

Economic Impact Assessment of the 2004 Fisheries Management Regime on the UK Whitefish Fleet

Summary

Seafish has developed a series of models, based on historical landings and costs and earnings data, which predict the financial outcome for segments of the UK fleet, based on inputs of landings levels, fishing effort and fish selling prices. Seafish staff have examined historical data and consulted widely with the catching sector to arrive at the most likely levels of landings and fish prices to use as inputs to the model, to reflect a range of possible scenarios for the UK whitefish fleet in 2004.

This report covers three scenarios for three segments of the UK whitefish fleet: >24m demersal trawl, <24m demersal trawl and seine netters, all for North Sea and West of Scotland. The central scenario in this report is based on the fleet not landing all of the quotas for haddock, cod and whiting, due to days at sea and other fisheries management restrictions. Fish prices used are the average prices for 2003. Quota leasing costs are based on figures collected in recent Seafish research¹ and consultations with catching sector. Seafish can run additional scenarios for these and other segments on request, using alternative levels of inputs.

The output of the model shows predicted costs and earnings given the parameters chosen for each scenario. Net profit is shown after taking out crew share, quota leasing costs and fishing expenses, but before deducting depreciation and interest payments. The central scenario shows average net profit for all whitefish sectors to be lower than 2002. For many vessels, this profit level will be insufficient to make loan and interest repayments. For >24m trawlers, in the central scenario the model predicts an average net loss of £14,000, for <24m trawlers an average net profit of £12,000. Crew share is also low compared to previous years and some vessels may struggle to retain their crew.

Providing the parameters used in this scenario (landings levels and sales prices) are close to the actual situation in 2004, quota leasing costs are similar to those in 2003, and no transitional aid is available to the fleet in 2004, then a large proportion of the fleet will not be profitable and many whitefish vessels are likely to cease fishing because of insufficient cash reserves to cover loan repayments and interest.

Average £ per vessel	NS & WoS Demersal Trawl >24m	NS & WoS Demersal Trawl <24m	NS & WoS Demersal Seine Netters
2004 - Earnings (sales)	£483,000	£284,000	£306,000
2004 - Average Net Profit or Loss	- £14,000	£14,000	£12,000
2002 - Average Net Profit or Loss	£36,000	£34,000	£29,000
No. of vessels in segment	70	120	30

Table 1. Summary of results from central scenario for UK fleet segments

¹ 2003 Economic Survey of the North Sea and West of Scotland Whitefish Fleet



Background

The December 2003 meeting of the EU Fisheries Council agreed complex fishery management measures for 2004 which will impact directly on the viability of many UK whitefish vessels. To assist government, vessel owners and industry bodies, Seafish Economics staff have developed and run a fleet financial model to illustrate some possible outcomes for key segments of the UK whitefish fleet. Inputs into the model for these scenarios (parameters such as catch, cost of leasing quota) were arrived at based on information gathered during interviews with various industry members.

The purpose of this paper is to discuss the **possible** financial impacts on the North Sea and West of Scotland whitefish fleet, and individual vessels, given a range of volumes landed, fish sales prices, and other inputs. The model used does **not** predict the impact of the 2004 management measures on landings, but rather predicts the profitability of the fleet based on model inputs. Three scenarios are presented in this report although additional scenarios could be run on request, for instance to test the effect of increased landings of haddock, lower average prices for cod, or a combination of altered inputs. This analysis is generated from Seafish forecasting models which are based on individual vessel costs and earnings data.

Model Explanation

Each segment of the fleet has its own model as different variables have different predictive power on income and costs in the various segments.

Segmentation of results

The whitefish fleet is grouped into segments to allow reporting of the performance of distinct groups of vessels. Vessels were classed as whitefish if more than 50% of catch volumes in 2001 were of demersal species. Vessels were further segmented by vessel length or gear type. Three segments are reported below: demersal trawlers over 24m in length; demersal trawlers less than 24m in length; and seine netters.

Within these segments there are still variations, and that is where the model is strong because it includes historical information on each vessel, so that variation is captured. In terms of the usefulness of these segments when considering the results, it has been suggested that it might be worthwhile to split out twin rig, single rig and pair trawling vessels. Further consideration will be given to this for future runs of the model.

Decommissioning

The UK whitefish fleet now has 50% fewer vessels than in 2000. The forecasts generated by the model reflect these changes in the structure of the fleet.

Baseline income estimates

Vessel earnings are estimated in the model utilising a multiple regression model, based on 2001 official landings for each vessel, effort characteristics (days at sea for each vessel) and other vessel characteristics. Estimation of costs is based on combining the effort data (days at sea) provided by the UK Fisheries departments with data collected by Seafish in the 2001 Economic Survey of the UK Fleet.

A multiple regression on UK vessels landings data enabled the calculation of weighting coefficients – to reflect the importance of days spent at sea and the value of landings of key species (haddock, cod, monks, whiting and nephrops) on fishing income by each vessel.



Predicting future income

Days spent at sea, volumes and prices of landings of each key species change from year to year. The model takes account of this by entering the 2004 days at sea (e.g. 180 days), volumes and prices as "parameters" or inputs to the model. The values of the parameters are then multiplied by the relevant weightings to generate income estimates for each vessel. The average is found and multiplied by the number of vessels now in the segment (post decommissioning) to give a total for the segment.

Calculating Costs

Most fishing and vessel owner costs are derived from weighting survey data from the Seafish 2001 Economic Survey of the UK Fleet and the days at sea for each vessel in 2001. Predicted costs for 2004 are calculated by adjusting 2001 estimates by the new days at sea input (180 in all scenarios) and increasing by the rate of inflation.

The input for days at sea is important in both the calculation of income and costs. It caps individual vessels' total revenue (and gross landings) in any one year and measures the costs that may result in any one year. If the number of days at sea input is increased but the volume of main species landed remains the same, the model run will show reduced profitability as it implies that the vessels simply took more days to catch the same amount of fish and were therefore less efficient.

Economic impact scenarios

The costs and revenues that result from this year's management regime will depend on actual volumes caught and the associated fishing effort. No model can determine what will actually be caught by the fleet given a set of inputs, therefore information gathered from a range of industry members is used to establish likely or reasonable levels of landings for the main species. Recent information and expectations for this year were used to select average prices for the main species to use in these runs of the model. Three scenarios are presented below.

Each scenario presents income, costs and therefore profit, based on limiting effort to 180 days at sea, in line with the 2004 management regime.

Scenario 1 is based on landings of each stock which have been based on industry consultation and analysis of historical landings. These consultations suggest that haddock catch levels could potentially be in line with 2003 quotas (rather than uptake), so the central scenario uses these volumes as the input for haddock landings. Other species catch levels are estimated as proportions of quotas. Gross landings chosen for each scenario are then split between segments of the fleet according to historical landing patterns. It is important to note that the segments modelled in this report are not the only ones catching these species, so the total landed by the three segments will not be the gross total expected to be landed by the whole UK fleet. Within each segment, landings of main species are further split down to each vessel, also based on historical activity.

In reality, actual landings in 2004 could be higher or lower, so Scenario 2 shows an outcome based on a higher level of landings, and Scenario 3 shows the outcome based on lower levels of landings. The landings volumes used in each scenario are detailed in the parameters tables. The nature of some of the management measures in place in 2004 may make it uneconomical to enter the cod protection area to catch the quota units held by individual vessels. If a vessel must either discard haddock or purchase haddock quota in order to fish within the cod protection area, this may make trips unprofitable and mean that the whole of the cod quota is not landed.

Prices are crucial in estimating vessel earnings. It is not possible to accurately predict prices so for the central scenario, recorded prices per tonne for 2003 for all



whitefish species except haddock have been used. The wider international market generally sets prices for most species, but poorer quality landings may attract poorer prices. Interviews with the catching sector have indicated that the cod protection measures may result in more smaller sized (less desirable) haddock being caught outside the cod protection box. Scenario 3 takes account of this possibility by using lower prices for haddock. In Scenarios 1 and 2, 2003 average prices are used, based on industry feedback and the probability that the international market price will prevail. The fact that UK quayside prices for haddock were, on average, around £670 per tonne in 2002 and 2003 supports this assertion. The prices used are detailed in the parameters table for each scenario.

Changes in the destination of landings

The model estimates are based on cost proportions in 2001. Industry feedback has indicated that the cod protection box restrictions may force some vessel owners to land in Lerwick, nearer to the fishing grounds and they feel they cannot afford to spend fishing days steaming to Peterhead. Fishing costs may change, steaming costs may increase, and if there are overnight stays required, extra food and stores costs and crew transport costs may be incurred. Fish landed in Lerwick will incur transport costs to the mainland market. Some skippers interviewed were contemplating locating their vessel in the Shetlands for extended periods during 2004. The model does not take account of these possibly increased costs.

If these costs do proportionally increase, then the financial position of the affected vessels will be poorer than is detailed below.

Quota leasing & interest payments

The model assesses costs associated with running and maintaining vessels. Many vessels in 2003 had to buy or lease extra quota to land fish legally. The future cost of leasing quota is difficult to estimate. Evidence from Seafish's 2003 Economic survey of the North Sea and West of Scotland Whitefish Fleet suggests that the cost varies significantly, so typical figures are used to show the impact quota leasing costs may have on operations (£50,000 for over 24m demersal trawl vessels, £15,000 for under 24m demersal trawl vessels and £30,000 for seine netters). These figures have been confirmed as reasonable averages in interviews with industry members. In reality, many vessels will have to pay more than £50,000 to lease quota – so vessels' profitability could be poorer than is presented below. Some skippers interviewed said they had spent in excess of £100,000 on leasing quota in 2003.

Many vessels are funded by debt. Loan repayments and interest on these loans must be paid out of vessel profits. Those that have invested heavily in recent years will have the highest repayments, so once interest payments are deducted, many vessel owners will make lower profits (higher losses) than is shown in these scenarios.

Many vessels are part owned by a fish sales company or vessel agent. It is reported that these companies have tended to support unprofitable vessels over recent years by providing cash to make loan and interest payments, either in exchange for increased equity or by creating a new debt to the vessel agent. It would be reasonable to suppose that these companies may not be willing to continue to support all their unprofitable boats with injections of further cash on an indefinite basis. In some cases it may be the bank that tells an unprofitable boat to cease trading, and in others it may be the vessel agent / part owner who decides that a vessel is not worth any more investment of cash.



Derogations

There are a number of derogations that allow a minority of vessels to fish for longer than 15 days a month, depending on where they fish and what gear they use. Although the model does not account for changes in costs and revenues arising from different mesh sizes, the results in appendix 1 show that on a trip by trip basis, the economic position of vessels is fragile, so small changes in the days at sea allowances (subject to the same quotas) would not be expected to result in a substantial change to the profitability of the eligible vessels.

Results Summary

Recent economic surveys by Seafish have indicated that since 1998, the whitefish fleets' financial performance has deteriorated. Reductions in quotas have meant that the value of landings has declined for each vessel whilst costs have (proportionally) increased. In 2003 some vessel owners continued fishing with the support of transitional aid programmes, which are no longer operating. Many vessels have continued fishing only by leasing quota at cost from other (usually non-fishing) quota holders. This quota leasing has also impacted on profits.

Outputs from the model suggest that the North Sea and West of Scotland whitefish fleet would be expected to face further financial difficulties during 2004, should the management measures produce the catch levels used in the scenarios below. In each scenario, each sector would be expected to see significant falls in earnings compared to 2002 (e.g. demersal trawlers over 24m could expect to earn on average between £456,000 and £503,000 in each scenario, compared to an average of £696,000 in 2002².) The North Sea and West of Scotland over 24m demersal trawlers would not be expected to make an operating profit in any of the scenarios, whilst under 24m demersal trawlers and seine netters would be expected to see reduced operating profits or losses in some scenarios.

There is the possibility that the cod protection measures could result in a large proportion of smaller sized haddock being landed, creating a lower average price than in 2003. Scenario 3 suggests lower prices would impact negatively on the earnings of all vessels.

Quota leasing costs have been on the increase in recent years and for at least some vessels in each scenario the cost of quota leasing can make the difference between posting an operating profit or loss.

Use of the model output by vessel owners

To assist vessel owners comparing their costs and earnings, Appendix 1 indicates the average costs and revenues per trip for scenario 1, assuming 20 trips per year, each trip lasting 9 days. Any skipper who wishes to talk through the implications for their vessel is welcome to contact the Seafish Economics team on the numbers given at the end of this paper.

² from the "2003 Economic Survey of the North Sea and West of Scotland Whitefish Fleet"



Scenario Analysis

Scenario 1

Parameters for Scenario 1

2004 gross landings in North Sea & West of Scotland:

Cod: 8,911 tonnes; Haddock: 35,863 tonnes; Monks: 6,675; Whiting: 6,013 tonnes;

Nephrops: 27,526 tonnes.

These volumes will be caught by other segments of the fleet in addition to the three segments below.

NS & WoS Demersal Trawl >24m	NS & WoS Demersal Trawl <24m	NS & WoS Demersal Seine Netters	
 max days at sea: 180 min days at sea: 100 70 vessels in this sector at January 2004. Price per tonne Cod: £1,456 Haddock: £671 Whiting: £624 	 max days at sea: 180 min days at sea: 75 120 vessels in this sector at January 2004. Price per tonne Cod: £1,456 Haddock: £671 Monks: £2,020 Nephrops: £2,303 Whiting: £624 	 max days at sea: 180 min days at sea: 75 30 vessels in this sector at January 2004. Price per tonne Cod: £1,456 Haddock: £671 Whiting: £624 	

Average £ per vessel	NS & WoS Demersal Trawl >24m	NS & WoS Demersal Trawl <24m	NS & WoS Demersal Seiners
Earnings	483,000	284,000	306,000
Fuel & Oil	81,000	24,000	27,000
Quota Leasing Costs	50,000	15,000	30,000
Other Fishing Expenses	78,000	46,000	59,000
Crew Share	137,000	99,000	95,000
Total Fishing Expenses	346,000	184,000	211,000
Total Vessel Owner Expenses	151,000	86,000	83,000
Net Profit (before depreciation and interest)	-14,000	14,000	12,000

Over 24m demersal trawlers

The estimates in this scenario indicate that over 24m trawlers will incur losses in the short term. Fishing revenues are on average 31% lower than in 2002³.

With fewer days at sea, fishing and vessel owner expenses are lower than in 2002, but are a greater proportion of revenues. Quota leasing costs impact on amount available for crew share. Crew share is estimated to fall from an average of £203,000 in 2002 to £137,000 in 2004. With an average of six men on an over 24m trawler, this suggests their gross pay falls by one third (to £22,800 per year each) over two years. It is likely that some deckhands will seek alternative employment however the model does not take account of this possibility.

The decision on whether these vessels continue to fish will depend on the ability of vessel owners to extend credit facilities and on their perceptions of the future, which may include the prospect of buying quota at considerable cost. With the possibility of fundamental changes in the fishing management regime in the next few years, vessel owners may be reluctant to invest heavily in buying quota in case it ceases to be of

³ 2002 values are presented in the "2003 Economic Survey of the North Sea and West of Scotland Whitefish Fleet"



value. If vessel owners judge that the fishing restrictions will be short-term, the prospect of a brighter medium term could mean they remain in the industry. If the restrictions are viewed as permanent, vessel owners may seek alternative opportunities in which to invest their funds.

Under 24m demersal trawlers

Forecast average revenues for the <24m trawlers for Scenario 1 are £284,000. Net profits may fall by £20,000 compared to 2002⁴. Although many vessels may continue to remain viable throughout 2004, some vessels may be forced to leave the industry.

Seine netters

Seine netters could see a 24% reduction in revenues since 2002 (to an average of £306,000) and a 34% fall in net profits before depreciation. A seine netter, with a crew of six, would provide average share per man of £15,800 and so may experience crew retention problems.

Quota leasing

The impact of quota leasing costs could be crucial to vessel viability. With more decommissioned vessels in 2003, the proportion of quota that is only available to active skippers by lease has increased and the overall costs of leasing may also increase. If the quota leasing costs were to be £20,000 or £30,000 higher than stated above, operating viability in the three sectors will be further threatened.

It is estimated by Seafish (based on figures from SEERAD and from POs) that around 40% of the quota of the main species can only be caught by paying leasing fees to inactive (usually former) skippers.

⁴ Comparing to revenues for under 24m Demersal trawlers, less than 300 Kw in power



Scenario 2

Parameters for Scenario 2

2004 gross landings in North Sea & West of Scotland:

Cod: 10,025 tonnes; Haddock: 40,986 tonnes; Monks: 6,675; Whiting: 6,764 tonnes;

Nephrops: 27,526 tonnes.

These volumes will be caught by other segments of the fleet in addition to the three segments below.

NS	& WoS Demersal Trawl >24m	N:	S & WoS Demersal Trawl <24m		NS & WoS Demersal Seine Netters
	max days at sea: 180 min days at sea: 100	• •	max days at sea: 180 min days at sea: 75	•	max days at sea: 180 min days at sea: 75
	70 vessels are in this sector at January 2004.	•	120 vessels are in this sector at January 2004.	•	30 vessels are in this sector at January 2004.
•	Price per tonne - Cod: £1,456 - Haddock: £671 - Monks: £2,020	•	Price per tonne - Cod: £1,456 - Haddock: £671 - Monks: £2,020 - Nephrops: £2,303 - Whiting: £624	•	Price per tonne - Cod: £1,456 - Haddock: £671 - Whiting: £624

Scenario 2 Results (figures round to nearest £'000)

Average £ per vessel	NS & WoS Demersal Trawl >24 M	NS & WoS Demersal Trawl <24 M	NS & WoS Demersal Seiners
Earnings	503,000	297,000	335,000
Fuel & Oil	81,000	24,000	27,000
Quota Leasing Costs	50,000	15,000	30,000
Other Fishing Expenses	80,000	48,000	62,000
Crew Share	146,000	105,000	108,000
Total Fishing Expenses	357,000	192,000	227,000
Total Vessel Owner Expenses	151,000	85,000	83,000
Net Profit (before depreciation and interest)	-5,000	20,000	25,000

Scenario 2 shows the impact of the higher landings for cod, haddock and whiting compared to scenario 1. Total uptake of cod, haddock, and whiting quota is increased by 10%. This is not however equivalent to 10% higher in this scenario than in scenario 1 for each vessel, since other fleet segments also catch these species. There is no increase in nephrops or monk fish uptake since these were already set at 100% of quota in scenario 1.

Although revenues will be higher than in scenario 1, earnings will be insufficient for a typical >24m trawler to be profitable, given the costs of fishing for 180 days.

Demersal trawlers under 24m could see slightly higher operating profits and seine netters could see profits twice that in scenario 1. Owners in both sectors will still face paying interest on their loans from modest profits.

Across the three segments, the increase in revenues may not substantially alter the financial position of vessel owners relative to scenario 1. The issues of poor profits (or losses) and poor crew share, threatening vessel viability, face many vessel owners.



Scenario 3

Parameters for Scenario 3

2004 gross landings in North Sea & West of Scotland:

Cod: 7,797 tonnes; Haddock: 30,740 tonnes; Monks: 6,675; Whiting: 5,261 tonnes;

Nephrops: 27,526 tonnes.

These volumes will be caught by other segments of the fleet in addition to the three segments below.

N	S & WoS Demersal Trawl	N	S & WoS Demersal Trawl		NS & WoS Demersal
	>24m		<24m		Seine Netters
:	max days at sea: 180 min days at sea: 100	•	max days at sea: 180 min days at sea: 100	•	max days at sea: 180 min days at sea: 100
•	70 vessels are in this sector at January 2004.	•	120 vessels are in this sector at January 2004.	•	30 vessels are in this sector at January 2004.
•	Price per tonne - Cod: £1,456 - Haddock: £637 - Monks: £2,020	•	Price per tonne - Cod: £1,456 - Haddock: £637 - Monks: £2,020 - Nephrops: £2,303 - Whiting: £624	•	Price per tonne - Cod: £1,456 - Haddock: £637 - Whiting: £624

Scenario 3 Results	(figures round to nearest £'000)
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Average £ per vessel	NS & WoS Demersal Trawl >24m	NS & WoS Demersal Trawl <24m	NS & WoS Demersal Seiners
Earnings	456,000	266,000	271,000
Fuel & Oil	81,000	24,000	27,000
Quota Leasing Costs	50,000	15,000	30,000
Other Fishing Expenses	76,000	44,000	56,000
Crew Share	125,000	92,000	79,000
Total Fishing Expenses	332,000	175,000	192,000
Total Vessel Owner Expenses	151,000	85,000	83,000
Net Profit (before depreciation and interest)	-27,000	6,000	-4,000

With increased effort controls and the rigorous cod protection measures in 2004, vessels may not be able to catch as much fish as shown in scenario 1. In addition, the average price of haddock may fall if a large proportion of landings are of low size.

Scenario 3 presents the impact of lower landings of cod, haddock and whiting, combined with 5% lower prices for haddock. In this scenario, the economic position of the over 24m trawlers would be worse, with vessel owners facing losses £13,000 greater than in scenario 1. Crew share could be as low as £20,800 per man.

Under 24m trawlers have lower profits than in scenario 1. These vessels tend to catch a wider a range of species (e.g. nephrops) and could target other species. Seine netters could see average earnings of £271,000 in scenario 3, with a net loss before interest and depreciation of £4,000 on average. Owners would have even more difficulty servicing their debts if profits were this low. In addition, with a crew of six the average crew share would be £13,200 per man, would significantly hinder crew retention.



Appendix 1 – Average trip performance

Assumes – 20 trips, 9 days per trip.

NS & WoS Demersal Trawl >24m	NS & WoS Demersal Trawl <24m	NS & WoS Demersal Seine netters
70 vessels are in this sector at January 2004.	120 vessels are in this sector at January 2004.	30 vessels are in this sector at January 2004.
Price per tonneCod: £1,456Haddock: £671Monks: £2,020	■ Price per tonne - Cod: £1,456 - Haddock: £671 - Monks: £2,020 - Nephrops: £2,303 - Whiting: £624	Price per tonne Cod: £1,456 Haddock: £671 Whiting: £624

Scenario 1 results per trip				
Average £ per vessel	NS & WoS Demersal Trawl >24m	NS & WoS Demersal Trawl <24m	NS & WoS Demersal Seiners	
Earnings	24,146	14,182	15,307	
Fuel & Oil	4,043	1,204	1,352	
Crew Share	6,846	4,959	4,756	
Quota Leasing Costs	2,500	750	1,500	
Other Fishing Expenses	3,910	2,311	2,943	
Total Fishing Expenses	17,299	9,224	10,551	
Total Vessel Owner Expenses	7,559	4,250	4,168	
Net Profit per trip (before depreciation and interest)	-712	708	588	

For further details, advice or to discuss other scenarios please contact

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