study mainly highlighting social considerations being weighed against one another in allocation decisions, the principle of developing a weighted, multi-criteria scoring system based upon an agreed set of environmental and/or social considerations is a valid one. Such a system would help create transparent access allocation decisions. Determining the priorities (i.e., the criteria) and their relative weights would ideally be conducted through a multi-stakeholder, consensus-based engagement process involving as broad a cross-section of interests as possible.
- A lottery system as a means to allocate access to fisheries resources may have a strong social dimension by ensuring equity between fishers. However, determining eligibility for participation may still require preferential selection based upon social or environmental criteria.

Figure 7: Diverse catch from the inshore waters of the Mediterranean. ©Nicholas Woodsworth.

5. *Lira-Carnota "Os Miñarzos"* marine reserve, Galicia, Spain

Aiming to ensure continued community access to fisheries resources, to maintain social cohesion and to protect local ecosystems, a local NGO, Lonxanet Foundation for Sustainable Fisheries worked closely with local fishers from Lira in north west Galicia to declare a marine reserve. The Foundation demonstrated how co-operation and collaboration between actors could achieve the creation and regulation of a marine reserve that allows fishing to continue to the benefit of both the local community and ecosystems. When combined with the concept of territorial use rights (TURFs) granted to fishers' guilds (Cofradías) to manage coastal fishing areas, the Lira-Carnota Os Miñarzos marine reserve should provide additional long-term security for a community's access to fisheries resources. This case study demonstrates the potential for both social and environmental considerations to inform the allocation of access to fisheries resources.

Fishery overview

Galicia is one of Spain's most important fishing regions, with more than 40 percent of the country's fleet working out of its ports, landing nearly seven times the amount of fish than Spain's next most important fishing region (Andalucía)[41] and accounting for nearly 70 percent of the fresh fish landed in Spain[42]. Based in north-west Spain, the Galician fleet has a significant number of large-scale vessels fishing in EU and distant-water fisheries. But like many other EU Member States, the greatest proportion of the country's fishing fleet (around 75 percent) involves small-scale fishing boats owned and operated by families fishing inshore waters on short trips of between one and three days. In Galicia this amounts to over 4,500 boats, fishing from more than 80 towns and villages, involving as many as 25,000 fishers and their families[42].

The small fishing community of Lira, in the municipality of Carnota on Galicia's west coast, has around 1,060 inhabitants. The economic viability of the community relies significantly on fishing, with 167 fishers and fishing-related work providing about 36 percent of jobs in Lira. Using a variety of methods including pots, traps, gill nets, trammel nets and diver-collection, Lira's small boats catch and market species like spider crab, velvet crab, octopus, lobster, shrimp and bivalve molluscs, as well as occasional flatfish like turbot and finfish such as pout.

In 2003, concerned about the long-term viability and social cohesion of local fishing communities, as well as the devastating effects of the previous year's *Prestige* oil spill, the *Cofradía de Pescadores de Lira* (fisher's guild) began working on a proposal to transform the management of their fisheries and their local economy[42,43]. Guild members worked closely with local NGO *Fundación Lonxanet para la Pesca Sostenible* to develop a methodology for the participatory design, creation and implementation of a marine reserve. Later, other local and national NGOs, Galician universities and the Galician fisheries and environment administrations joined the process led by Lira's *Cofradía* and *Fundación Lonxanet* to establish the marine reserve. This process enabled Lira's fisher to continue fishing, while also protecting marine habitats and the ecosystem from harmful fishing impacts. In

[41] Sanmamed, A. (2007) *Innovative recruitment strategies in the fisheries sector: Spain.* Report for European Monitoring Centre on Change. European Foundation for the Improvement of Living and Working Conditions. 18pp.

[42] García Allut, A. (2009) *From centralised management to adaptive co-management: the experience of Lira (Galicia, Spain).* Presentation to the OCEAN2012 Regional Fisheries Management Conference, Brussels, 29 September 2009. http://www.ocean2012.eu/channel/view_resource/id/12244 Downloaded 1 October 2009.

[43] Louro, E. (2008) *Construyendo Futuro.* Presentation to the Seafood Summit, Barcelona, 27-30 January 2008. Seafood Choices Alliance. http://www.seafoodchoices.org/media/documents/Louro_LiraCarnota_000.pdf.

2007, the Galician regional government declared the *Os Miñarzos* marine reserve a protected area for fishing, thus protecting the fishers' right to fish in the area of the reserve under the law[42,44].

Fishery management system features

Spain's political and democratic systems were transformed three decades ago to create a new State model involving a central, national government and 17 autonomous regional governments[45]. Fisheries policy and overarching national legislation is developed at State level by Spain's Ministry of Environment and Rural and Marine Environment, through its National Directorate for Marine Fisheries[46]. The National Directorate also manages fisheries between 3 and 12 nautical miles[46].

Autonomous regional governments, e.g., *Xunta de Galicia*, are then responsible for implementing and enforcing fisheries management under the supervision of the central government[47]. Management and regulation of fisheries inside three nautical miles, i.e., internal waters, such as the Lira-Carnota *Os Miñarzos* marine reserve, are the sole responsibility of the regional governments[47]. Thus, Spain's fisheries are mainly managed through a top-down system. The exception being some coastal fisheries, within three nautical miles for certain species like molluscs (e.g., barnacles, clams) are often managed through TURF-like mechanisms, where fishers' guilds (*Cofradías*) are significant actors in socio-economic and collective management processes and where the right to exploit resources in a specified area belongs to the relevant *Cofradía* for an indefinite amount of time[46,48].

Cofradías have a long history of fisheries involvement that has evolved over eight centuries. In some coastal areas *Cofradías* now serve to bring local fishers together in a bottom-up approach to fisheries management and related onshore community activities[49,50]. Throughout Spain there are 229 *Cofradías*, with the vast majority of these (63) in Galicia[41,49]. *Cofradías* throughout Spain operate differently depending on the region, however many share similar characteristics and ways of operating[49]:

- All fishers fishing in the geographical area of a *Cofradía* must be members.
- The democratic structure involves two groups equally represented: boat owners and fishing crew.
- It is compulsory for members to sell their catch at *Cofradía* market auctions, with commission payments supporting the administrative costs of the guild and surpluses spent on infrastructure or redistribution to members.
- Using spatial management by gear type and additional measures relating to fishing times, zones, gear specification and, importantly from an access perspective, acceptance or not of new guild members entering their territory to fish.

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[44] http://www.xunta.es/Dog/Dog2007.nsf/FichaContenido/1358A?OpenDocument Downloaded 14 October 2009.

[45] Symes, D., Steins, N. and Alegret J.L. (2003) *Experiences with fisheries co-management in Europe*. In: Wilson, D.C., Nielsen, J.R. and Degnbol, P. (Eds.) The fisheries co-management experience: accomplishments, challenges and prospects. Vol. 26: Kluwer Fish and Fisheries Series. Dordrecht: Kluwer Academic Publishers. Pp: 119-133.

[46] MRAG, IFM, CEFAS, Azti and PoIEM (2009a) *An analysis of existing Rights-Based Management (RBM) instruments in Member States and on setting up best practices in the EU. Final Report: Part II: Catalogue of Rights-Based Management Instruments in coastal EU Member States.* FISH/2007/03. 249pp.

[47] Suarez de Vivero, J.L., Martinez Alba, I. and Dominguez, S.F. (2005) *Spain*. In: Hoof, L. van, E. Hoefnagel, J.W. van der Schans, J. Nielsen, A.-S. Christensen, S. Sverdrup-Jensen, A. Delaney, S. Jentoft, K. Mikalsen, G.R. Karlsen, C. Bodiguel, J. Catanzano, J.L. Suarez de Vivero, I. Martínez Alba, S. F. Domínguez, D. Rommel. Sharing Responsibilities in Fisheries Management, Part 2, Annex: Case Studies. Project code: 63651. The Hague, LEI. Pp: 49-99.

[48] Antonio García Allut. Personal communication, 9 November 2009.

[49] García Allut, A. And Jesus, A. (2009) *Becoming proactive agents*. Samudra Report No.53: 15-18.

[50] Franquesa, R. (2004) *Fishermen Guilds in Spain (Cofradías): Economic Role and Structural Changes*. In: Shriver, A., Matsuda, Y. and Yamamoto, T. (Eds) Proceedings of the Twelfth Biennial Conference of the International Institute of Fisheries Economics and Trade, July 21-30, 2004, Tokyo, Japan. Corvallis OR: International Institute of Fisheries Economics & Trade. 14pp.

- Co-policing, control and punishment relating to collective agreements.

The *Cofradía de Pescadores de Lira* also: guides its members on the area's fishing rules; provides information about regional government grant aid and other programs; receives and records fisheries documents on behalf of the regional government; promotes training for fishers and others in the community; responds to and generates fisheries management proposals; represents its members interests; and develops management plans to control the supply of products according to market demand and improve their overall quality[51]. In the context of this case study, perhaps the most important role the *Cofradía de Pescadores de Lira* plays is to actively manage the areas and resources of its territory that have been fully entrusted to it by the regional government and to be responsible for their surveillance and monitoring.

Managing the *Os Miñarzos* marine reserve is a specific governing body made up with equal numbers of members of the *Cofradía* and the *Xunta de Galicia*.

Allocation and access to resources

Description

There are two aspects of relevance to the access and allocation context of this report. The first concerns general licensing arrangements. The second relates mainly to the process and methodology used to create the marine reserve.

General licensing

All Spanish fishing vessels must be licensed. In addition to a vessel licence, an extraction permit is also required to enable fishing for certain species such as shellfish[52]. Membership of a *Cofradía* is said to provide added security or tenure to general licenses and fishing permits[52].

Marine reserve

The marine reserve, with its legal basis, could be said to have a similar effect to that of a TURF by limiting access to the fishery to those vessels that ultimately meet the access criteria. The key difference between this arrangement and the TURF-like Cofradías arrangement which is limited to certain species, seems to be that the marine reserve is more comprehensive in its coverage both in terms of species and limiting access to those who meet the eligibility criteria. Once the reserve was formally created by decree, i.e., set down in a legal instrument, a register was established to conduct a census and determine which of nearly 6,000 Galician vessels may be eligible to fish in the marine reserve. Originally 158 small boats registered from Lira and other nearby *cofradías de pescadores* These boats were subject to a filtering process to determine their eligibility to fish in the marine reserve. From 2010, after filtering the census based upon prior fishing activity in the area, the register will list only 45 vessels with access to fish in the marine reserve.[53]

Allocation criteria

General licensing

Access and the rights of exploitation in geographically defined areas are allocated to *Cofradías*, thus general access to fishing grounds outside the *Os Miñarzos* marine reserve for individual fishers is allocated by virtue of membership of their local *Cofradía* in accordance with relevant species management plans developed by the *Cofradía* or the regional government (*Xunta de Galicia*).

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[51] http://www.mardelira.net/es/lacofradia/lacofradia/ Downloaded 16 October 2009.

[52] MRAG, IFM, CEFAS, Azti and PoIEM (2009a) *An analysis of existing Rights-Based Management (RBM) instruments in Member States and on setting up best practices in the EU. Final Report: Part II: Catalogue of Rights-Based Management Instruments in coastal EU Member States.* FISH/2007/03. 249pp.

[53] Antonio García Allut, personal communication. 21 October 2009 and 9 November 2009.

Specific shellfish permits are generally granted according to the status of the resource. If resource status is healthy and the number of participants can be increased, newcomers may be granted permits subject to meeting additional requirements like participation in training courses and providing documentation to support their application. However, only full-time fishers are eligible to be granted access.[52]

Marine reserve

Access is allocated based upon prior involvement in fishing in the area. Each year the register of eligible fishing boats is reviewed. In order to remain eligible to fish in the marine reserve, fishers must demonstrate to the *Cofradía* that they have fished in the reserve at least once in the preceding year[53]. This suggests that newcomers will not be eligible to enter the fishery.

Marine reserve development process

The process to develop the *Os Miñarzos* marine reserve began in 2003 when the *Cofradía de Pescadores de Lira* joined with NGO *Fundación Lonxanet para la Pesca Sostenible* to conduct preparatory work for designing the reserve. The fishers and their co-creators crafted a mission statement which established the key objectives for the project: to return dignity to the profession of traditional fishers; to reinforce a culture of responsibility for marine spaces; to value traditional fishing as a production system; and to empower traditional fishing using a bottom-up management process.

Lonxanet facilitated Lira's fishers in workshop discussions designed to share information and knowledge about the area's ecology, fishing and other uses, and other information relevant to the proposal to design the marine reserve. A multi-stakeholder working group was established to design the reserve and to mediate conflict amongst various interests. Subsequent discussion and decision-making took place within the general assembly of the *Cofradía de Pescadores de Lira*.[42,54] Steps in the process after the preparatory phase included: zoning discussions; management plan discussions about spaces and species to protect, as well as harmonising or deciding between environmental and social objectives; discussions about specific management measures; and the formal approval stage with the regional government giving the reserve the force of law in April 2007[42].

Assessment of the pre-reserve status of stocks, species diversity, ecological community structure and habitat mapping was conducted by researchers from A Coruña University to provide a baseline from which to monitor and assess the future impact of the marine reserve and associated fishing activity[54,55]. Social monitoring is also an important part of the management process[54].

In 2008, the co-management body '*Órgano de Gestión*' was established and adaptive management and implementation began in earnest[43,54].

Conditions of use

Licensing

Shellfish fishing (extraction) permits for fishing with a vessel (as opposed to hand collection) are valid for up to five years and may only be transferred when selling a fishing boat within the same fishing area. Otherwise they are not transferable. Conditions attached to shellfish permits can include daily catch limits, area restrictions and species-specific area closures, as well as other limitations.[52]

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[54] Freire, J. (2007) *The development of a marine reserve in Galicia*. Presentation to the Workshop on the Strategies for Stock Enhancement of Clawed Lobsters. IGAFA, Galicia, 29-31 May 2007. http://www.slideshare.net/jfreire/marine-reserve-galicia-may07 Downloaded 21 September 2009.

[55] Fernández-Márquez, D., Pita, P. and Muiño, R. (2009) *Spatial and temporal variability in the epibenthic megafauna assemblages in the Marine Reserve of Fishing Interest Os Miñarzos: influence of protection.* Poster presentation to the International Symposium in Marine Sciences, Vigo, 27-30 April 2009.

Marine reserve

The marine reserve management plan includes a comprehensive suite of measures that set limits on catches, both minimum sizes and total weight that are more restrictive than those outside the reserve. Measures also include the types of fishing gear that may be used in which areas; and bans on access except for scientific purposes to two areas within the reserve itself to protect nursery habitats. Some of the species-specific measures include:

- Crab (*nécora*) – individual non-transferable quotas of 10kg per person per day, minimum landing size and prohibition on landing berried females.
- Spider crab – individual quotas of 20kg per person per day, minimum landing size increased to 11cm (i.e., a more precautionary size limit than management regulations outside the reserve) and prohibition on landing berried females.
- Octopus – size limit increased from 1kg to a more precautionary limit of 1.5kg.[53,54]

Ongoing monitoring of biodiversity, species abundance and other ecosystem components is part of the management of the reserve and thus part of the conditions of use. Fishers collaborate with scientists by enabling fishing activity to be monitored both onshore and at-sea, in real time: regular fishery data and information are provided; onboard observers are deployed and traditional ecological knowledge is gathered[54].

Conclusions: Lessons learned

Apart from engaging in the ongoing adaptive management of the marine reserve, one of the next steps for the *Cofradía de Pescadores de Lira* has been to explore how they might differentiate their products in the marketplace. For example, they have been working with environmental NGOs to examine the feasibility of achieving certification against an eco-label that would independently verify their sustainability credentials[43].

Processes have been established and documented to enable comprehensive evaluation of the effectiveness of the marine reserve to accomplish both the original mission of its creators, as well as whether the reserve and its limited access will enable Lira's fishers to contribute to the ecological and social sustainability of their fishery and community. Like the Swedish case study, it is too early to evaluate whether the initiative has been successful in achieving the objectives which guided the development of the reserve and guides management of the fishery. This is particularly true given that eligibility for access to fishing in the area seems only relatively recently resolved for the 2010 fishing year. Similarly, it is also too early to determine whether there were any unintended consequences.

Members of the *Cofradía* and others involved in the processes have been in demand to tell their story to inspire and influence public policy makers and stakeholders in the debate about managing fisheries for the future, in Galician, European and international forums. They've also been called upon to help others in Galicia and around the world to develop their own fisher-led, bottom-up processes for creating and to design marine reserves where fishing is an integral part[42,43].

In the context of the EU's CFP, this case study demonstrates that an integrated approach to both fisheries management and community sustainability can be driven from the local level. It also demonstrates that blending social and economic needs of fishing communities is possible, but that the strongest foundation is the health and sustainability of the marine ecosystem upon which fisheries and communities depend.

Both social and environmental considerations can determine the allocation of access, but the holistic approach to managing resources, space and people demonstrated in this case study, shows that these ideas are an integral part of successfully combining the pursuit of both environmental and socio-economic fisheries management objectives.

6. Creel fishing in Scotland's Loch Torridon

This case study demonstrates the potential for both environmental and social considerations to determine the allocation of access to fisheries resources. Nearly nine years ago, in a bid to prevent the depletion of stocks by destructive fishing methods and to protect the livelihoods of local fisher using highly selective creel pots to fish for Norway lobster pursued and were granted exclusive access to Loch Torridon. With the support of Scottish statutory nature conservation and fisheries agencies, marine research bodies, local and national politicians and local fishers, what was initially temporary zoning for five years has become a more permanent area of exclusive access to creel fishing. The fishers created the original impetus for integrating sustainability considerations and good practice into fisheries management in the Loch. They continued the momentum by creating a voluntary fishery management plan with which most Loch Torridon creel fishers comply and co-police. Better quality, live products achieve four to five times the price in export markets than their trawl-caught counterparts, creating a sustainable income for fishers and regular, well-paid direct and indirect work for local people. The fishers' forward thinking, the development of the voluntary plan and their fisheries management outcomes helped secure the independent certification of the voluntarily managed creel fishery against the MSC's Principles and Criteria for Sustainable Fishing in 2003 and again in 2008.

Fishery overview

Loch Torridon is a large and deep sea fjord on the north west coast of Scotland providing productive fishing grounds for creel (pot) fishers targeting the valuable Norway lobster (also known as nephrops, Dublin Bay prawn, langoustine, or simply 'prawns' by Scottish fishers). For more than 30 years the creel fishery in Loch Torridon has supported local fishers. Along the west coast of Scotland fishing for Norway lobster has become a mainstay for many fishing communities and is the most valuable fishery in the region, with creel fishing contributing about 35 percent to the total value of Norway lobster landings on the west coast of Scotland[56].

Vessel numbers in the fishery vary from year to year. In 2008-09, creel fishing in Loch Torridon involved a total of 17 vessels targeting Norway lobster using creels baited with salted herring. Between 115 and 120 creels, each about 16m apart, are attached to a line and set on the sea floor for at least 24-48 hours. Norway lobster are landed and handled carefully for supplying live to European markets mainly in Spain[56,57]. Total landings from a sub-set of vessels, i.e., vessels certified against the MSC's environmental standard[58], averaged around 115 metric tonnes per year between 2002 and 2006, representing about 6 percent of the total landings by all creel vessels on the west coast of Scotland[56]. Live Norway lobster caught by creels and exported to mainland Europe fetch as much as four to five times the price of trawled and processed prawns[59].

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[56] Bennett, D. and Hough, A. (2008) *Public certification report for Loch Torridon Nephrops Creel Fishery*. Derby: Moody Marine, Moody International Certification. 114pp.

[57] Purvis, A. (2009) Net Benefits: The first ten years of MSC certified sustainable fisheries. London: Marine Stewardship Council. 37pp.

[58] MSC's certification system allows sub-sets of vessels within a fishery to be certified providing the fishery itself passes the standards relating to the biological and ecological outcomes of fisheries management. For more information about "unit of certification" and the fisheries assessment and certification methodologies go to http://www.msc.org/get-certified/fisheries/know-the-basics

[59] http://www.sustainablescotland.com/communities/case-studies/the-loch-torridon-nephrops-fishery.html Case study dated 16 September 2003. Downloaded 20 October 2009.

Creels are highly selective and the nature of creeling means that most animals caught can be handled separately. Norway lobsters are price sensitive based on their weight, thus small specimens can be released alive back to the water. By-catch in creels is said to be reduced by the presence of escape hatches, with crustaceans, molluscs, some finfish and dogfish being the main species taken. Research has also demonstrated that creels have very little adverse impact upon benthic habitats or the overall functioning of marine ecosystems.[56]

Fishery management system features

As for other species distributed throughout EU waters, the overarching management framework for 'Nephrops' TACs, quotas and technical measures is the CFP and the UK receives an annual quota allocation in accordance with the principle of 'relative stability'. Devolution of government to the Scottish Parliament means that management of fisheries in territorial and inshore waters (i.e., within 12 nautical miles of the Scottish coast) is the responsibility of the Scottish Executive's Marine Scotland. Inshore fisheries management has recently become the responsibility of new Inshore Fisheries Groups, but these are yet to fully assume responsibility for developing management plans[60].

In the meantime, all fishing vessels must be licensed and monthly catch limits for Norway lobster are established by the Scottish Executive for vessels under 10m in length[56]. The Loch Torridon area of creel-only access was established by the Scottish Executive using a statutory instrument to prohibit all but static fishing gears from fishing in the area[61]. As an adjunct to this, the surrounding areas outside the creel-only zone are divided into: an area closed to all fishing by any means; a mixed-gear zone where creel and trawl fishing may take place; and a trawl-only zone[56]. This spatial management, especially the no-fishing zone, is thought to contribute to local abundance of Norway lobster, with high catch rates of large specimens near the boundaries of the no-fishing zone believed to be "spill-over" from un-fished local populations[56].

Finally, fishing in the creel-only area by ten creel operators is conducted under a voluntary code called the Loch Torridon Management Plan, created by the fishers themselves in an attempt to manage their fishery sustainably[56,62]. The voluntary Torridon Nephrops Management Group both implements and monitors compliance with the plan.

The main elements of the voluntary plan include:

- specifying the number of sets and creels that may be deployed according to the size of the boat (one or two man boats);
- the requirement to fit escape gaps in all creels;
- specifying the maximum number of days fishing is permitted;
- specifying a minimum carapace length that exceeds regulatory requirements;
- the requirement to return 'berried' females to the sea; and
- the number of gear hauls permitted each day[56].

Only those vessels who have signed up to the voluntary management plan and are seen to be compliant with it are entitled to use the MSC eco-label.

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[60] Grieve, C. (2009) *Regional governance: making it work for fisheries and the environment.* Background Paper to the Conference on Regional Fisheries Management, Brussels, 29 September 2009. WWF European Policy Office and Ocean2012. 22pp.

[61] Inshore Fishing (Prohibition of Fishing and Fishing Methods) (Scotland) Amendment Order 2001 (Scottish Statutory Instrument 2001 No. 174)

[62] Bennett, D, and Combes, J. (2009) *Surveillance report: Loch Torridon Nephrops creel fishery.* Derby: Moody Marine, Moody International. 11pp.

The above requirements do not apply to those vessels whose operators have not signed up to the voluntary management plan, which in 2008-09 was calculated to be seven vessels out of the total of 17[62]. The independent certification experts observed that in the future there may be a need to limit fishing mortality in the Loch, either using input or output controls. The total UK quota and the monthly catch limits for boats under 10m in length do not serve to limit creel catches of Norway lobster. As there is nothing to prevent entry to the creel-only area by other creel fishing boats or anything that compels entrants to comply with the voluntary plan, overall fishing mortality in the area could be approaching saturation. Even though there is no evidence of local depletion, the independent certification body acknowledges its potential and has made it a condition of continued certification that the Torridon Nephrops Management Group develop, with relevant management agencies, ways to achieve appropriate limits on fishing mortality within the creel-only area[56]. Within six months of re-certification the Group had redoubled efforts to lobby and communicate with Marine Scotland about the need for formal management of fishing mortality in the creel-only area[62].

Allocation and access to resources

Description

Akin to a TURF, effective on May 30th 2001, the Scottish Executive temporarily closed an area in Loch Torridon and the Inner Sound of Rona to all mobile fishing gear for five years, which was subsequently rolled forward on a more permanent basis[56].

Born out of conflict and controversy over competing for space with trawlers, the strategic, forward thinking of the creel fishers working Loch Torridon led to the creation of this special area of access. They enlisted support from local politicians, nature conservationists, government scientists and government officials. The decision to seek certification against the MSC's standard for well-managed and sustainable fisheries was also part of the long-term strategy to secure and protect their fishery and their livelihoods[63], which in turn led to the creation by the fishers of the voluntary Loch Torridon Management Plan and the Torridon Nephrops Management Group.

Allocation criteria

After failed attempts to resolve conflicts outside the political arena (see below), lobbying efforts led to the decision to allocate a creel-only area of special access, a trawl-only area, a mixed-gear area and a total no-fishing area. Documentation about allocation criteria in relation to the decision-making process is not available to the researchers, so one must speculate that the decision was a compromise to attempt to resolve conflict among many interests. One is also left to speculate about any criteria that may have influenced the type of areas that would be allocated and, subsequently, to which area each gear or activity (e.g., fishing versus no fishing) would be allocated. Given the proactive lobbying by the creel operators and the evidence of the outcome, it seems reasonable to conclude that their choice (i.e., establishing creel-only access in the Loch itself) and whatever arguments they were able to mount were compelling to the then Scottish inshore fisheries Minister[63].

Allocation process – gaining creel-only access to Loch Torridon

Local action to create the creel-only fishing area started after the 1984 Inshore Fishing (Scotland) Act removed the limit banning the use of mobile fishing gear within three nautical miles of the coast, thus allowing trawl vessels into new areas, which until then had been the sole preserve of static fishing gears like creeling[56,63]. This resulted in conflict and acrimony between fishers competing for space, with creel operators reporting that the trawlers fished indiscriminately which led to reduced

[63] http://www.sustainablescotland.com/communities/case-studies/the-loch-torridon-nephrops-fishery.html Case study dated 16 September 2003. Downloaded 20 October 2009.

catches and long recovery times for Norway lobster grounds[63]. They also speculated that trawling damaged the sea bed and accused trawl operators of damaging creel gear[63].

The local creel operators, along with the Highland and Islands Fishermen's Association, enlisted the support of local people and took their case to their local Community Council, their Highland Councillor and ultimately their Member of the Scottish Parliament. These politicians supported the creel operators cause by taking their case to the relevant government agencies and the Scottish Executive. It took six years, the additional support of nature conservation agency Scottish Natural Heritage and scientists from the then Fisheries Research Service, but by 2001 the Inshore Fisheries Minister brought in the Statutory Instrument creating the spatial management zones described earlier, including the creel-only fishing area.[63]

Conditions of use

From a legal perspective the statutory instrument prohibiting the use of mobile gear in the area is technically the only constraint to fishing in the access area. However, under the voluntary Loch Torridon Management Plan, creel fishers agree to abide by the following conditions in order to be a part of the MSC certified group of vessels:

- Completing daily log sheets showing the number of creels fished and the number of days fished over specified periods of time;
- Onshore inspections to confirm escape panels are fitted to all creels before fishing in the fishery; and
- Supplying remittance advices to demonstrate that only one set of creels has been hauled each day.

Practical considerations

As described earlier, the Torridon Nephrops Management Group is a voluntary collective of creel fishers dedicated to managing the fishery sustainably. However, there are a number of fishers who have chosen not to join the group and there is no statutory basis for preventing further entry into the area by other creel vessels, which is said to have contributed to increased fishing mortality. While this does not appear to be a current problem for the sustainability of the fishery, there are concerns about the future. A great strength of the current arrangement is its growth from the bottom-up, however, from a practical point of view, it seems likely that further regulatory intervention will be necessary.

Technical and financial support from various agencies helped to provide a robust basis for the spatial management arrangements. In addition, following the initial impetus from fishers, Scottish Natural Heritage took responsibility for an early collaborative project to develop not only ecological monitoring and research of the Loch's Norway lobster population, biodiversity and habitats, but also to establish a broad stakeholder and 'users' group to help develop a sustainable management scheme[64].

From a financial point of view, there is support for the management system from both the Scottish Fisheries Protection Agency to enforce the creel-only area and other spatial management rules, while the remainder of the voluntary management plan is self-policed quite successfully[56]. Enhanced roles have been taken up by Scottish Natural Heritage (SNH) and Fisheries Research Services (FRS) (now Marine Scotland Science) in ecological research and monitoring, including the ongoing sponsorship of a PhD studentship to conduct detailed monitoring and research into the fishery. These ecological research and monitoring dimensions, if not provided by SNH and FRS, would have

[64] Donnan, D.W. (2001) Thinking globally, acting locally: the Loch Torridon Project. *El Anzuelo,* Vol.8, pp: 7. European Newsletter on Fisheries and the Environment. London: Institute for European Environmental Policy.

to be provided to the voluntary collective by external consultants to obtain the information needed to evidence performance against the MSC's environmental standard[63].

Conclusions: Lessons learned

The fishers themselves acknowledge that conflict and acrimony are not the best driving forces for a collective initiative to secure access to a fishery, despite the fact that it was the conflict that gave then the impetus to take action to make further environmental improvements to secure access. They suggest that the pursuit of sustainability and good practice should be argument enough[63]. Their next challenge is the need to extend the voluntary management plan to all creel fishers in the area, probably through statutory means. The new Inshore Fisheries Groups and their mandate to develop formal management plans seems the likely avenue for this to occur. In the meantime, the fishers' group is continuing to lobby for proactive change to ensure the long-term viability of their fishery and their community with one of their options being the extension of the creel only fishing area beyond its current boundaries[62].

The independent assessment by experts against the MSC's *Principles and Criteria for Sustainable Fishing* is the main means of evaluating the success or otherwise of the access arrangement and other fisheries management measures. Comprehensive assessments have been conducted twice (published in 2003 and 2008), with audits being conducted every year to date. These reports are the most comprehensive, publically available information on the fishery and have the benefit of adding new information every year[65]. The certification itself is said by the fishers to have been both motivated by, and a visible support for, their desire to protect the long-term sustainability and viability of the creel fishery and to be able to demonstrate this objectively and scientifically[57,63].

However, one of the unintended consequences may be that their success could have contributed to the increased effort seen in the fishery, thereby making a legally-based formal management plan highly desirable. It would indeed be a heavy irony if the fishery's success in the market place became its downfall.

In the context of the EU's CFP there may be lessons to learn and apply. Despite this case study being about a small-scale fishery, the principles of preferential access to more selective fishing methods through spatial management demonstrate clear benefits from an environmental perspective and may be able to be applied on a larger scale within EU waters through technical measures or long-term management plans.

While the primary concerns in beginning of the creel fishery story were about the prevention of environmental degradation, these were also very closely connected with the community's social and economic imperatives. In this there is an echo of the sentiment expressed in the European Commission's Green Paper – i.e., that the foundation for social and economic sustainability in fishing is the underlying health and productivity of marine ecosystems and fish stocks[66].

Consistent with the above line of reasoning, the creel fishers argue that their fishery can accommodate more creel vessels than trawlers, so even though crew numbers are smaller on creel boats, on balance there are more opportunities for employment. Combined with the higher value paid for better quality products, the fishers suggest this means well-paid, regular employment both at-sea and onshore in processing and packing, for local people who might otherwise leave the area[63].

Finally, from a community perspective, the creel fishers argue that the social fabric of remote fishing communities can be sustained: the more people, especially the young, who stay in the area, the greater the likelihood that schools and other infrastructure remains viable; and, the less likely the

[65] http://www.msc.org/track-a-fishery/certified/north-east-atlantic/loch-torridon-nephrops-creel

[66] COM(2009)163 final, Green Paper: Reform of the Common Fisheries Policy. 28pp.

population will become dominated by older, retired people leading inevitably to the decline and demise of rural fishing communities[63].

Thus, these lines of reasoning support, along with the demonstration of successfully creating selectivity-based spatial management, the idea that creating a framework that enables access to fisheries to be allocated on the basis of environmental and social considerations has much to offer EU fisheries' sustainability and could bring socio-economic viability and longevity back to remote or rural-based fishing communities who depend on fishing for their livelihoods.

7. Handlining in the Mackerel Box, United Kingdom

Since the early 1980s, the South West Mackerel Box has been a regulated fishing zone under European Union legislation. It was established and has been maintained to protect juvenile mackerel from exploitation by large-scale fishing methods and gave preferential access to the more environmentally selective handline fishing method. By virtue of this protection and preferential access, as well as a guaranteed share of the annual quota from the UK government, a thriving handline fishery has continued to contribute to the economies of traditional fishing communities and the health of mackerel stocks off south west England. This case study demonstrates how preferential access for more selective fishing methods is already a feature of the Common Fisheries Policy which may serve as a useful example in its reform. It also offers lessons for the future by demonstrating how quotas can be ring-fenced or underpinned for fishing communities that use more selective fishing gear and are dependent on fisheries resources for their livelihoods.

Fishery overview

Mackerel has a very wide distribution throughout the cold, temperate waters of the north-east Atlantic. A pelagic species, mackerel form large, migratory schools whose distribution is affected by oceanographic temperatures and the distribution of its main prey, e.g., prawns, small fish, like sand eels, and zooplankton.

After intense fishing pressure by offshore pelagic (mid-water) trawlers and purse seiners gave rise to concerns about the future of the stock and to protect large concentrations of juvenile mackerel, the South West Mackerel Box was established by the EU's Council of Ministers in 1983[67,68]. This limited access for targeted mackerel fishing to the more selective handline and gillnet fishing methods[67,69]. Covering approximately 67,000km^2, the Mackerel Box runs east and south from the coast of south Wales into the Irish Sea, around south western England, taking in the western reaches of the English Channel (See Figure 8).

Figure 8: The South West Mackerel Box (Source: MSC)

South west England's mackerel handline fishery is mainly a winter fishery, with fishing taking place in UK territorial waters off the southern coast of the counties of Cornwall and Devon. Some fishing occurs in spring and summer around the Cornish peninsula and the north Cornish coast. In 2007, there were an estimated 177 handline boats, about 95 percent of which were under 10m in length, fishing within six to eight nautical miles of the coast. Mackerel

[67] Commission 2000/C219/014: Answer to Written Question E-1585/99. Official Journal of the European Communities. 2pp.

[68] Sweeting, C.J. and Polunin, N.V.C. (2005) *Marine Protected Areas for management of temperate north Atlantic fisheries: lessons learned in MPA use for sustainable fisheries exploitation and stock recovery*. Report to the Department for the Environment, Food and Rural Affairs. Newcastle: School of Marine Science and Technology, University of Newcastle upon Tyne. 64pp.

[69] Council Regulation (EC) No 850/98 of 30 March 1998 for the conservation of fishery resources through technical measures for the protection of juveniles of marine organisms.

handlining is very low-intensity fishing, changing little in the last century. Fishing generally involves a single fisher using one or two weighted lines with 20-35 unbaited hooks per line and bright lures or feathers attached. Although mackerel handlining is highly selective, occasionally there is a small amount of by-catch of other commercially valuable species such as sea bass, pollock, whiting, garfish, herring, horse mackerel and Spanish mackerel. Any unwanted fish are usually returned to the sea alive. Vessels in the fishery do not target mackerel 100 percent of the time. Fishers also opportunistically target other species using different gear.[70]

Fishery management system features

Mackerel are managed through bilateral and multilateral agreements between the EU and other coastal states such as Norway and the Faroe Islands, which establish fishing mortality and precautionary biomass reference points and harvest control rules. North-east Atlantic mackerel are considered to come from a single stock. However there are three distinct components within the stock: southern, western and North Sea. In EU waters, mackerel are managed under the CFP with a single annual TAC and quotas allocated to Member States in accordance with the principle of relative stability. In addition to the TAC, technical conservation measures also regulate minimum landing sizes and area closures for specific component features such as spawning or juvenile grounds. While access to directed fishing of mackerel within the Mackerel Box is limited to gillnetting and handlining[67], there are derogations to the Mackerel Box regulation which allow 15 percent mackerel by-catch by vessels fishing for other species, or up to 25 percent by-catch by Danish seiners, demersal trawlers or other towed nets targeting a limited number of other species[70].

Targeting the western component, the South West Mackerel Handline Fishery is managed by the UK government through its Department of the Environment, Food and Rural Affairs (DEFRA) and by the Cornish Sea Fisheries Committee (CSFC) which is responsible for managing UK fisheries out to six nautical miles. The CSFC is specifically responsible for monitoring minimum landing sizes and enforcing Mackerel Box exclusion regulations. Producer Organisations established under the CFP manage the overall UK mackerel quota allocation. Under UK quota management rules established by DEFRA, the handline fishery is entitled to a dedicated annual quota allocation of 1750 tonnes or 0.83 percent of the UK mackerel quota, whichever is the greater. This arrangement is known as underpinning and serves to protect the traditional handline fishery against fluctuations in the total UK quota.[70]

The South West Mackerel Handline Fishery was one of the early fisheries to be certified as meeting the MSC's standard for well-managed and sustainable fisheries. In 2007, the fishery was recertified for a second term of five years[71].

Allocation and access to resources

Description

The restriction of targeting mackerel by any other methods than handlining (and gillnetting) to protect juvenile mackerel and the establishment of the ring-fenced quota for the handline fishery of 1750 tonnes (which has remained the same since 1994) to protect the traditional handline fishery, when combined, could arguably be said to create an access arrangement based upon both environmental and social considerations.

There is no explicit licensing regime for the mackerel handline fishery *per se* and no restriction on the number of participating vessels. But vessels fishing in UK waters, whether they are under or over

[70] Nichols, J. and Hough, A. (2007) *Public certification Report for South West Mackerel Handline Fishery.* Derby: Moody Marine, Moody International Certification. 112pp.

[71] http://www.msc.org/track-a-fishery/certified/north-east-atlantic/south-west-mackerel-handline

10m, must have a general fishing vessel licence. Thus, anyone with a registered fishing vessel licence may take part in the fishery.

However, only once during two decades has the handline fishery needed to top-up (through a quota swap) its ring-fenced quota allocation due to catches higher than its initial share. Furthermore, in recent years, the handline fishery has declined in the winter such that the 1750t quota has not been fully caught[70].

Allocation criteria

Quota allocations for the South West Mackerel Handline Fishery were calculated using catch history, using landings during a rolling three-year reference period as a proxy for actual catches[70,72]. The guaranteed minimum allocation from the UK government, known as underpinning, was introduced in 1994 and was based on the handline fishers' share of UK landings in 1992 and 1993. This resulted in an underpinning allocation of 0.83 percent of the total UK mackerel quota. The UK government also agreed that the handline fishery's quota share would always be the greater of either the initial allocation of 1750t or a 0.83 percent share of the total UK quota.[70]

Allocation process

Publically published reports about the process for creating the Mackerel Box and privileging access to handlining have proved difficult to come by. Records from deliberations in Council or at scientific meetings from the early 1980s are not readily available without an extensive search for hard copies, presumably held in archives. What has come to light is limited, but suggests that restrictions on mackerel fishing off the south west UK were first implemented as far back as 1977, after declines in over-wintering schools in the region and the subsequent implementation of a management box predating the CFP basic regulation by two years (i.e., in 1981). In 1977, eastern-bloc fishing vessels were excluded from fishing within the waters of EU Member States and a large contingent of UK trawlers took up targeting of mackerel, thus filling a void left by the Russians. This shift of effort by both trawlers and purse seiners was partly prompted by the total closure in 1977 of the North Sea herring fishery. The resultant fishing pressure by offshore, large-scale trawl and purse seine vessels in known areas of large concentrations of juveniles was understood to be having a negative impact on the mackerel stock. This is said to have led to the designation of the Mackerel Box. [70]

Meanwhile there had been small-boat, localised fishing for mackerel in south west England dating back centuries. The expansion of mackerel fishing in the late 1960s to 1970s by 1975 resulted in a handline fleet of up to 400 vessels landing up to 15,000tonnes of mackerel at its peak[70]. While these numbers subsequently declined in line with the decline in over-wintering schools of mackerel in the mid to late 1970s[70], one might speculate that the importance of the handline fleet to the region at the time and the relative abundance of handline fishers ensured they had a presence and would be recognised when the UK government set about allocating access to, and shares of, mackerel resources.

Figure 9: Mackerel (Source: FAO)

In the context of the South West Mackerel Handling Fishery and its special recognition through a ring-fenced quota allocation, its foundation can be found in the UK's sectoral allocation and quota management system. Before 1983, when the first basic CFP regulation was implemented in the context of resource conservation, the UK was already actively managing the western mackerel stock using weekly and fortnightly landing limits according to vessel length. These arrangements were the

[72] Hatcher, A., Pascoe, S. Banks, R. and Arnason, R. (2002) *Future options for UK fish quota management: A report to the Department for the Environment, Food and Rural Affairs.* CEMARE, University of Portsmouth. 143pp

UK's way of managing its national quota allocation granted under agreements within the North East Atlantic Fisheries Commission (NEAFC) and were among the first restrictive licensing and quota arrangements to be implemented in the UK based on 'pressured' stocks before 1984.[72]

The UK also had a pre-existing system of Producer Organisations (POs), but it was not until 1984 that the first quota allocations were made to POs to manage their own quota. By 1985 most POs were receiving annual allocations to divide amongst their members. But mackerel quotas were also now being allocated to individual freezer trawlers and purse seiners. The system to allocate quotas in the UK evolved for the next decade, with rolling catch history periods, different rules about transferring catch history (track records) and rules for transferring ('gifting', selling or leasing) quota.

Underpinning of quotas for species other than mackerel came about in the mid-1990s for vessels not belonging to POs or for some stocks caught by vessels under 10m. It was a concept introduced by the UK government apparently in response to industry concerns about shares for such vessels being disproportionately reduced by the allocations to PO sectors. [73]

Conditions of use

All under 10m vessels must submit weekly landing figures to DEFRA, while those over 10m are required to complete daily logbooks and submit them to Fishery Officers.

The handline quota is monitored by DEFRA's Marine Fisheries Agency Fishery Officers at designated mackerel landing points, as well as through records held by the first purchaser under recent 'Registration of first-time buyers' regulations that keep records of fish sold by fishers. Handline catches of mackerel are easily identified on the markets as they are kept separate and clearly labelled, because of their superior quality, and price premium, compared with trawl caught mackerel.

Conclusions: Lessons learned

The area of the box was extended to its current size in the late 1980s and its efficacy was evaluated by the Commission's scientific and technical committee in 1992 who advised that the box should be maintained[67]. According to the independent experts who assessed the handline fishery against the MSC's *Principles and Criteria for Sustainable Fishing*, many of their interviewees from scientific organisations (e.g., the UK's CEFAS) and government agencies like DEFRA considered the Mackerel Box to be a success, contributing to existing stock levels[70].

However, according to the aforementioned independent experts, some concerns have been expressed by handline fishers about enforcement of the Mackerel Box regulations. Particularly concerning are the levels of the allowed by-catch and allegations of mackerel targeting within the box by large-scale vessels. Even the relatively recent introduction of Vessel Monitoring Systems and satellite tracking of large mid-water trawlers is not considered by handline fishers to have stopped such activities[70]. It is unclear what, if anything is being done to address these concerns.

This case study on the Mackerel Box and the UK's dedicated handline fishery quota mechanisms suggests several conclusions that may be relevant to ideas about using environmental and social considerations to inform both access decisions on fishery resources and the future CFP.

For example, using the CFP to privilege access to more selective fishing gear through conservation measures is possible under the existing regulatory framework – i.e., by using technical measures to protect juvenile fish. However, the way the technical measure[74] is worded appears to create a relatively blunt instrument: while the regulation explicitly limits targeted mackerel fishing to

[73] Hatcher, A., Pascoe, S. Banks, R. and Arnason, R. (2002) *Future options for UK fish quota management: A report to the Department for the Environment, Food and Rural Affairs.* CEMARE, University of Portsmouth. 143pp

[74] Council Regulation (EC) No 850/98 of 30 March 1998 for the conservation of fishery resources through technical measures for the protection of juveniles of marine organisms (as amended from time to time).

gillnetting and handlining, the by-catch derogations enable other methods to enter the 'Box' to target other species and combined with potentially troublesome enforcement, they could undermine the measure's intention to protect juvenile mackerel and compromise the viability of the handline fishery. While the reviews of the measure's efficacy, as reported by the Commission and anecdotally by the independent certification body, tend to support the notion that the measure creates a disincentive for large-scale mid-water trawling or purse seining to target mackerel in the Box, the fisher's anecdotes suggest this is not entirely the case.

Another consideration is the fact that the measure itself is directed at protecting a single species within an area where multiple species are targeted by many different methods. While the protection measure is warranted in its own right and probably should be maintained, it does raise a more general fisheries management consideration: the need for a broader, more holistic approach to management using ecosystem-based principles. While the access to resources issue might be said to be able to be considered separately, some of the previous case studies in this report have demonstrated that integration of access considerations within a more holistic management framework can lead to better fisheries management outcomes.

Finally, if CFP reform leads to wholesale introduction of transferable quotas across the European Community in 2012, approaches like ring-fencing or underpinning of quota for small-scale fleets may offer some stability or protection for fishing communities reliant upon small-boat fisheries for their livelihoods and should be considered, along with other options, when reforming the CFP.

8. Wadden Sea Integrated Fisheries Foundation, Netherlands

The Integrated Fisheries Foundation (IFF) proposes a possible future for Dutch fishing. Adopting a sustainability and ecologically-considered perspective, members of the IFF, all fishers, suggest that the future of the fishing industry could be embedded in both nature and society. Through a state endorsed experiment in a small-scale fisheries project initially involving six vessels, the IFF aims to demonstrate that diversified fishing, with a low impact on marine ecosystems and a low contribution to climate change, could serve local economies and could have a future in the Dutch fishing industry. This case study explores how social and environmental considerations might be used in an integrated way to inform the allocation of access to fisheries resources in European Community waters.

Fishery overview

The Wadden Sea is the largest tidal flat area in Europe, ranging from the north coast in the Netherlands up to and including the west coast of Denmark. It provides shelter for the early life stages of many species of fish and shellfish and its dynamics make it very productive, attracting millions of seabirds. The Wadden Sea therefore is a flagship for the European Union's nature conservation efforts, with qualifications as a Ramsar Convention area, a World Heritage Site and an EU Natura 2000 area.

Fishing in the Dutch part of the Wadden Sea stretches back centuries, but with a changing spectrum of species being exploited. Well into the nineteenth century, fishers in the Wadden Sea were targeting mainly oysters, salmon and herring in the west, while smelt, sprat and flounder were fished in the eastern part of the Dutch Wadden Sea. Salmon and the highly prized sturgeon were amongst the first to disappear in the nineteenth century. But the biggest impact on the ecosystem occurred from 1932 onwards when the "*Afsluitdijk*" was completed, a 30km dam separating the *Zuiderzee* from the Wadden Sea. This changed the regional tidal system dramatically, including fishing operations. Many fishing villages were suddenly left on the banks of a freshwater lake, the *IJsselmeer*. Since then, fishing in the Wadden Sea has concentrated mostly on shrimp and cockles. Like elsewhere in European waters, the scale of fishing in the Wadden Sea has increased, with higher catch levels of shrimp and cockles by larger vessels. Some small-scale operations have persisted, targeting a variety of species. For example, in the last 15 years sea bass and mullet have become a regular feature of catches by small-scale static gears. Recently markets for introduced species like razor clams (*Ensis* spp.) and Japanese oysters have also been explored.

Fishery management system features

Management of the small-scale fisheries in the Wadden Sea falls under the national jurisdiction of the respective coastal states: The Netherlands, Germany and Denmark, and is conducted entirely within national territorial waters. Licenses are allocated by the national governments. Originally Dutch fisheries in the area were regulated under the Dutch National Fisheries Law of 1993, but recently the Wadden Sea is subject to an integrated management regulation, the PKB-Waddenzee.[75] Fishing is managed by limited entry, i.e., by determining the number of licenses and setting conditions for meeting the PKB-Waddenzee integrated regulation associated with the licenses. Fishers need to comply with all conditions that are set in the relevant local, national and European regulations, including local and national implementation of the EU Habitats and Birds Directives[76].

[75] The "PKB Waddenzee" of 2007 is the integrated national regulation document for the Wadden Sea activities. A description in Dutch can be found in www.waddenzee.nl/Beleid.1927.0.html#c7507.

[76] www.waddenzee.nl/Wetten_en_regels.2161.0.html contains an overview of most relevant legislation.

Figure 10: The Wadden Sea, a shallow tidal sea sheltering behind islands stretching from the Netherlands to Denmark. (Source: GKKS-research centre, Germany)

The IFF

The Integrated Fisheries Foundation (IFF) was started by several small-scale fishers in 2000 with a long-term vision of establishing a lively small-scale fishing community along the coastline of the Dutch Wadden Sea and the Ems estuary.[77] Several pilot studies and activities were supported by provincial funds and the European LEADER-programme.[78]

[77] There are currently twelve IFF-members.

[78] The EU's LEADER programme is designed to help rural stakeholders improve the long-term potential of their local areas. Since 1991 in various forms, the LEADER programme has aimed to encourage the implementation of integrated, high quality and original strategies for sustainable development of local areas by broad-based local partnerships in Local Action Groups (LAGs). Formerly a Community Initiative programme, LEADER+ now requires rural development programmes from 2007-2013 to finance development of LAGs, transnational and inter-territorial co-operation projects and to support capacity building. Accessed on 16 November 2009: http://ec.europa.eu/agriculture/publi/fact/rurdev2007/en_2007.pdf

One of IFF's aims is to establish and maintain a low impact fishery with diverse gear on a variety of species, in which the fishers work with the local availability of the species. Fish are only targeted in seasons with high catch potential and low costs. Fishers are able to shift fishing effort from one species to another on an opportunistic basis, adjusting gear and targets with the seasons. Instead of just fishing for shrimp, mullet or seabass, a spectrum of species are exploited at a rate determined by the local density, thus implying that both fishing areas and seasons are limited. IFF pursues this strategy as its members are all-year-round fishers in a restricted area (see Figure 10). Part of the strategy, through the pilot project described below, requires training for fishers in the use of a variety of gear and of markets for a variety of products in typical seasons. By spreading the economic risks posed by limited availability of fisheries resources over several species that require different gears, the IFF hopes to avoid intensive capital investments in high-tech vessels and gears and to maintain low impacts on marine ecosystems.

In parallel, the IFF aims to achieve sustainability of the stocks, the ecosystem and the fishing operations. To help achieve the former, the members consider that there first needs to be an increased understanding of the impacts of the fishery to the Wadden Sea. Economic viability needs to be improved by active marketing and re-establishing a small-scale fishing culture in the townships.

Allocation and access to resources

Description

It was decided between the IFF and the management authorities that in the first experimental phase of the pilot project only a limited group of six fishers would participate. The collective individual licenses of the group were exchanged for a single group license and only fishers with existing licenses can participate in the IFF group license. The list of participants is reviewed annually. The current maximum number of possible participants in the group license is eight. The participants all signed up to a joint management protocol, which includes the license description. The group license is further restricted to five static gear types in this first pilot project. None of the targeted species is subject to a quota. The management protocol was formally adopted by the government and a group license was issued in mid-2008.

The initial license period is five years (2008-2013). It is limited to static gear only; therefore it does not include shrimp trawl or cockle hand-raking. The total allowed fishing effort of the group licence (i.e. the amount of gear, the horsepower of the vessels and the number of days-at-sea) was further reduced by the fishers themselves as a voluntary, precautionary measure by about 15 percent.

The freedom to choose the best fishing strategies for the group members applies to the transferable number of days-at-sea within the agreed total. This is an effort-driven low impact system, with the only limitation on members' freedom of choice being that the total effort is predetermined. The resource access for fisher outside the IFF is not affected by the experiment. In fact, such potential impact was deliberately avoided by excluding moving gear types like shrimp trawls or hand-rakes for cockles. A consequence of this is that the scale of the experiment has been reduced to a size where the effects may be hardly measurable or noticeable. Species, like mullet, smelt, mackerel and sprat may contribute to a year-round fishing practice for the existing group members whilst limiting the fishing pressure to each species. When scaling-up the IFF-membership, the ambition is to diversify the fishery further to include species like Dover sole, cockles and oysters. Allowing shifting and swapping of effort (days-at-sea for different species and/or seasons) between the members is expected to increase the cohesion in the group.

Allocation criteria

The group licence allocates access to a capped number of six fishers, who in turn have been limited to using static gear only, expressly excluding shrimp trawling or cockle hand-raking. There are various static gear types with low environmental impact and high selectivity when used to target certain desirable species like sea bass. In addition, they also use less fuel.

Allocation process

Acceptance of the approach to pool or group licences and implement stricter environmental controls is a slow process and has a long-term horizon. The first years were spent spreading the idea and getting buy-in from management authorities, fishers and civil society groups. The report of the first year's experiment should be completed by the end of 2009. The scope of the experiment was greatly reduced on advice by the authorities that would not otherwise issue the group license to enable access to fishing grounds or the project to proceed. This is said to be driven by a strategy that seeks to avoid complexities with existing regulatory systems and by fear of opposition from other fishers. However, this has raised a concern that the limited scope of the experiment may not allow any conclusions about its possible impact and therefore also may give no insight in the prospects of a larger scale project.

Practical considerations

The IFF-members have agreed to report any non-conformities against the management protocol to a third-party compliance committee that has been established especially for this purpose. The committee oversees the compliance of the group members. Members have to fill in a logbook that is additional to the standard logbook of the national inspection service.

So little is known about the status of some of the target stocks or the impact of the fisheries that there is a need for basic research and data collection to support further assessment. For several of the involved species there are no unequivocal landing statistics, let alone information on the stock status. For example it is unclear whether seabass catches in the Wadden Sea, France and the UK are from a single stock. While in most cases the effect on other ecosystem components by these selective operations appears limited, it would require structured data collection and subsequent assessment to be able to confirm such hypotheses.

Conclusions: Lessons learned

In addition to the organisational components, the IFF-members plan to conduct an experiment on the joint management of fishing for Japanese oyster, an exotic species that at present is widely distributed in the Wadden Sea. They will seek collaboration between fishers and researchers. Communication by the fishing community will seek a wider public: buyers, authorities, civil society organisations and other fishers. Fishers who would like to switch to a mixed fishing business will be provided with IFF support. Local markets and marketing will be stimulated through local distribution of the products as a brand or high quality product from the small coastal fishing industry. With support from the Dutch national agriculture and economics institute (LEI), three business models have been developed for future use by small-scale fishers, with a range of target species in a limited area during the year.[79]

The aim of IFF is not about being small-scale *per se*, rather members would like to answer the question about whether small-scale fishing provides the means for economically viable fishing activity and to respond to the growing concerns about intensive fisheries that use capital and fuel intensive growth models. The low cost model is expected to become viable when the fishing activity can be spread over a variety of species. Not only does this require adjustment by the fishers, who

[79] Geïntegreerde Visserij. "*Integrated Fisheries*". Unpublished document by IFF, 2006, in Dutch. 34pp.

today are usually quite specialised in one to three gear techniques, it also needs the development of markets for alternative products.

The approach of IFF is: *How can we operate a decent fishery with the smallest impact possible?* The IFF appreciates that this approach will require collaboration with civil society groups, marketing specialists and management authorities alike. It is anticipating the trend of fishing with low diesel impact, limiting CO_2-emissions, both pre- and post-landing, as possible future conditions for fishers. The alternative approach of spreading business risk over a variety of species deserves further exploration to determine whether and how low impact fisheries may become economically viable and healthy.

From a broader perspective, scaling up the experiment is likely to require more political and financial support for the IFF in the coming years. However, there appears to be significant hesitation and anxiety amongst authorities for making changes to existing management systems, even in fisheries where there is little active management, like in this case. But if the signals of the current experiment result in promising outcomes, the managers and authorities should expand it over a larger number of fishers and more species and gear-types. The IFF is aware that the fisheries management for any of the target stocks will have to include the fishing pressure on the entire distribution area of the target species. Therefore, the second stage of this experiment needs to be accompanied by a robust research plan, collecting data and allowing for the most basic fishery assessments.

9. Re-allocating access to lobster resources, Papua New Guinea and Australia

Tropical rock lobster resources fished commercially and for food in the Torres Strait are shared between Australia and Papua New Guinea under a bilateral agreement called the Torres Strait Treaty. Over the previous decades, most rights of access and shares of the tropical marine ecosystem's valuable resources had been 'given' away by successive governments to non-island people (particularly on the Australian side). This consigned traditional inhabitants to living within a largely welfare-based economy with the resultant societal challenges and problems. This case study demonstrates how social considerations embraced notions of maximising and expanding fishing opportunities for traditional inhabitants and giving islanders preferential access to the wealth of Torres Strait's fisheries resources. This led eventually in 2007-2008 to the re-allocation of access to more of the highly valuable rock lobster resources to traditional island inhabitants of the Torres Strait, creating a more balanced 50:50 split between islander and non-islander sectors. Most of the information for this case study comes from Australian sources. However, the outcomes of the re-allocation process were negotiated and implemented between both governments through the Treaty-related joint authorities.

Fishery overview

Between the most northerly tip of eastern Australia and the mainland of south west Papua New Guinea (PNG) lies the Torres Strait. Dotted with tropical islands, swathes of coral reefs and seagrass beds, it is teeming with marine life. Torres Strait's productive fishing grounds yield finfish, shellfish, dugong (sea cow-like marine mammal) and turtles. According to the Australian Government's Torres Strait Regional Authority, the sea is the only significant natural resource available to all Torres Strait islanders and its commercial fisheries are the only resources upon which people can build a real economy[80].

Traditional island communities fish both commercially and for food, while non-islanders only fish commercially. Both islander and non-islander fishers target valuable species like rock lobster, prawns, reef fish, Spanish mackerel and sea cucumber. The ornate or tropical rock lobster fishery is one of Torres Strait's most valuable, providing a major source of income for islanders. The fishery's importance to traditional island livelihoods is the reason it has been the focus of more than two decades of targeted research and management by both PNG and Australian authorities[81].

With trawling for lobsters in the Torres Strait banned in 1984 to protect breeding migrations and tropical rock lobsters not entering baited traps, lobsters are now exclusively taken by divers, either free-diving or hookah (air) assisted, by hand, or using handheld scoop nets or spears[81,82]. Islanders mainly work from small dinghies less than 6m long. The non-islander sector uses larger freezer boats (locally called 'primary' boats) of between 7m and 20m, each one operating with up to seven small

[80] http://www.tsra.gov.au/the-torres-strait/issues/marine--fisheries.aspx Accessed on 24 October 2009.

[81] Dennis, D., Prescott, J., Yimin, Y. and Skewes, T. (2006) *Research to support allocation of indigenous and commercial catch in the Torres Strait Tropical Rock Lobster (Panulirus ornatus) fishery*. Presentation to the Sharing the Fish Conference 2006, Perth, Australia. http://www.fish.wa.gov.au/docs/events/ShareFish/papers/pdf/papers/DarrenDennis.pdf Downloaded 14 August 2009.

[82] Taylor, S., Prescott, J. and Kung, J. (2004) *A guide to management arrangements for Torres Strait fisheries*. Canberra: Australian Fisheries Management Authority. 67pp.

dinghies (called tender boats) to tend its hookah divers, thus operating more flexibly and able to sustain catch rates by moving between lobster grounds[81]. Information on the composition of the Papuan fleet is difficult to come by, but in Australia's share of the tropical rock lobster fishery, by the end of 2007, there were around 430 islander boats and 26 non-islander 'primary' boats with 58 attached tender boats[83].

The commercial fishing season extends from December to September each year, with a peak during March-August. Islanders fish on both local and more distant reefs generally on short trips. Non-islander freezer boats generally travel to the Torres Strait Protected Zone (TSPZ) from further afield (e.g., Cairns in far north Queensland, over 900 kilometres away) on trips lasting from a few days to several weeks[84].

Fishery management system features

Commercial and traditional fishing in the Torres Strait are governed under a framework guided by the Torres Strait Treaty (1985) between the governments of Australia and Papua New Guinea. The Treaty framework sets out provisions for managing, conserving and sharing of fisheries resources and relevant enforcement measures in the TSPZ.[82] Fisheries management in the TSPZ involves agencies from Australia's Commonwealth and Queensland State governments and the PNG governments[82].

The Australian government has created an agency called the Protected Zone Joint Authority (PZJA) to manage its share of Torres Strait fisheries. The PZJA in turn has created a management advisory committee involving stakeholders from islander communities, including both commercial and traditional fishers, non-islander representatives, Commonwealth and State government officials, scientists and technical experts[85].

One of the main aims for establishing the TSPZ was to protect traditional ways of life and the livelihoods of islanders, as well as preserving the marine environment. This includes protecting fishing and traditional right of free movement between Australia and PNG. However, the TSPZ was also established to enable commercial fishing to develop[82].

The Australian part of the tropical rock lobster fishery is managed primarily by effort controls to keep fishing mortality within agreed limits, but this is set to change to catch controls and ITQs in the future under a formal management plan. In the meantime, the main regulatory features of the fishery include: limiting fishing methods to hand collection or handheld implements; closure of the fishery in October-November every year; bans on use of hookah gear for an additional two months; minimum tail and carapace size limits; bag and boat limits for islanders; and prohibitions on carrying processed lobster meat removed from any part of a lobster on any boat[85].

Allocation and access to resources

Description

The TSPZ fisheries management framework was theoretically oriented towards favouring islander access. A key fisheries management objective is to ensure that any increases in fishing effort within the TSPZ are reserved for traditional islanders. However, when entry to Torres Strait fisheries was limited, the majority of those who could demonstrate prior history of fishing in the area were non-islanders and were thus allocated transferable licences[82]. Islanders were able to continue fishing under community fishing licences (Traditional Inhabitant Boat licence). Since this time, non-islander licence numbers in TSPZ fisheries have been reduced through measures to reduce the number of

[83] http://www.pzja.gov.au/fisheries/rock_lobster.htm Accessed on 24 October 2009.
[84] AFMA (2007) *Annual status report: Torres Strait Tropical Rock Lobster Fishery.* Canberra: Australian Fisheries Management Authority. 30pp.
[85] http://www.pzja.gov.au/fisheries/rock_lobster.htm Accessed on 24 October 2009.

tender boats by 30 percent and islanders can now transfer their Traditional Inhabitant Boat licences to other islanders[82,84]. However, the imbalance between islander and non-islander access still favoured non-inhabitants, almost all of whom were Australian rather than from Papua New Guinea.

In order to pursue the overarching objectives of the Torres Strait Treaty and related Acts, i.e., to protect traditional ways of life and livelihoods of traditional inhabitants, as well as promoting Torres Strait Islander economic development, under the Treaty both governments agreed a reallocation of access would be required to redress the imbalance in fishing capacity between the non-islander and islander sectors. In 2005, the Australian and Papua New Guinean governments announced that they would reallocate access shares to achieve a 50:50 split between islander and non-islander fishers. The process to decide and implement this decision is described below.

Allocation criteria

Article 23 of the Torres Strait Treaty specifies the proportion of TACs to which Australia and PNG are entitled. However, as output controls on catch have never been implemented, in practice the two countries estimate and nominate the number of vessels each will allow to fish in the area to catch the nominal shares[84].

The following distinctions are made between the different groups that have access to rock lobster resources in Treaty waters: PNG fishers and Australian fishers (as per Treaty arrangements); traditional inhabitant fishers (traditional fishing); traditional inhabitant commercial fishers (community fishers); and non-traditional inhabitant commercial fishers[86].

In addition, traditional fishing is acknowledged by authorities and fishers alike, including non-inhabitant fishers, as having priority access to resources[86]. Principles that further enable the assessment of the relative merit of different access allocation options include, in priority order:

i) Protection of fishery resources.

ii) Protection of traditional ways of life and livelihoods of traditional inhabitants.

iii) Enhancing economic and employment opportunities for traditional inhabitants.

iv) Enhancing economic and employment opportunities for non-traditional inhabitants, and in a more general sense enhancing economic and employment opportunities in the Torres Strait region.[86]

Allocation process

The process to reallocate access to shares of Torres Strait rock lobster resources began in 2002 when the PZJA commissioned an Independent Advisory Panel to review the sustainability of fisheries in the zone, and to provide advice about resource allocation and access, as well as economic development options. The 'expert panel' route was chosen because of historical inabilities of the established consultative forums to resolve difficult issues by consensus: the main sticking points being allocation of access to resources. The independent panel experts included a fisheries scientist, legal counsel and an indigenous policy adviser. By 2005, long after the panel had reported to the PZJA, access and resource allocation remained unresolved due to issues about compensation to facilitate the removal of excess non-islander fishing capacity and the considerable amounts of public money such a solution was likely to involve.[86]

In early 2005, the PZJA set up another specialist group made up with senior government officials and technical advisers. This group developed the suite of distinctions between sectors and the principles for assessing access allocation options that are described in the section above. Stakeholder views

[86] Kung, J. and Norris, W. (2006) *Re-allocating resources between fishing sectors in Torres Strait commercial fisheries – Recent decisions of the Protected Zone Joint Authority.* Paper presented to Sharing the Fish Conference 2006, Perth, Australia. http://www.fish.wa.gov.au/docs/events/ShareFish/ Downloaded 14 August 2009.

were sought and ultimately led to the decision to reallocate resources between the sectors to achieve a 50:50 split between the islander and non-islander commercial sectors[86].

The next part of the process involved raising the funds to buyback licences (i.e., pay compensation) to those non-islander operators who voluntarily chose to leave the fishery and conducting the buyback itself. Even though some PNG Torres Strait islanders would benefit from the reallocation of access, so would Australian Torres Strait Islanders. Therefore, since the reallocation decision was going to negatively affect Australian commercial non-islander operators (because theirs was the sector that was to be reduced), by 2007, the Australian Commonwealth government had agreed and funded a partial buyback scheme[83,87]. This resulted in the removal of 13 primary (freezer) vessels and 29 attached tender boats, reducing the former non-islander fleet by 50 percent[83,87]. However, the islander communities were said to be disappointed because the reallocation did not leave enough room for future growth of islander fishing[87]. Even so, the outcomes of the reallocation are said to have achieved one of the primary objectives, i.e., the 50:50 division of access between islander and non-islander fishers. The Torres Strait Regional Authority reports the proportions as: 25 percent to PNG, 40 percent to the Torres Strait Islander commercial sector and 35 percent to the non-islander commercial sector[88]. The report further suggests that that Torres Strait Islanders received 53.5 percent, and non-islanders 46.5 percent of the Australian share of tropical rock lobster resources, thus achieving the 50:50 split for which they were aiming.

Conditions of use

Conditions of access and licences are as previously described and relate to limits on expansion of non-islander capacity and conditions limiting transferability of licences. Other conditions of use are the management regulations and measures, also already described in an earlier section of this case study.

As described earlier, the main technical rules establishing conditions for fishing in the fishery include: only hand collection or handheld implements to catch lobster; closing the fishery in October-November every year; banning hookah gear use for an additional two months; minimum tail and carapace size limits; bag and boat limits for islanders; and prohibitions on carrying processed lobster meat removed from any part of a lobster on any boat

Practical considerations

Given the outcomes of the reallocation process appear to have achieved the target figures set out by the joint authorities, it would seem that superficially the reallocation of resources worked. However, the observation in the scientific report referenced below[87] seems to imply that that another round of buybacks may be required, or some other mechanism to further reduce non-islander fishing capacity and reallocate additional access to enable the intended economic development of islander communities throughout Torres Strait.

The intended management plan and the move towards allocating ITQs in the Australian commercial sector may well provide different means to adjust fishing capacity. However, the plan has been repeatedly delayed, such that at the time of writing, management measures had been carried over for two previous years and there was no clear indication when it may come into force[84,85,87].

Conclusions: Lessons learned

In reflecting upon the reallocation process up to the point where the decision was made to reallocate access to rock lobster resources (i.e., in 2005), one observer noted that: allocation issues should be considered explicitly in the pursuit of fisheries management objectives; independent

[87] TSSAC (2009) *Strategic research plan for Torres Strait fisheries, July 2009.* Torres Strait Scientific Advisory Committee. Protected Zone Joint Authority. 26pp.

[88] http://www.tsra.gov.au/the-tsra/structure/administration/chairpersons-report.aspx Accessed on 24 October 2009.

expert panels can be good circuit breakers when stakeholders cannot achieve consensus; and money helps.[89]

Apart from the reported comments by islanders to the Torres Strait Scientific Advisory Committee[87], no formal evaluation has been published that reviews whether the reallocation process achieved the intended outcomes in terms of protecting traditional livelihoods and ways of life and contributing to the economic development of islander communities and at what costs. As the reallocation only took effect in the 2008 fishing season, it is too soon to expect significant changes in the fishery.

In the context of the CFP, this case study has demonstrated that environmental objectives can inform access, i.e., access by each sector was limited to the most selective fishing method (hand collection). But the primary driving forces behind this reallocation of access have been the social considerations, demonstrating that governments can and do redistribute wealth in the form of fisheries resources.

In the first instance, expansion of access was limited to only those participants who would help meet the social objectives. In the second, the buyback or buy out of licences facilitated the removal of some of the unwanted fishing capacity, thus enabling authorities to adjust access in line with their objectives and stated principles. However, as described, the Australian government had ultimately to be willing to pay for such action.

The model that uses independent Allocation Advisory Panels to provide expert advice to authorities on resource allocation and access may offer a useful template for the European institutions, particularly if relative stability does not remain a feature of a reformed CFP.

[89] Wright, G. (2006) *Rapporteur Report: Re-allocating resources between fishing sectors in the Torres Strait commercial fisheries.* Presentation to the Sharing the Fish Conference 2006, Perth, Australia. Downloaded 14 August 2009. http://www.fish.wa.gov.au/docs/events/ShareFish/papers/pdf/rapporteurs/Thur-GuyWright.pdf

10. Transparent use of multiple allocation criteria, South Africa

The backdrop to this case study is the redistribution of wealth through reallocation of access rights to fisheries, thus demonstrating the use of social considerations informing fisheries access. However, this case study departs from the previous nine in that it highlights useful issues surrounding the processes and methods that may be used to transparently allocate access to resources in participatory ways.

The end of apartheid brought democracy to South Africa and with it the urgent need to change society and the country's economy. The subsequent years saw many changes in the political system and distribution of wealth. After the adoption of new fisheries legislation in 1998, the government applied several methods of allocating access to, and shares of, South Africa's fisheries resources with varying degrees of success, resulting in dissent and conflict between many actors within fishing communities and the government. In this context, a project funded by the Dutch-financed Poverty Reduction and Environmental Management (PREM) programme sought to develop a just and broadly acceptable allocation process for fishing rights. The PREM project's over-arching goals were to contribute to the empowerment of historically disadvantaged people, to help ensure long-term sustainability of fish stocks and related ecosystems, and to help alleviate poverty in the long-run. The project demonstrated how a participatory approach and a simple multi-criteria decision-making process could develop and distil allocation principles and criteria into transparent options for allocation decisions. Ultimately in 2005, the project's conclusions were not adopted by the South African government. The outcomes of the government's actual method and process continue to be contested by small-scale fishers in a class action that has now made its way to the High Court of South Africa. Even so, this case study demonstrates the multi-criteria decision making approach that was developed during the PREM project and suggests it as a simple, transparent decision-making tool that could be useful in a European fisheries context. The tool could be used to demonstrate how different considerations and tradeoffs are taken into account when allocating access to fisheries resources under the CFP to arrive at just decisions that are consistent with the principles and objectives that are being pursued.

Fishery overview

Three fishing communities on the Western Cape were the focus of a Dutch-financed Poverty Reduction and Environmental Management (PREM) project: Hawston, about 120km from Cape Town, and Kalk Bay and Ocean View, which are effectively suburbs of Cape Town (see Figure 11).[90] These communities have some similar characteristics: high levels of unemployment, low education and a range of societal problems brought about by apartheid. Each community had long-standing links to fishing and small-scale fishers considered so-called linefishing a staple activity which provided income and food between fishing for other species[90].

The three fisheries of most relevance to the three communities are the hake handline and traditional linefish fisheries, west coast rock lobster and abalone fisheries. Each of these fisheries was relatively accessible to the poorer, small-scale fishers of each community and required relatively low levels of capital investment to enable their participation. However, each fishery is exploited by a diverse range of large, medium and small-scale fishers each with complex and competing needs.[90]

[90] Joubert, A. (Editor), Stewart, T., Scott, L., Gilbert, A., Janssen, R., van Herwijnen, M., Matthee, J., and de Vries, L. (2005) *Fishing rights and small-scale fishers: An evaluation of the rights allocation process and the utilisation of fishing rights in South Africa.* Amsterdam: PREM, Institute for Environmental Studies (IVM). 168pp.

Hake is South Africa's most valuable fishery involving offshore, deep sea trawlers, inshore trawlers that target sole and inshore hake, a longline fishery introduced as recently as 1998, and finally the hake handline fishery whose management was separated from the general linefish fishery in 2002 because of stock depletion in the linefish sector.[90] In 2002-2005, the annual TAC for all hake species and sectors was around 164,000 metric tonnes, of which about 5,500t were allocated to the handline fishery.[90]

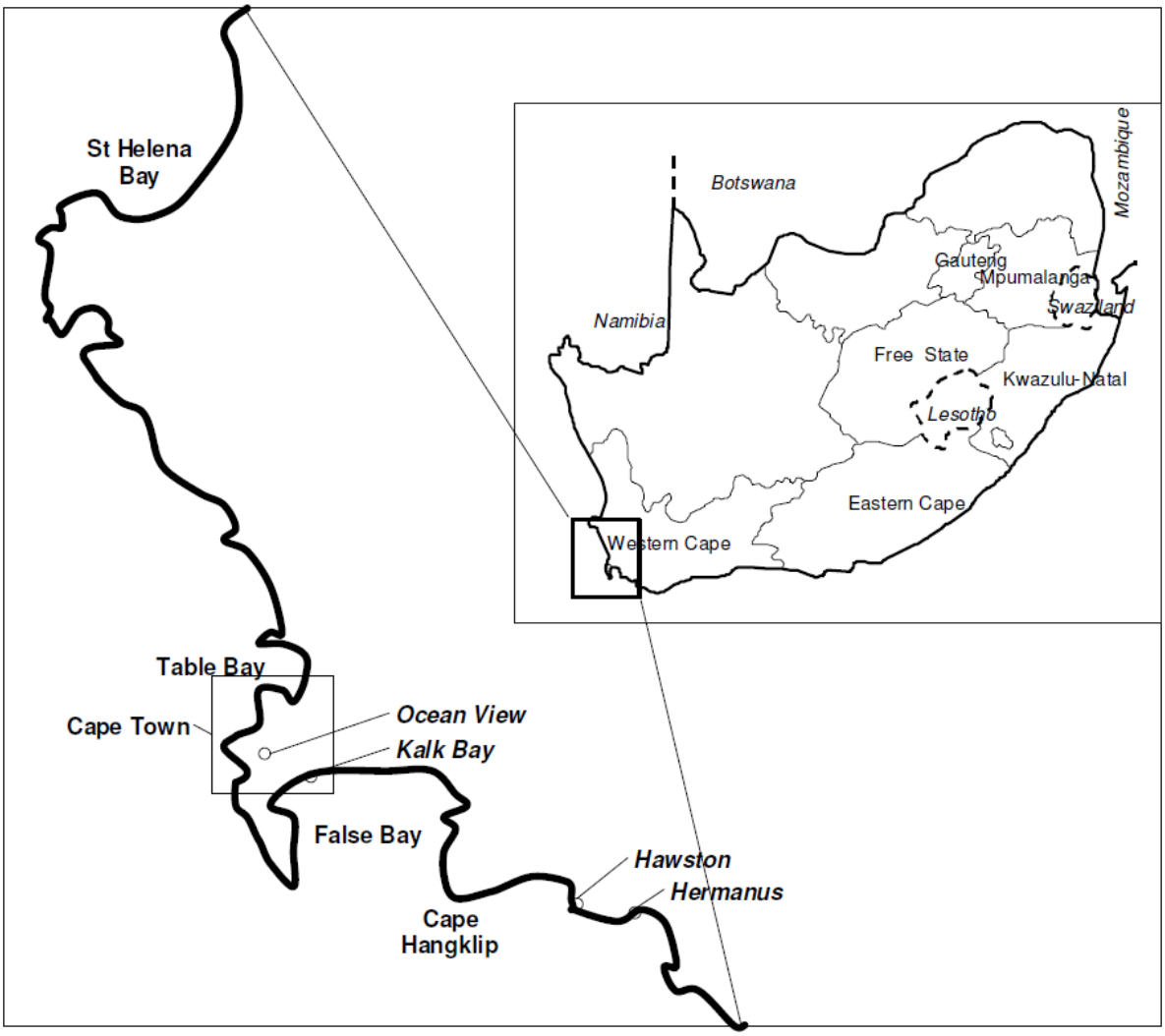

Figure 11: PREM study location. (Source: PREM report)

The first of the three key fisheries for the above communities is the so-called traditional linefishery. It is said to be a mainstay of the small-scale, poorer community fishers of the western Cape[90]. While about 200 different species may be caught, around 95 species are significant for fishers and about 20-30 species make up the bulk of the catch[90,91]. The linefishery is a catch-all term that refers to commercial, recreational and subsistence fishing that is both shore and boat-based, and includes not only the use of lines, but gillnetting, beach-seining and traditional spear and trap fishing methods[91]. Overlaps in species caught and fishing grounds means that their management is usually considered part of the linefishery[91]. In 2007, the linefishery was said to provide employment for an estimated 130,000 people throughout South Africa, with commercial fishing responsible for 79 percent of the catch but only 19 percent of employment and 18 percent of the revenue generated by the fishery[91]. Many linefishery stocks are reported as overfished or collapsed, requiring drastic management

[91] Lamberth, S.J. (2007) *C.A.P.E. Estuaries Guideline 7: Sustainable fishing in estuaries*. Cape Action for People and Environment. 31pp.

intervention to reverse stock depletion[91]. Changes in allocation methodologies have significantly shifted the eligibility for access to the linefishery for many fishers, especially those fishers who also targeted hake, rock lobster or abalone (which under South African fisheries policy are considered separate fisheries) as part of multiple species, multiple gear small-scale operations. The allocation changes are said to have broken traditional links between these fishing activities for many from vulnerable, fishing dependent communities[90]. More details about these issues are described later in this case study.

The second key fishery was rock lobster, which was, and to some extent still is, an important species in the mixed species, mixed gear operations of small-scale community fishers. The changes in classifications for different types of fishing operations make it difficult to tease out how many small-scale fishers continue to have access to west coast rock lobster resources.

Finally, the third key fishery, abalone, is fished by divers working from small boats and dinghies. Crew numbers are limited regardless of boat size. Since 1998, subsistence fishers, like those involved in the rock lobster, hake and line fisheries have been subject to changing classifications (eg., from subsistence to limited commercial) and allocation methodologies which have left some fishers without rights of access to resources they legally previously fished. Poaching is a major problem for the abalone fishery, with some estimates suggesting that the poaching take in some years doubled that of legally caught abalone, despite new allocation, management and enforcement approaches, significantly higher detection and conviction rates, and increases in the speed at which cases were dealt with[90].

Fishery management system features – allocation dimensions

South Africa's fisheries are managed by the central government through the Department of Environmental Affairs and Tourism, Marine and Coastal Management Branch under the *Marine and Living Resources Act* (1998). Fisheries and fishers have been subjected to a great deal of political, administrative and allocative changes since the apartheid era ended in 1994 and the introduction of constitutional democracy. One of the primary goals of the new fisheries legislation in 1998 was to transform South Africa's fishing industry in accordance with principles laid out in South Africa's new constitution which sought to promote social equity, redistribute wealth among its people, alleviate poverty and transform the lives of historically disadvantaged people.

Policies relating to allocation have seen much change since 1998, bringing new, mostly previously disadvantaged people into fishing and giving them rights that facilitate investment and the establishment of track records in fishing[92]. This has not necessarily translated into recognition of, or allocation of access to, previously disadvantaged people from certain demographics who have for generations been subsistence or small-scale fishers.

Using the linefishery as an example, overfishing led to a crisis being declared in 2000 and in 2003 a new approach was implemented to drastically reduce fishing effort by reducing access from 2,500 active vessels to about 450 with a crew of approximately 3,450[90]. The methodology used to allocate access at the time is said to have adversely affected a number of fishing communities. This is because allocation of access was tied to boat ownership and many small-scale or subsistence line-fishers shared access to boats rather than owned them outright. As a result, the number of people who were allocated access to the fishery was even smaller, thus concentrating allocation rights in the hands of few. Subsequent appeals led to a number of exemptions that enabled both owners and crew to access the traditional linefish fishery's resources. However, the linefish fishery was split into three sectors and conditions were placed upon traditional linefish fishers such that only those who were dependent on linefish for more 75 percent of their income were granted preferential access. Other fishers who had rights of access to other fisheries were excluded completely: meaning that if a

[92] DEAT (2009) *Performance reviews: commercial fishing rights 2009/10*. Department of Environmental Affairs and Tourism. 8pp.

fisher had just one other right of access to a different fishery, e.g., rock lobster, they were not granted access to the linefishery. The effect of this was to exclude a great number of fishers whose subsistence fishing was diverse, seasonal and used different gears according to the availability of species like rock lobster or abalone, but had relied upon the linefishery to enable them to earn a livelihood all year round.[90]

Allocation and access to resources

Description

Attempts to redistribute access and harvest rights for South African fisheries were undertaken several times after new fisheries legislation was enacted in 1998. Each attempt up to 2000 resulted in general chaos and significant instability in the fishing industry, and processes were dogged by accusations of maladministration and corruption[93]. Apparent inconsistencies and a lack of transparency about allocation of fishing rights, including access, also caused high levels of discontent amongst fishing communities in the Western Cape following the 2001 allocation process. It was against this backdrop that the PREM project began to develop proposals for a more open, participative process for deciding between multiple, conflicting allocation objectives and criteria which could result in more transparent and just outcomes[90]. Although not officially commissioned by the government through MCM, the project served as a demonstration of how such a participative, multi-criteria decision making process and methodology could be implemented to achieve the government's stated objectives in relation to access to fisheries resources.

Through a participative process involving members of three Western Cape fishing communities and separately with managers from MCM, a comprehensive range of views about improving allocation of access and fishing rights were collected and analysed[90]. Using a framework of tools and principles called "Multi-criteria decision analysis", structured hierarchies of stakeholders' and managers' values, goals and objectives were agreed, which illustrated relationships between different goals and enabled them to explicitly weigh up and score tradeoffs. Ultimately this led to proposals about the allocation process and recommendations for new allocation procedures.[90]

Allocation criteria

Since 1998, the principal considerations that influenced the development of allocation criteria for access and rights to South African fisheries were socio-economic.

Criteria adopted by government between 2001 and 2005

The overarching objectives for the government in the 2001-2004 allocation system focussed on "*the need to balance the sustainability of the industry while enhancing the capacity of historically disadvantaged communities to establish commercially viable businesses*". Subsequent allocation criteria that realised those objectives included: the degree of transformation as measured by the historically disadvantaged person (HDP) status of applicants or percentage HDP ownership/management of fishing enterprises; the degree of investment and involvement in the industry as measured by ownership, access to vessels, previous fishing rights, and business acumen through plans or demonstrated economic performance; and compliance with fisheries and other regulations[94]. These objectives and criteria were to lay the foundation for the official 2005 policies and processes which sought to allocate rights for up to 8-15 years on the basis of consolidating and

[93] Kleinschmidt, H., Moolla, S. and Diemont, M. (2005) *A new chapter in South African fisheries management*. Press release dated 25 April 2005. Marine Coastal Management, Department of Environmental Affairs and Tourism. http://www.mcm-deat.gov.za/press/2006/commercial_fishing_rights_applications_2005.pdf Downloaded 7 October 2009.

[94] van Beukering, P. (2005) *Fishing rights and wrongs: the development of a simple, transparent and defensible allocation system for fishers in South Africa*. PREM Policy Brief No. 6. Amsterdam: Institute for Environmental Studies (IVM). 4pp.

extending black ownership and participation, the redistribution of wealth within fisheries and bringing stability to the fishing industry[95].

Criteria developed by PREM project

The PREM project developed criteria through its participative process that linked to the policy priorities related to industry transformation. The resultant criteria expressed values and objectives related to the provision of:

- *Greater stability.* To the community fishers involved in the PREM project this meant being concerned about social continuity by not disrupting traditional ways of life. Whereas MCM interpreted stability to mean the economic stability of the fishing industry.
- *Equitable access.* For community fishers this meant access for those who were dependent on fishing for livelihoods and could demonstrate their bona fides and shared access to vessels rather than ownership of vessels. In the actual allocation process MCM criteria focussed on those who were dependent on a 'single fishery' to the exclusion of multi-species, multi-gear fishing usually conducted by small-scale, subsistence fishers, and vessel ownership was seen a more important criterion.
- *Economic performance.* Communities favoured historical or previous involvement in fishing as a criterion. Despite the idea that historical involvement could be acknowledged as a proxy for economic performance, MCM favoured the requirement for small-scale fishers to demonstrate their business skills. Thus establishing criteria relating to business-like approaches to fishing enterprises, over the actual performance of law-abiding fishers who may have been 'good' fishers (i.e., caught fish successfully)[90].

Allocation process[90]

The PREM process involved an interdisciplinary, action research approach[96] to integrate inputs informed by social sciences, environmental economics, local knowledge and participation, using decision analysis and information technology. The three principal mechanisms to achieve the project's aims were: 1) interaction with community fishers and representatives through informal discussions, workshops and questionnaires about their goals and values; 2) interaction with government officials from MCM to understand national goals, how they were being interpreted and any practical and political implementation issues; and 3) critical evaluation of previous rights allocations in relation to the objectives that were being pursued.

The government, through MCM, had already begun the formal process of evaluating and comparing rights applicants. The PREM project analysed the steps already undertaken and how congruent the performance criteria were with the government's stated goals, and with community representatives' aims.

Over approximately nine months, fishers from each of the three communities participated in a series of formal workshops conducted by PREM researchers in their respective communities. Participants were given time to voice or table their thoughts and opinions. Formal, but relatively low-tech brainstorming sessions were then conducted to further elicit participants' values and priorities. Cognitive maps were developed that visualised the connections and relationships between issues, the driving forces behind the issues, participants' goals and potential actions or solutions.

[95] DEAT (2009) *Performance reviews: commercial fishing rights 2009/10*. Department of Environmental Affairs and Tourism. 8pp.

[96] Action research is a social science research method. It is characterised by its participatory, collaborative approach to inquiry between researchers and, in this case, stakeholders. Action research involves action and reflection, developing theory and practice, in pursuit of practical solutions to problems of concern to people (Reason, P. and Bradbury, H. (2006) Introduction: Inquiry and Participation in Search of a World Worthy of Human Aspiration. In: Reason, P. and Bradbury, H. Eds. The Handbook of Action Research. London: Sage. Pp: 1-14.

Participants were asked to assign points between the various issues according to their beliefs about which were the most important, thus showing each issue's relative importance. These weighted issues were combined into value trees which are hierarchical depictions of objectives and criteria, where higher level objectives and priorities are linked to the means of achieving them by specific allocation criteria (see Figure 12). In the case of the community workshops, the goal of social continuity and reintegration and its related criteria were weighted higher than other potential allocation criteria.

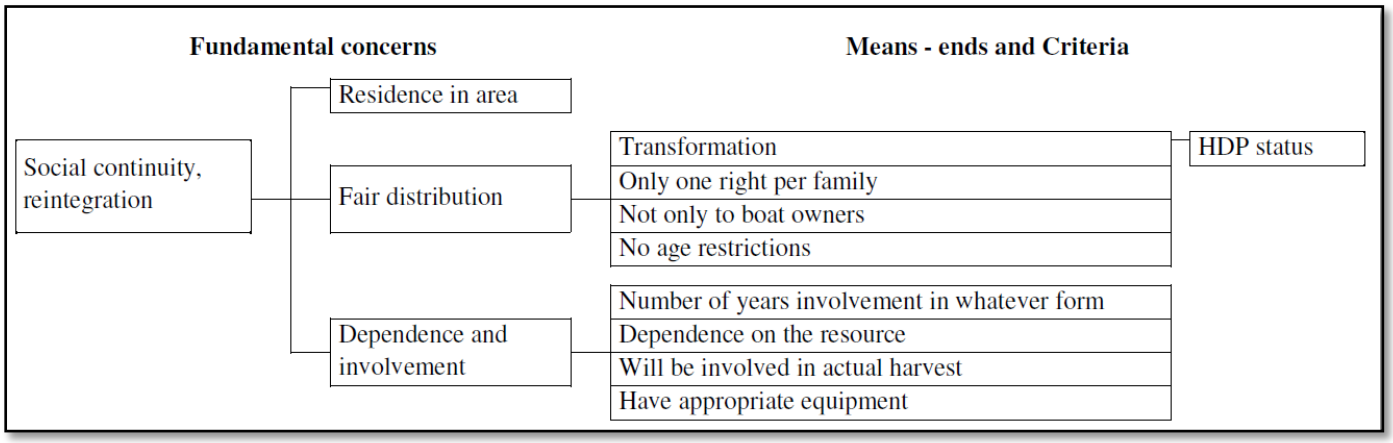

Figure 12: Value tree developed after three workshops with Hawston community fishers. (Source: PREM report)

Following the community workshops and interaction, interviews and discussions were held with senior officials of MCM to understand the legal and policy framework under fisheries legislation and to clarify interpretations. The project team then conducted a formal workshop with MCM officials to develop cognitive maps and value trees that represented management and policy objectives.

All of the analysis of the outputs from the various workshops was conducted using a multiple criteria decision analysis (MCDA) framework of tools and principles. Aggregated value trees were developed from all the outputs from the community workshops and the MCM sessions, which formed the basis for proposals and recommendations for future fishing rights allocations emerging from the project .

Practical considerations

Use of multi-criteria decision making support tools

Using an MCDA approach does not guarantee the correct result, because as with many social issues like allocation, there is no single right answer. The approach and process needs to be used to explore alternatives in an informed and structured way. One of the strengths of the PREM approach was the researchers' ability to clearly demonstrate, transparently, how different considerations have been traded-off against one another in the decision-making process to arrive at the aggregated tree of allocation criteria. After the fact, researchers noted how the formal process used by MCM (i.e., not the PREM process), while it did not yield results that were widely accepted or understood, was also a version of a multi-criteria decision making process.

The result may only be as good as the data inputs and analytical methods used to arrive at credible results. Again, in the case of the actual approach implemented by MCM in 2005, some of the criticisms levelled against it by stakeholders relate to alleged deep flaws in both the data (invalid, inaccurate or simply missing) and the statistical methods used to analyse, weigh and score the different criteria (e.g., using invalid data or missing values incorrectly resulting in statistically

irrational results). In addition, the less transparent the methodology and its inputs are, the more difficult it is to ensure results will be congruent with stated goals and objectives.

Similarly, the results may only be as good as the degree to which the outcomes are bought into by those whose livelihoods and fishing futures are bound up in the results. Stakeholder participation, including fishers, government or fisheries officials, civil society representatives, technical and scientific experts, are key to ensuring as much information and opinion is considered in the process.

Finally, the process requires technical capacity to support it. This means not only acquiring appropriate computer-based programmes and software, but also the expertise and training in facilitation or use of decision science approaches and MCDA tools, as well as the expertise or skills to analyse, consolidate and interpret results.

Conclusions: Lessons learned

As indicated earlier in this case study, concurrent with the PREM project, the government contracted a larger international auditing firm to begin an audit and allocation process using a quantum method that could be said to be a form of multi-criteria analysis. Though the PREM researchers had met and engaged throughout the process with senior MCM officials, their project was never fully integrated into the formal process, nor was the government under any obligation to heed its recommendations. Ultimately the government's allocation decisions in 2005 were highly contested on several fronts: alleged inequitable or irrational outcomes that were said to be inconsistent with the stated goals, objectives or principles of both fisheries policy and the South African Constitution itself, and allegedly incorrect or invalid data leading to potentially invalid outcomes. This led to a series of delayed allocation announcements, a large-scale appeals process, overturned decisions and subsequent reallocations[97].

Only relatively few of the many thousands of subsistence and small-scale fishers who claimed to have relied upon fishing for food and livelihoods for generations were granted long-term rights under the 2005 process. Many of those who were unsuccessful were said to believe that outcomes further entrenched their exclusion, which had its origins in the 2001-2002 allocation process[98]. Some of the fishers who believe they were most disadvantaged by the allocations were the subsistence and small-scale fishers of Western Cape Province communities, who relied upon the traditional linefishery, rock lobster, abalone and hake handline fisheries. They, along with other communities, launched a class action appeal against the government that has made its way to South Africa's High Court but has yet to be settled[98]. The basis for the suit is that the legislative framework and its subsequent allocations violate several rights guaranteed to the plaintiffs by the Constitution of South Africa, and that the way in which the policy and allocation process was administered also violated constitutional provisions. The central argument of the case is that taken together the violations and the fishers' treatment by the State, through the Minister, results in an inequitable and discriminatory law, thus violating the central principle enshrined in South Africa's constitution: the Equality Clause[98].

A sub-text to all of this, as in many issues in South Africa, is that of race. When apartheid ended and the newly elected democratic government developed a new constitution, they enshrined a fundamental concept within the goals to transform society and the South African economy: transformation based upon the empowerment of historically disadvantaged individuals (HDI), i.e., those people who had been disadvantaged and discriminated against by the apartheid regime. When originally conceived in early to mid-1990s, HDI was taken to mean people categorised as 'black' or 'coloured'. 'Black' referred to a person whose origin was the African continent and 'coloured' referred to non-native, mixed-race or other non-white people. The majority of South

[97] See 2005 and 2006 press release and public notices archive pages of the MCM-DEAT website: http://www.mcm-deat.gov.za/press/index.html Accessed between 7 and 28 October 2009.
[98] Jaffer, N. and Sunde, J. (2006) *Fishing rights vs human rights?* SAMUDRA Report, No. 44: 83-86.

Africa's population is black, thus the majority of South Africa's population are HDI. By contrast, the majority of the small-scale fisher communities of the Western Cape are said to be coloured and claim to have been artisanal or subsistence fishers for many generations making small incomes from diversified fishing operations, as well as providing food for their families. However, since the enactment of laws relating to black empowerment in the early 2000s, HDI status and transformation goals have come openly and explicitly to mean the empowerment of black people[99]. In the context of fisheries allocations, this manifested itself in criteria to be weighted higher and scored more positively when the applicant was black. Thus, the essence of the class action lawsuit brought by small-scale fisher communities of Western Cape province is that in discriminating positively towards the transformation and empowerment of black people, the dispossessed, marginalised and poverty-stricken coloured fisher communities that suffered under apartheid have been further discriminated against, marginalised and even more disadvantaged than before by being virtually excluded from fisheries to which they have historical involvement.

In the meantime, the government has made several attempts to develop allocation and management policies for South Africa's subsistence and small-scale fishers in 2006 and again in 2008. The latest draft policy released for public comment in December 2008 is reported as being under question or even rejected by the task team of subsistence fisher representatives constituted by the government to contribute to its development. One of the main reasons reported is that the draft policy statement overtly implies subsistence fishers will not be allocated access or harvest rights because resources are already allocated to commercial fisheries[100]. This implies that reallocation of resources away from commercial interests will not be considered. These issues will take time to be resolved.

Even though the above outcomes are far from ideal for South Africa's subsistence and small-scale fishers, they should not diminish the potential demonstrated by the PREM project for the use of MCDA tools and processes to develop transparent, simple and socially just allocation criteria and outcomes. In the context of the CFP, a framework that incorporates such explicit tools and approaches to developing clear and transparent access criteria could be a unique strength. Difficult decisions, laden with conflicting objectives and goals, entrenched positions, interests and perceived needs between Member States, or between the EU's diverse fishing sectors, seem to be the ideal subjects for a transparent, simple and readily understood approach.

A multi-criteria decision analysis approach could be applied to the highest access and allocation related issues under the CFP, e.g., if relative stability is abandoned as the driving principle for Member State quotas. Alternatively, MCDA could be applied within some form of regional fisheries management approach to allocate access to vessels, communities or others at regional levels according to regional objectives. Finally, MCDA could be applied uniquely at individual fisheries levels to determine specific allocation or access criteria by grassroots stakeholders, in accordance with local environmental, social and/or economic objectives.

As suggested in the conclusion to the French case study, developing a weighted, multi-criteria scoring system based upon environmental and/or social considerations would help the transparency of access allocation decisions. Determining the priorities (i.e., the criteria) and their relative weights could be conducted through a multi-stakeholder, consensus-based engagement process involving as broad a cross-section of interests as possible.

[99] DEAT (2005) *General policy on the allocation and management of long term commercial fishing rights: 2005*. Department of Environmental Affairs and Tourism. 47pp.

[100] Burnett, P. (2009) *Fighting for the right to fish.* West Cape News, 14 February 2009. http://westcapenews.com/?p=638 Accessed on 22 October 2009.

DISCUSSION

Summary of case studies

As might be expected when examining individual fisheries, particularly those that are governed within frameworks that enable decision-making to be made closer to the fishery, each case study has demonstrated something unique in the context of allocating access to fisheries resources. Yet there are some similarities. Seven out of ten case studies demonstrate how both social and environmental considerations can determine criteria for allocating access to fisheries. Two exceptions are: South Africa's allocations being mainly informed by socio-economic imperatives regarding societal transformation; and South Georgia's government focussing upon criteria that will aid the pursuit of its environmental and conservation objectives. Three case studies (Cape Cod, USA; South Georgia; and South Africa) reveal that a history of compliance with regulations is an important criterion to be considered in allocation processes.

In a majority of cases, the environmental considerations influencing allocation criteria are access related to selectivity of fishing gear and the gear's subsequent reduced environmental impact, either upon juvenile or breeding populations, habitats or other elements of marine ecosystems. These are often combined with some kind of spatial management framework, defining areas of special or restricted access. For example, the marine reserves in Galicia and Sweden, the creel-only fishing area in Scotland, the Mackerel Box off south west United Kingdom and the Wadden Sea inshore fishing grounds in The Netherlands. These could be likened to the concept of Territorial Use Rights in Fisheries (TURFs) or marine tenure systems, facilitating stewardship by individual or community users.

The principal social considerations influencing allocation criteria include linking access to social cohesion or protection of the social ecology of fishing communities and the protection of fisher livelihoods. Some case studies demonstrate criteria that link to individuals, such as France's right to work or the individual empowerment or crew dimensions of South Africa's allocation model. While others show that community or local empowerment are important considerations (Torres Strait rock lobster and the Dutch Wadden Sea pilot project).

The processes used to allocate access are as diverse as the fisheries themselves. Some fisheries began with some kind of community action that transformed over time into collaborative, participative processes (Cape Cod, Koster-Väderö, Lira-Carnota, Scottish creel). Conversely, in South Georgia the government is the driving force behind their strong environmental access criteria. Some processes have been aided by financial support (Wadden Sea grant, Torres Strait buyback programme, and Cape Cod grants). Uniquely, the French Mediterranean *Prud'homies* use a lottery system to allocate each member the fishing grounds they will access for the coming year. The French authorities, meanwhile, use a process to rank and score applicants against multiple criteria in order to make their allocation decisions. Similarly, the South African case study set out a comprehensive approach to making decisions using multi-criteria decision analysis (MCDA) and the US Cape Cod fishers contemplate using ranking criteria to score and weigh up applicants for access to fishing permits and/or quota which could encourage a race to the top in terms of competing for access based upon how well environmental and social objectives can be pursued or achieved. In order to protect small-scale fishing, in the UK a process of ring-fencing or underpinning quota was described in relation to the Mackerel Box. In two cases, allocation processes explicitly involved the development of a marine reserve that enabled fishing to continue, albeit with more conservative rules, while also providing additional protection to marine ecosystems (Lira-Carnota, Spain and Koster-Väderö, Sweden).

The table overleaf summarises the key elements in each case study relating to the criteria and processes used to allocate access to fisheries resources.

Case study	Criteria			Allocation process
	Social considerations	History of compliance	Environmental considerations	
1. Cape Cod, USA	Social cohesion Protect livelihoods	✓	Selectivity Reduced environmental impact	➢ Community action ➢ Consensus-based decision making ➢ Qualifying and ranking criteria ➢ Potential auctions ➢ Financial support (grants)
2. South Georgia Toothfish	-	✓	Pursuit of Government environmental objectives	➢ Assessment by Director of Fisheries
3. Koster-Väderö shrimp, Sweden	Social cohesion Protect livelihoods	-	Marine Reserve More conservative rules	➢ Community action ➢ Co-management initiative ➢ Maintained prior access
4. Languedoc-Roussillon, France	Right to work Right to protect profession Equitable sharing	-	Selectivity (by virtue of trawl ban inside 3nm)	➢ Annual lottery by fishers for individual fishing space ➢ Multi-criteria decision analysis by authorities for access licences
5. Lira-Carnota, Galicia, Spain	Social cohesion Protect livelihoods	-	Marine Reserve More conservative rules	➢ Community action ➢ Workshops, collaborative development of marine reserve ➢ Register of vessels, history of fishing
6. Creel fishing, Scotland	Protect livelihoods	-	Selectivity Habitat protection	➢ Community action ➢ Torridon Management Plan
7. Mackerel Box, United Kingdom	Protect livelihoods	-	Selectivity Juvenile protection	➢ Ring-fencing of quota, underpinning
8. Wadden Sea, The Netherlands	Local empowerment	-	Selectivity Reduced environmental impact	➢ Local action ➢ Pilot project ➢ Financial support (grant)
9. Torres Strait, Australia & PNG	Community empowerment	-	Selectivity Breeding population protection	➢ Independent allocation advisory panel ➢ Independent expert advisers ➢ Financial support (buyback) ➢
10. Western Cape, South Africa	Fisher empowerment, Societal transformation Crew dimension	✓	-	➢ Multi-criteria decision analysis

Table 2: Summary of key access and allocation features of each case study.

Lessons learned

Holistic, integrated approach

Some of the case studies clearly demonstrate that issues related to allocation of access to, or shares of, fisheries resources should not be considered outside a broader, integrated, more holistic management framework. For example, the Cape Cod, Koster-Väderö, Lira-Carnota and South Georgia fisheries, the first three of which also have clear visions or missions for social cohesion and sustainable fishing at the heart of their management frameworks.

Leadership and participation

Two case studies showed that not only was thought-leadership an important dimension of the eventual success of their approaches, but so was actual physical leadership in the form of a single person driving the project forward. In the case of Koster-Väderö, a project leader was seen as an important success factor. In the case of Cape Cod, the leader of the Fishermen's Association brought drive and an entrepreneurial dimension to the work, helping create innovative and ground-breaking solutions to the problems of community continuity and long-term access to sustainable fisheries resources.

In two case studies, fishers enlisted the support of politicians, local NGOs, conservation agencies and other community stakeholders to gain attention for their actions and to bolster support for them (Spain and Scotland).

Finally, many case studies describe how fishers, government officers, NGO representatives, fisheries and conservation officials, scientists, community representatives and other stakeholders came together in participative processes to develop access arrangements within a fisheries management context. It is suggested that those arrangements which attempt to transparently balance the competing interests of all participants will probably be seen as more legitimate by fishery participants than those that do not. In turn, this may result in fishery participants exhibiting good levels of compliance with management and access rules.

Flexibility

One case study in particular demonstrated a model of innovation, creativity and flexibility that enabled fishers to continuously improve and learn: Cape Cod, USA. The Association's approach offers a model for similar schemes to devise management and access arrangements. One of the key lessons the Association learned and applied is the idea of not carving everything in stone immediately. They learned it takes time to adapt and improve as more experience is gained. Thus, the more flexible the approach, the more measures can be shaped to better achieve one's overarching objectives. Conversely, too much change and adaptation can lead to instability, as demonstrated by South Africa's various approaches to allocation since the advent of democracy.

Time

Some case studies demonstrated how long things can take to work their way through political processes and systems (e.g., years in Sweden, Scotland and the USA). Conversely, some action was taken in relatively short time scales: in South Georgia the government can act swiftly, changing access criteria between seasons; in Spain the Galician regional government took a relatively short four years from initial community action to decreeing the marine reserve in Lira-Carnota.

On balance, some would suggest that the development of plans, criteria, processes and collaborative forums takes time and can be seen as a continuous problem-solving process. However, the more diverse the range of stakeholders engaged in the process the greater the possibility of disagreement about objectives and aims, leading to politics and power struggles delaying and lengthening the time

the process takes. In the final analysis, however, if a consensus-based process is to be used, one must keep talking until issues are resolved satisfactorily.

Politics

Any process relating to the division of scarce resources among people where some will be excluded and others will be included, ultimately involves the distribution of wealth, and therefore politics. Three case studies approached the political dimension in different ways. Astutely, Cape Cod fishers sought to join the political process by ensuring one of their representatives had a seat at the regional fisheries management decision-making table. Similarly, Scottish creel fishers lobbied and campaigned for local and national political support for their cause to create a creel-only fishing zone. Conversely, the South African PREM project researchers were not wholly integrated into the allocation process conducted by the government, despite meeting with government officials. They perhaps naively allowed their project to roll along, developing the MCDA methodology and allocation decision making tool, instead of spending energy and time trying to convince the government that it was the tool to use. The criteria developed in the PREM project had the potential to deliver the government's transformation objectives without leaving it to fight protracted court battles some four years after the event.

Wealth redistribution

Two of the case studies demonstrated government and political will to engineer large-scale wealth redistribution. In the case of South Africa, the government since 1994 has been on a mission to engineer massive social change at a societal level, and the fisheries story is one small part of that overall change effort. Whereas, in the Torres Strait, fishing is the one community activity upon which a real economy can be based, so the governments there were willing to redistribute the wealth in the form of access rights, but not without paying compensation of a sort by buying back licences from non-islander fishers.

Incentives and financial support

Access to fisheries resources can be a powerful enough incentive on its own to comply with rules and even contribute to the overarching pursuit of ecologically sustainability, as demonstrated by the South Georgian government. However, sometimes more tangible incentives may be necessary, such as buying back licences to facilitate a redistribution of fisheries access, financial support in the form of grants and funds to facilitate research or development of more selective gears, the development of collaborative management planning, or the implementation of pilot projects to demonstrate the benefits of a particular approach.

Current CFP ~ existing instruments

The current CFP can accommodate the inclusion of environmental and social criteria in the context of access allocation. Although the specific access limits may not be entirely explicit the Mackerel Box is currently regulated under a Council Regulation for juvenile protection purposes. In a similar vein, the concept described in the Cape Cod case study relating to the 'special area of access' for haddock fishing, could be likened to the current "Conservation Credit Scheme" that Scotland has been authorised by the European Commission to use in the context of the North Sea cod recovery plan.

One size does not fit all

The diversity of approaches in all ten case studies shows that one size does not fit all. However, it is possible to articulate high level principles and objectives to facilitate the development access arrangements that can be seen to pursue or achieve those objectives.

Design elements

Some proposed elements for designing access or allocation criteria are set out below. These might be applied within an overarching management framework, on a regional basis under a regional fisheries management framework or more locally in individual fisheries.

Design element	Description
Overarching objectives	Describe the highest level of objectives, in priority order, of the overarching management framework – what is management trying to achieve using outcome terms? E.g., ecologically sustainable development, or equitable distribution of the benefits of access to fisheries resources.
Decision methodology	Determine the decision methodology to be used. E.g., multi-criteria decision analysis tools which will enable decision makers to simply, transparently and justly weigh many criteria against one another and reveal to stakeholders the tradeoffs and compromises being made.
Management unit	Identify the management unit for which access or allocation criteria are to be determined. This might be defined based on biological or ecological factors; sectoral distinctions like fishing methods; geographical factors; or combinations of factors.
Stakeholders	Identify the stakeholders who should be involved in the process to develop transparent access and allocation criteria.
Goals	Articulate the goals or next level of objectives in reference to the management unit.
Type of access	Determine the kind of access that will enable the goals and overarching objectives to be achieved.
Eligibility & exclusion	Determine who may or may not be eligible to be granted access, and on what basis.
Allocation	Determine how catch and/or effort might be distributed between eligible participants once access has been granted.
Past attachment	Determine whether previous or current use of resources will be a factor determining access. Unlike catch history as a means to allocate shares of quotas, this concept captures the idea of recognising past or current resource access and connections either at individual or community levels.
Changing access	Determine entry and exit rules: can access be traded, allocated to new entrants, retired, surrendered, etc. On what basis?
Conditional access	Determine any conditions linked to continuing or maintaining access. E.g., compliance with management regulations, monitoring and research participation, carriage of observers, collaborative research, etc.
Sanctions	Linked to the above, if conditions of access are violated, what sanctions or penalties might be applied?
Costs and Benefits	Quantify to the best of one's ability, the likely distribution of costs and benefits between participants, including those who are excluded and the likely re-distribution of costs and benefits within and between fisheries, within and between sectors, or at local community level, even on a societal level, whichever is most relevant to the access scheme under consideration.
Incentives	Determine whether the financial and/or other incentives that are needed to facilitate the transition to environmentally or socially sustainable fisheries access.
Conflict resolution	Determine process for resolving conflict about access, both internal and external conflict.
Legal considerations	Determine potential legal implications for decisions relating to inclusion or exclusion of previous rights of access holders.

Table 3: Design elements to consider when developing access criteria for fisheries.

CONCLUSION

The case studies clearly demonstrate the feasibility of basing access to fisheries resources on environmental and social criteria. Under a reformed CFP, within a principle-centred approach to fisheries management in EU waters, it should be possible to base rules for access to fishing and fisheries resources on criteria that ensure a transition to, and support for, environmentally and socially sustainable fishing.

Integral to making a transition to environmentally and socially sustainable fisheries access is the idea that creating an over-arching policy and management framework that integrates and implements ecosystem-based approaches to management and participative governance structures. Within such a framework, the following ideas should be enshrined:

- A principle-centred approach to the CFP should ensure that pursuing environmental objectives is the highest priority and a prerequisite to fulfilling social and economic objectives;
- Transparent and participatory decision making is conducted within a framework that ensures strategic and operational decisions are made at the most appropriate level, be it European, regional, national or local;
- Instruments are aimed at delivering sustainable fishing capacity at EU and regional levels; and
- Access rules are based upon criteria that facilitate a transition to, and support for, environmentally and socially sustainable fishing.

Within the context of basing access to fishing and fisheries resources on criteria that facilitate a transition to environmentally and socially sustainable fishing, this study has revealed that while one size does not fit all, an integrated, holistic approach to management is paramount. In this sense, at EU level, it will be necessary to articulate high level principles and objectives that facilitate the development of access rules designed to achieve those objectives.

Furthermore, these case studies have also revealed that a system which enables both flexibility and time to create the most appropriate mechanisms at relevant levels has significant chances of success. Equally, those mechanisms that are championed in a dedicated project or by an appointed project leader, in a participatory and transparent manner, are also good candidates for success. Another factor that may contribute to success is the provision of appropriate incentives and financial support for transition to a new management framework. Ultimately, however, success or otherwise may rest in the political process where tackling challenging issues of wealth distribution and social equity are played out.

Policy reform at the CFP level which involves developing a framework that sets out the strategies and elements required to make the transition to more environmentally or socially sustainable access rules may need to include the notion of making a gradual transition. Given that access to fisheries and operational decisions about fishing capacity are currently in the competence of the Member States, a framework at Community level might serve to guide Member States to develop transition arrangements for access to fisheries resources. Should the reformed CFP involve regional fisheries management of some form, a similar framework should articulate the overarching objectives and imperatives, design tools and decision methodologies, guidance on their use and the financial instruments to support the transition.