

Title: West of Scotland Nephrops Fishery – review of the management objectives in the nephrops fishery
Author: Susan Anton, Economist
Organisation: Sea Fish Industry Authority (Seafish), UK
Contact Address: 18 Logie Mill, Logie Green Road, Edinburgh, EH7 4HS
Author: Hazel Curtis, Chief Economist
Organisation: Sea Fish Industry Authority (Seafish), UK
Contact Address: 18 Logie Mill, Logie Green Road, Edinburgh, EH7 4HS

Abstract

The main objective of this research is to help inform efforts, by government and industry, to identify effective solutions to the issues adversely affecting the profitability of vessel businesses and the sustainability of nephrops stocks in the west of Scotland region. This research raises the question of whether current management rules, especially allocation of fishing rights, are designed to deliver the desired balance of profits and employment against higher total profit from the nephrops fishery. The appropriateness and effectiveness of management measures in the west of Scotland nephrops fishery are also examined.

During early 2006, the Seafish economics team conducted structured interviews with nephrops processors, vessel owners and skippers about the issues affecting the west of Scotland Nephrops fishery. Interview answers were analysed using quantitative and qualitative techniques. Responses received enabled us to characterise the issues facing the fishery along with fishermen's views of some potential solutions to issues.

Making sure that management measures deliver the required balance between profits and employment is complicated, however understanding stakeholder preferences is the first step in ensuring that management measures are likely to deliver what is wanted.

The survey findings could form the basis of discussion between industry groups and the fisheries administration seeking to make some improvements to management measures and practices. However, further research is required to answer the question of the balance between employment and profit in management objectives.

Introduction and background

Seafish was approached by a UK fisheries organisation, West of Four Fisheries Management Group (WOFFMG), to carry out a study in early 2006 into the issues affecting the nephrops sector on the west coast of Scotland.

WOFFMG had identified a growing number of issues adversely affecting the profitability of dependent vessel businesses and the sustainability of the nephrops stock in the west of Scotland area from north Scotland at the line of 4 degrees west to the Ayrshire coast. In order to solve the problems effectively, industry representatives and Highland Council officials agreed that they should seek assistance from Scottish Executive Environment and Rural Affairs Department (SEERAD) to tackle the issues in a structured way. First however, the industry wanted a better understanding of the causes and implications of an agreed list of issues and to obtain fishermen's views on some possible solutions. Seafish research, conducted during the first half of 2006, shows that these issues do create significant negative impacts on profitability and sustainability and

therefore government and industry should work together to tackle them. This paper focuses on the Seafish findings relating to the management objectives in the nephrops fishery in the west coast of Scotland.

Methods

Landings and fleet data was requested from the SEERAD. This allowed us to characterise the vessels involved in the fishery. It also enabled us to establish the population of vessels which earned 50% or more of their income from nephrops and with declared landings of ten tonnes or more of nephrops in 2005 from ICES area VIa. This permitted us to stratify the sample and interview a representative group of vessel owners.

The survey resulted in 66 responses from vessel owners and skippers, representing 78 vessels, and also one response from an association. These responses included 33 trawl vessels and 33 creel vessels.

The authors initially intended to weight the answers to some questions according to the proportion of fishing time spent in area VIa. However, of the 66 respondents, one did not specify fishing time and only six (all trawlers) spent any time fishing outside area VIa, so there would have been very little benefit in weighting the answers, as long it is noted that a few trawlers spent a small proportion of time outside the west coast area. On average, 91% of income for sample vessels came from nephrops.

For open questions when respondents gave views or reasons, all answers were included in our data analysis, therefore the number of answers given exceeds the number of respondents for many questions.

Responses came from a large range of districts, namely, Clyde, Mallaig, Oban, North East, Western Isles, Skye and Ullapool. Interviews were arranged to try to achieve a balance of respondents proportionately distributed between vessel types and geographical regions. Potential respondents were asked (in person and by telephone) to take part, and when the target number of responses was achieved for each group, no further potential respondents were approached. A press release issued to publicise the survey generated a small number of requests to participate.

Of the vessel respondents, 59 expected to still be fishing for nephrops in five years time. Three trawlers and three creelers did not expect to be fishing for nephrops in five years time.

Appropriateness and effectiveness of management measures

Various rules and regulations are applied to the west coast nephrops fishery, some determined by the EU and some by SEERAD. Judgements on whether the measures applied are appropriate and effective can be assessed by whether they deliver the intended outcome. For some of the management measures in force, the intended outcome is not specifically defined. For example, the quota level is set with a view to ensuring that the stock remains viable in future years, but this level is not quantified, making comparison difficult.

Despite the lack of defined intended outcomes for some management measures, those reviewing the fishery were interested in knowing the views of those whose activities are governed by these measures. The answers given by respondents are probably best interpreted on the assumption that management measures ought to deliver a sustainable, profitable fishery. Most of the measures are clearly aimed at restricting the amount of nephrops that will be caught and landed.

Appropriateness can also be considered in terms of whether the rules are suitable for the local circumstances. An inappropriate measure might be effective, but might deliver the wrong thing or might cause undesirable side effects for those involved in the fishery.

How effective and appropriate are current fishery management measures?

Survey respondents ranked various aspects of the current fishery management regime on a five point scale from excellent to completely unsatisfactory.

A substantial majority considered that involvement of fishermen in management decisions is poor or completely unsatisfactory (see figure 1), which would suggest that they fear measures are often consequently inappropriate. Analysis of respondents by district shows that the Western Isles district was the only exception, where the distribution of answers was more positive. This suggests that more fishermen in that district believe they have satisfactory or good input to the management, possibly via an association.

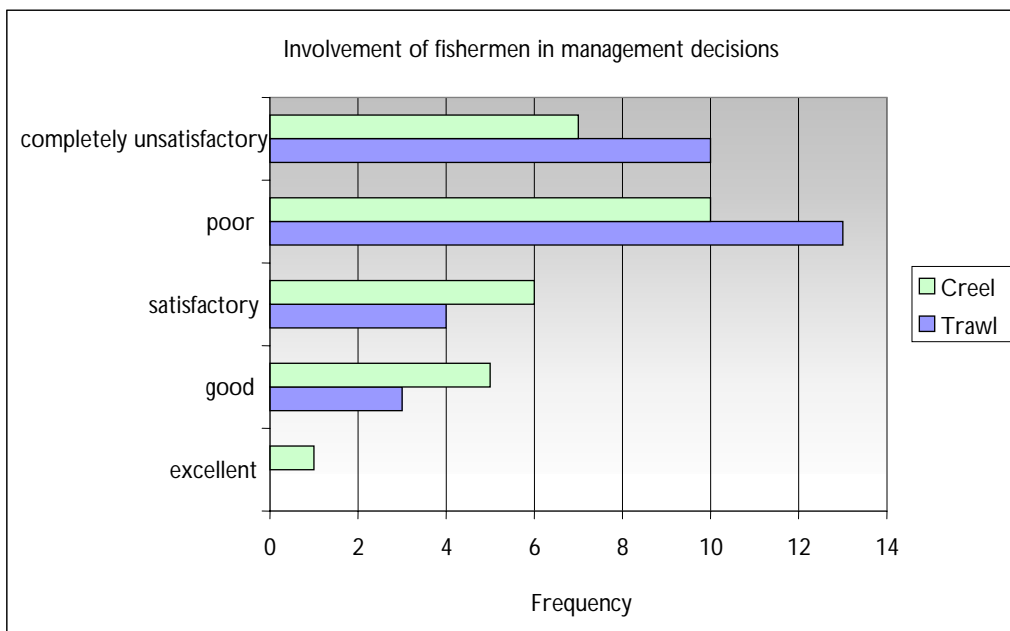


Figure 1 Views on involvement of fishermen in management decisions

Views on the amount of resources employed to enforce the management regimes were normally distributed. Figure 2 shows the answers split by vessel type and Figure 3 shows the answers without the split. This shows more clearly that overall, a majority (62%) of respondents felt the resources employed were satisfactory or better and 38% felt that resources employed were poor or unsatisfactory. Analysis by district, Producer Organisation (PO) members and vessel size revealed no major exceptions.

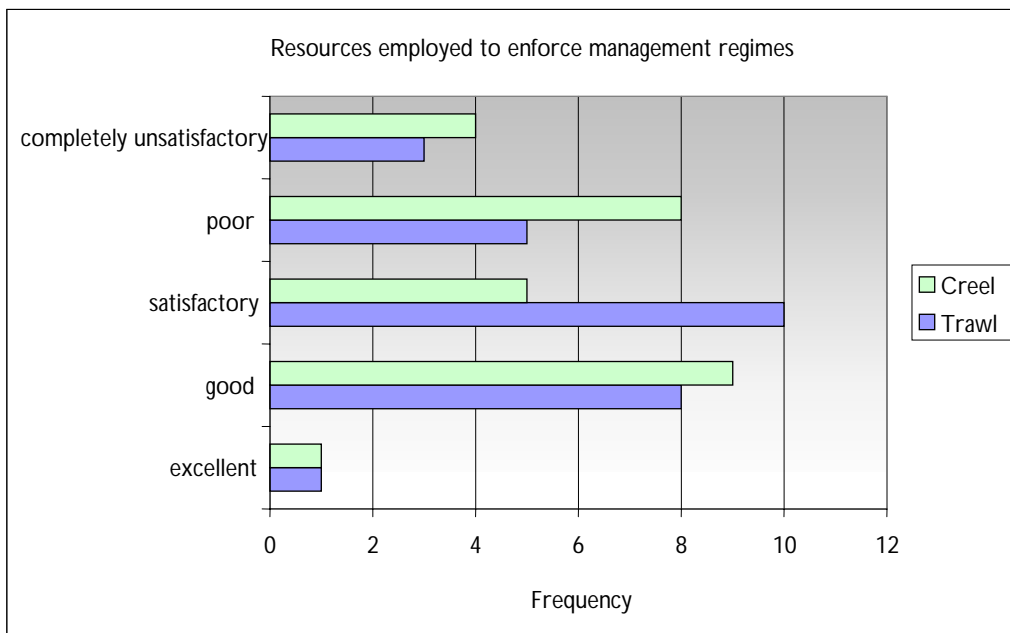


Figure 2 Views on resources employed to enforce regulations.



Figure 3 Views on resources employed to enforce regulations, combined vessel types.

Just over half (52%) of respondents who answered the question believed that integration with other stakeholders (fish farms and environmental interests were given as examples) was satisfactory or better, and just under half, therefore, rated integration with other stakeholders as poor or completely unsatisfactory (see Figure 4). Creelers tended to have more positive views than trawlers. Respondents in Mallaig and Ullapool districts gave more unsatisfactory assessments and it has been suggested that these answers may have been influenced by sentiment against a proposed marine national park. For those respondents whose vessel size was known (38 vessels), the over 10m vessel owners were more inclined to say that integration was unsatisfactory.

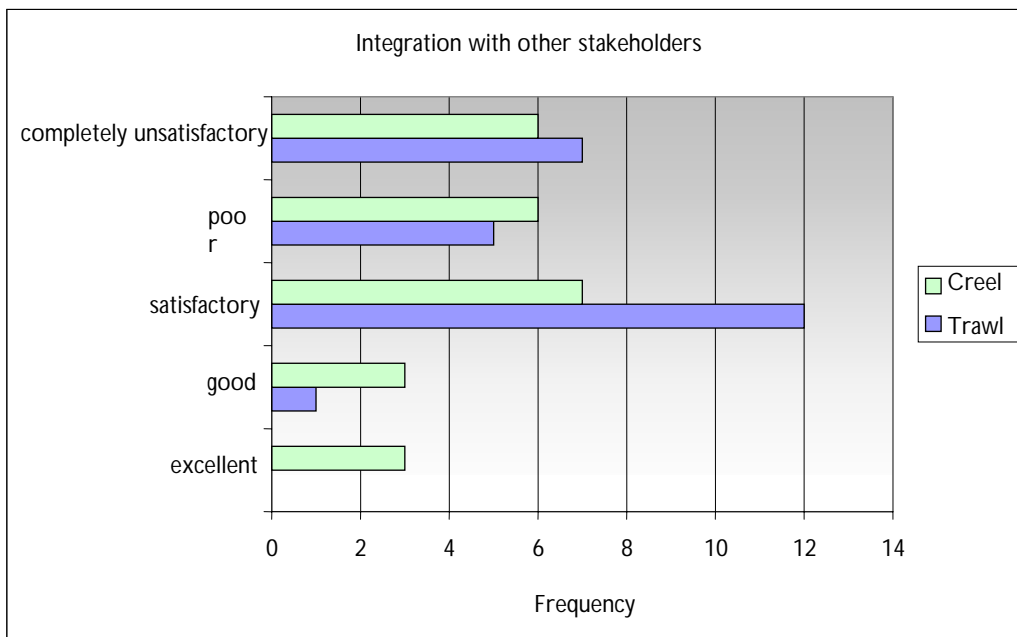


Figure 4 Respondents' views on integration with other stakeholders.

When asked about the advantages and disadvantages of community quota schemes, respondents citing advantages listed local control, helping new entrants and various other factors in favour. There was an almost equal number of disadvantages suggested, which focused on issues relating to the cost, concern over effective management and the practicalities or expectation that such a scheme would offer no benefits.

Effects of inappropriate or ineffective management measures

Management measures which are in some way inappropriate or ineffective can ultimately result in vessels being less profitable than they could have been (in the short or long run) or in the stock collapsing, which would lead to lower profit and fewer vessels, fewer jobs and various onshore impacts of a smaller fishery. Inappropriate management measures may also increase costs or increase conflict between groups of fishermen.

How ineffective or inappropriate management measures can reduce vessel profitability and damage sustainability

If measures which are designed to protect the stock from collapse, or from being dominated by small size nephrops are ineffective, then they would, in fact, permit over-exploitation and result in a smaller stock dominated by smaller nephrops. For instance, if the amount of nephrops harvested from the stock is managed by quotas, which are set either too high or not well enforced, then over-exploitation would occur, leading to lower prices in the short term followed by possible reduction in fishing opportunities in the longer term. This would cause poor profit levels and ultimately a smaller fishery. The same applies to any measure aimed at restricting the harvest level from the stock.

Inappropriate measures, especially those set in complex mixed fisheries can sometimes cause the opposite of the intended effect. Measures designed to protect one species can end up harming another stock.

Measures that were clearly unpopular with survey respondents were:

- Restriction of days at sea – creelers only (trawlers were in favour of this)

- Permanent, temporary or rotational closure of some areas to nephrops fishing
- Temporary or permanent restriction of access to areas for certain gear types
- Regulating orders
- Limiting fishing effort during summer months
- Restrict total number of creels laid by area - (trawlers were in favour of this)

This would suggest that respondents believe that these measures would either not be effective at delivering a sustainably profitable industry, or that they would have undesirable side effects which might impact on the practicality or cost of running their businesses, and therefore also impact on profitability of their businesses.

Measures which were clearly unpopular with respondents	Comments by those against these measures
Restriction of days at sea – creelers only (trawlers were in favour of this measure)	<ul style="list-style-type: none"> • weather already achieves a restriction • would lead to more risk-taking • would lead to business closure
Permanent, temporary or rotational closure of some areas to nephrops fishing	<ul style="list-style-type: none"> • skippers lose flexibility of choice • impose longer steaming distances on trips • won't work • can't be policed • other areas would be overworked • closed area would be overfished when opened • temporary closures always end up as permanent
Temporarily or permanently restrict areas to certain gear types	<ul style="list-style-type: none"> • would cause further problems • would be unworkable.
Regulating orders	<ul style="list-style-type: none"> • doubt will be effective • won't be workable
Limit fishing effort during summer months	<ul style="list-style-type: none"> • need to be able to fish when weather is good
Restrict total number of creels laid by area - (trawlers were in favour of this)	<ul style="list-style-type: none"> • would be unworkable • unenforceable

Table 1 Comments against management measures that were largely unpopular.

1.1. Possible solutions to ineffective or inappropriate management measures

Although this research project was principally aimed at characterising the issues in order to inform those who must find solutions, the steering group also wanted to test fishermen's views on some potential solutions to issues.

Part of the solution to the issue of ineffective or inappropriate management measures must lie in the process of choosing management measures. An inclusive, collaborative approach to identifying appropriate and effective management measures is more likely to succeed. Some of the inshore groups already established are beginning to tackle issues at a detailed level in a way suitable for local needs.

1.1.1. Fishermen's views on solutions

Survey respondents were largely in favour of some of the management methods listed in the questionnaire. These were:

- Restriction of days at sea – trawlers only (creelers were against this measure)
- Quotas
- Buyers and sellers legislation (although this is really a means of enforcing quotas)
- Vessel licensing
- Restrict number of creels per vessel
- Restrict total number of creels laid by area - trawlers only (creelers were against this measure)
- A percentage increase in the minimum landing size (more creelers in favour)
- Better enforcement of current minimum landing size

Measures which respondents largely supported	Comments by those in support
Restriction of days at sea – trawlers only (creelers were against this measure)	<ul style="list-style-type: none"> • in support of a five day week, • days at sea restriction instead of quota • but don't reduce any further than current levels • provided it doesn't get out of hand
Quotas	<ul style="list-style-type: none"> • favour ITQs • a necessary evil • non-sector vessels are ok with five tonnes per month
Buyers and sellers legislation (although this is really a means of enforcing quotas)	<ul style="list-style-type: none"> • this is good • if it results in better prices • but should simplify the paper work • a necessary evil
Vessel licensing	<ul style="list-style-type: none"> • can't be a free for all • should not be tampered with by government • imperative
Restrict number of creels per vessel	<ul style="list-style-type: none"> • is too high at present, up to 2,000 per vessel • imperative • in favour • in static gear areas only • need vessel restrictions too • have too many which cannot be hauled • they block trawlers • creelers should be allowed unrestricted fishing while trawlers are restricted
Restrict total number of creels laid by area - trawlers only (creelers were against this measure)	<ul style="list-style-type: none"> • but would need to be enforced • in favour • need to regulate taking spawning prawns • or limit by day, but limit somehow
Better enforcement of current minimum landing size	No comments given by those in favour
A percentage increase in the minimum landing size (more creelers in favour of this measure)	<ul style="list-style-type: none"> • if the price went up • move further up the Clyde as prawns are smaller at the mouth

Table 2 Comments in favour of management measures that were largely supported.

Action to find solutions to the issues

The findings of this study give some clear messages on individual management measures, although all of these must be considered in light of what they are seeking to deliver. The survey findings could form the basis of discussion between industry groups and the fisheries administration seeking to make some improvements to management measures and practices.

Fisheries Management Objectives for the nephrops fishery

This section seeks to raise the question of whether current management rules, especially allocation of fishing rights, are designed to deliver the desired balance of local profit and jobs against higher total profit from the west coast nephrops fishery.

Although the UK runs a market economy in which the government tries not to interfere unduly, inshore fisheries are a national resource and the rights to access that resource are controlled by the government. Therefore, the government's choices about how to allocate access rights will affect how profitable the businesses are, how many people are employed in the fishery and where the profits from a fishery are distributed.

The Highlands and Islands of Scotland are recognised as an economically fragile area and are subject to various schemes which essentially seek to protect the communities there from the full effects of an unregulated market economy. It is reasonable to suggest, therefore, that the government may want to ensure that the west coast inshore fisheries management regime delivers benefits which reside in the west coast area, in line with wider economic and social policies seeking to protect communities in the region.

The SEERAD inshore fishery strategy gives high level goals for the fisheries, but does not specifically address the required compromise between maximising profit from the fishery and maximising employment in the fishery. The FAO guidelines for fishery management states "*The over-riding goal of fisheries management is the long-term sustainable use of the fisheries resources*"¹ and goes on to say that it is essential to decide what is meant by optimising the benefits for each fishery. It advises that managers can divide the goals in fisheries management into four subsets: biological, ecological, economic and social, where social include political and cultural goals. The SEERAD Strategic Framework for Inshore Fisheries in Scotland follows this guidance and states the high level goals but does not rank the objectives. The FAO guidelines point out that goals under these four headings may be contradictory, since management strategies that aim to maximise net incomes will *not* also maximise employment opportunities.

Members of the industry do not have a good understanding of this issue however. It would be preferable, in support of an effective management strategy, to have informed agreement on the desired balance between total profitability generated by the fishery on one hand and local jobs and economic benefits on the other.²

There is, in practice, some balance between aiming for maximum profit and aiming for local jobs in the west coast region. Although much of the available quota is fairly freely tradable and therefore likely to end up in the hands of the highest bidder over time, the fisheries administration allocates part of the UK TAC to vessels that are not members of producer organisations and therefore do

¹ A fishery manager's guidebook. FAO Fisheries Technical Paper 424, 2002.

² A fishery manager's guidebook. FAO Fisheries Technical Paper 424, 2002.

not hold tradable quota. This element of quota allocation reserves these fishing rights for smaller businesses even if they are less efficient than others. The recent shift of a small proportion of additional nephrops quota from the holders of quota units to the non-sector vessels shows that the government does recognise the desire of many stakeholders to have protected fishing rights for smaller, local businesses. These vessels are allocated an equal amount of volume to land and cannot trade that allocation, so it cannot be bought from them by more efficient businesses.

The questions in the west coast fishery are, to what extent the fishery should be exploited subject to market forces (more total profit from the fishery, possibly not retained locally, fewer jobs) and to what extent fishing rights should be protected to ensure that local businesses and local owners can stay in business, even if they are smaller and less efficient than “the highest bidders” (less total profit from the fishery, but possibly more profit remaining local, more local jobs). These issues are harsh, however, and include detail such as:

- Are vessel owners prepared to forego some profit in order that more local vessel owners may make a living at fishing?
- Are vessel owners prepared to forego business efficiencies in order to employ an extra crew man?
- Are crew prepared to forego some crew share in order to employ an extra crew man?
- Is the UK taxpayer prepared to forego some total gross domestic product in order that a higher amount of the fisheries value can remain in the west coast region?
- Do local businesses which depend on the downstream effects of value remaining local get an equal vote to current fishing business owners?

Adding to the issue are reports that the higher sales prices for nephrops in 2006 are causing some owners of non-active licensed vessels to bring the vessel back to work in the non-sector, protected segment. According to SEERAD statistics, around 300 vessels landed less than ten tonnes in 2005, so these could decide to become active again. There are also reports of over 10m vessels in the non-sector segment (possibly fairly inactive) transferring to a PO so that their quota allocation can be converted into FOAs which can then be sold. These reports may warrant further investigation to determine the extent, if any, to which these practices are occurring and the impact that they may have on the overall allocation of fishing rights.

It is important to realise that maximising number of jobs means having less efficient businesses which make lower total profit, with the benefits spread more thinly. It is clear from some survey responses that some people do realise this and would like to see fewer people in the industry.

These are value-based questions and stakeholders should decide what compromise they want on this question. Then fisheries managers could design and assess management measures to see whether they would be likely to deliver the agreed balance.

Effects of lack of clarity in fisheries objectives

Where it is not clear what general balance is being sought between maximising total profit from a fishery and maximising local employment and local income, there is a risk that the fisheries management regime will deliver unintended outcomes which may not be what the majority of stakeholders expect from the fishery.

The government may not wish to intervene in questions relating to the number and size of vessels which are exploiting the fishery. However, rules relating to quota allocation and trade do inevitably drive decisions which affect the number and size of vessels in a fishery, and therefore do impact on total profit from the fishery, total employment in the fishery and the geographical distribution of profits.

Identifying the desired balance does not necessarily mean that the government must be over-prescriptive. The FAO guidelines do not suggest that government should attempt to determine exactly how many and what size of vessel should be allowed and where the owners should live.

For the west coast of Scotland, there are a few quota allocation measures which seek to protect some local rights (non-sector quota) and others (fixed quota allocation units) which make fishing rights available on the open market to the highest bidder. What balance these policies are seeking to deliver is not articulated, nor is the outcome expected by west coast stakeholders clear.

Possible solutions to lack of clarity in management objectives

Fisheries management choices depend on what the management regime is aiming to deliver for the stakeholders, and, for an inshore fishery, these objectives should be influenced by the expectations, preferences and needs of vessel owners, local fishermen, crew and members of local communities.

If the people involved in and affected by the success of the west coast nephrops fishery made clear to fishery managers what they wanted in terms of a compromise between total profitability and local profit and employment, then they would have more chance of getting what they wanted from the fisheries management regime. For instance, if the people involved agreed that they wanted more emphasis on local employment than on total profit, but that vessels must be able legally to make a normal profit, then fishing rights regulations could be created with the aim of delivering that agreed compromise. Equally, the consensus might be to maximise profits to the most efficient business managers, even if that meant fewer local jobs and more value going out of the region, and managers could design a scheme to deliver this.

Finding out what the majority of stakeholders want is not likely to be a straightforward task, as was found during the survey for this project. Alternative means of having this discussion may be more successful.

Fishermen's views on management objectives

The results of the survey do not give a valid representation of respondents' views on where the compromise should be between total profit and total employment. The results do suggest that there is a current appetite for more profitability in the fishery, but do not show whether respondents would be prepared for the fishery to support fewer jobs in order to achieve that higher profit. Some answers given were quite clear, however, that there should be more profit and fewer "bodies" in the industry.

The survey results showed that the question on management objectives was widely misunderstood by the respondents. This is partly due to the wording of the question and partly due to the fact that this is a complex issue. The fact that several respondents wanted to maximise both revenues and jobs showed that the question was not sufficiently well explained to them. It is likely that respondents thought the suggested answer referred to gross earnings per boat, rather than total profit from the fishery. Perhaps a questionnaire was not the best way to investigate preferences on this issue.

On the issue of trading off total profitability from the fishery against number of jobs supported, it is likely that crew members and members of local communities may have different views from vessel owners.

The results of the data analysis are shown below in Figure 5. Where the answer given did not relate to an objective of fisheries management, or gave contradictory goals (such as maximise both

jobs and revenues), it was classed as “Invalid Answer”, except where the respondent had made a specific suggestion about fisheries management – these were classed as “Management suggestions”.

The management suggestions made in response to this question are listed in the Appendix.

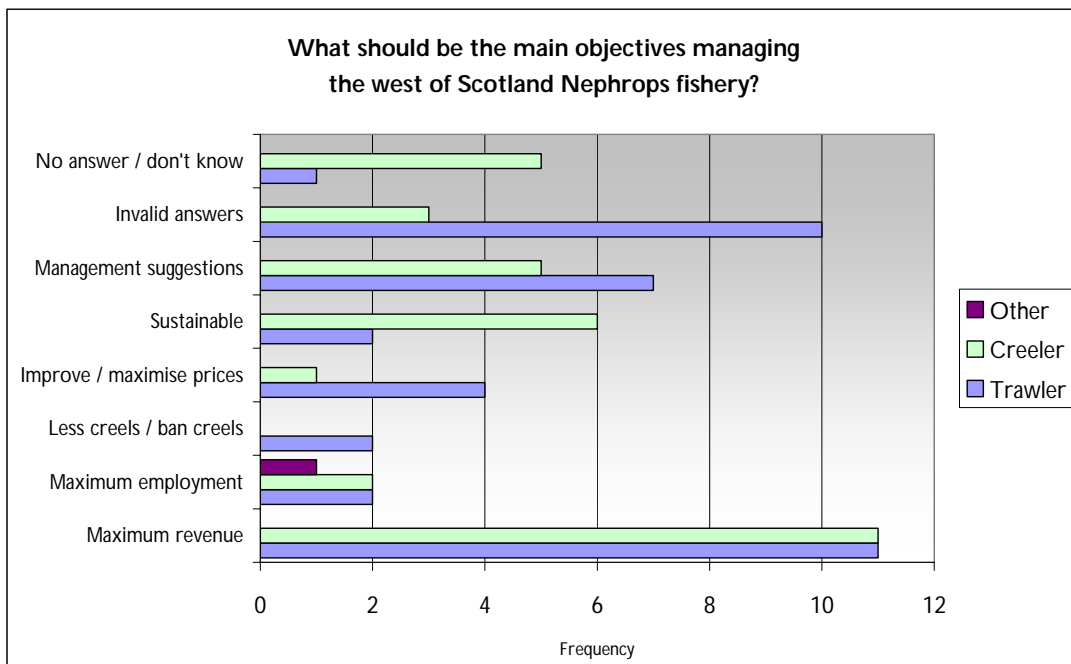


Figure 5 Views about the objectives of fishery management. (Respondents could give more than one answer.)

Owners and skippers are business-oriented, but also have a significant number of reasons other than financial for remaining in the fishing industry. Another question which sought insight to respondents' motivations asked about their main motivating factors for staying in the industry. The most common answers were: lifestyle; financial return and employment; in that order. However, in the questionnaire, this question gave these three possible answers as examples and so may have lead some respondents to choose from these three. Respondents could give more than one answer to this question and all answers are counted. Figure 6 shows that the opinions were fairly similar for owners and skippers of both creel and trawl, though slightly more trawlers remain in the industry due to their owners' lifestyle preferences. Three responses, all from trawlers, said that they wanted to leave the industry. Heritage and love of the job were also reasons given for wanting to stay in the industry.

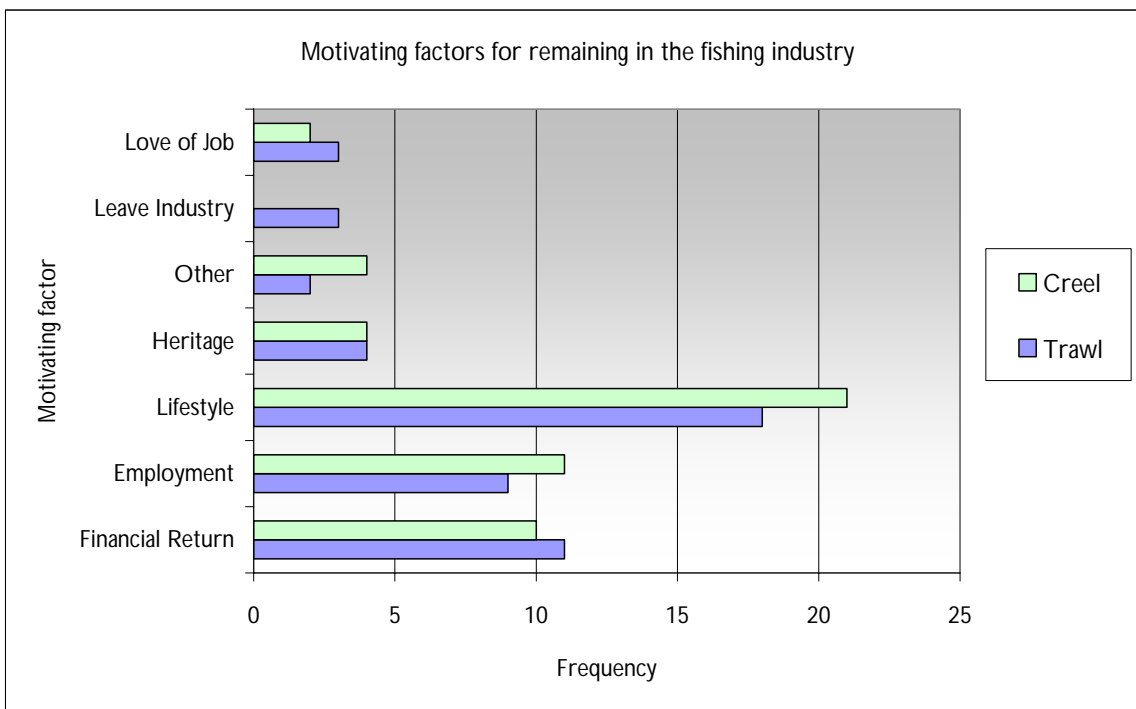


Figure 6 The main reasons why respondents remain in the industry (Respondents could give more than one answer)

How to tackle the issue of lack of clarity in management objectives

If stakeholders want to pursue this issue, then further work with the industry is important and would help the government and the stakeholders to understand the balance preferred by current business owners and other stakeholders between local jobs and profit and maximum total profit.

For managers, ensuring that their management measures are likely to deliver this required balance is also not necessarily straightforward. However, knowing the preferences of the stakeholders is the first step in ensuring that measures are likely to deliver what is wanted.

Further research required

This study did not sufficiently capture fishermen's considered views on what the fishery should seek to deliver in terms of the balance between employment and profit. Nor did it capture the views of other stakeholders on this question. Fisheries management policy is balanced between seeking to deliver profitable vessel businesses, but also offer some protection to existing businesses from market forces which might see a concentration of ownership of fishing rights in fewer hands. There is, however, no explicit statement about the balance that policies are seeking to deliver, and it may be useful to the industry and the government if there were a better understanding of the issue and the preferences of the various stakeholders on this point. It is perhaps inevitable that most people will want policies which protect their own current interests and do not require them to make financial sacrifices, however, current business owners are not the only stakeholders who have valid views on rights to make a living from fishing.

Summary

In summary, the work presented here into the management objectives of the nephrops fishery in the west coast of Scotland is part of a wider review of issues surrounding the fishery. What our

results did show is that the respondents were very clear in their preferences when asked about the usefulness of specific management measures, such as the restriction of days at sea or quotas.

However, confusion and uncertainty were found when preferences for the entire fishery were questioned, ie whether to maximise the number of jobs or revenue.

Looking forward, it is very important that stakeholder preferences into this compromise between jobs and revenue are recorded and used by policy makers whilst they are setting out the management measures for the fishery. Hopefully, this will result in achievement of the compromise between jobs and revenue expressed by the stakeholders through management measures.

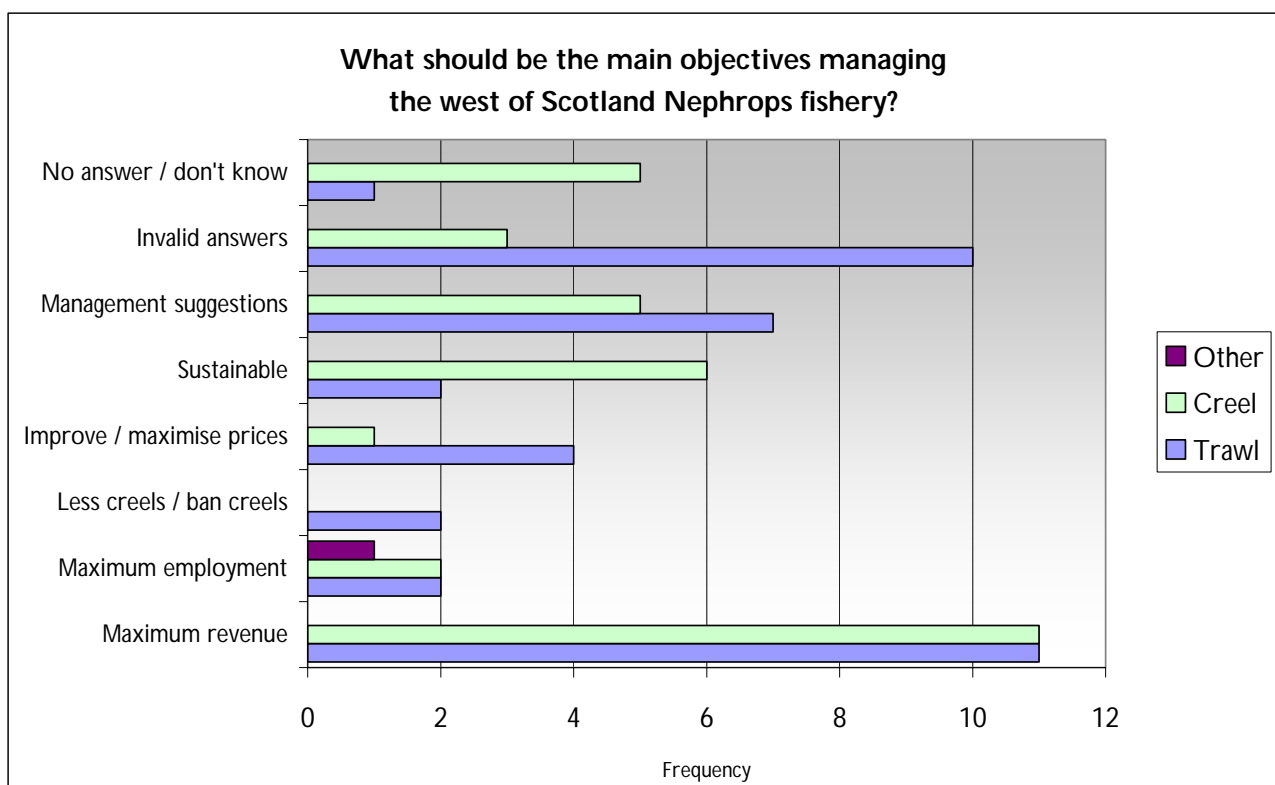
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Appendix

What do you think the main objectives should be for managing the west of Scotland Nephrops fishery?



This question is flawed in a few ways:

- We suggested two possible answers which may have lead some respondents to simply choose from one of those.
- One of our suggested answers was “maximise revenue” which meant from the fishery, but which people might have interpreted as meaning maximum revenue per boat.
- The question is not one that people are used to answering and was not fully explained. As a result, it could have been misunderstood. Eg some respondents will not have understood that a fishery cannot aim for maximum employment and maximum revenue from the fishery

Suggestions made relating to how the fishery could be managed.

Focus on making life easier! Lots of forms etc
Gauge catching capacity to available quota
Get united front & stop arguing with each other. Creeling vs. trawling etc
Limit number of creels per boat, some boats have 3,000 creels
Maintain status quo, maximise fishermen involvement
Put a landing size restriction on nephrops eg no boxes over 20kg
Quotas
Reduce discards, increase selectivity
Restricting the amount of creels each boat can use, maximum of 800 per boat per week
Sensible creel limitations and help with marketing for the creel fishing industry
Should try to maximize fishermen involvement, and get the management to spend time at Sea with the vessels
Sustainable fishing through measures like creel limitation