

Title: Eastern IFCA Permitting Byelaw, Eastern IFCA Permitting Byelaw (Flexible Conditions), Eastern IFCA Whelk Byelaw IA No: EIFCA001 Lead department or agency: Eastern Inshore Fisheries and Conservation Authority Other departments or agencies:	Impact Assessment (IA)		
	Date:		
	Stage: Consultation		
	Source of intervention: Domestic		
Type of measure: Secondary Legislation			
Contact for enquiries: Julian Gregory - Acting CEO (01553 775321)			

Summary: Intervention and Options	RPC Opinion: N/A
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Cost of Preferred (or more likely) Option

Total Present Value	Net Present Value	Business Net Present Value	Net cost to business per year (EANCB on 2009 prices)	In scope of One-In, Two-Out?	Measure qualifies as In, Two-Out?
£m	£	£	NA	No	NA

What is the problem under consideration? Available scientific literature and case study evidence indicated that whelks are very vulnerable to over-fishing. Peak levels of fishing effort in 2014 and removal of pre-spawning individuals are likely to have contributed to the observed reduction in catch per unit effort. Due to the importance of whelk as a non-quota species, particularly to inshore fishermen who regularly diversify, ensuring a long-term, sustainable fishery will provide better economic security for fishes in the long term.

Why is government intervention necessary? The fishery has historically operated under a 'boom-and-bust' model, where fishers remove the majority of the population through intense fishing mortality. Due to limited available evidence regarding whelk population dynamics and fishing activity a precautionary approach is required until Eastern IFCA's evidence base is more robust.

What are the policy objectives and the intended effects? To collect data relevant to operating the fishery at maximum sustainable yield, introduce flexible effort restrictions which will allow Eastern IFCA to manage a fishery at maximum sustainable yield as data becomes available, reduce the removal of pre-spawning individuals, partial cost recovery for the associated measures, introduce measures which are enforceable, initially introduce measures which are precautionary to lessen immediate impacts on fishery.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base) The preferred option is a combination of flexible permit conditions (administered through a permitting byelaw) and byelaw provisions (administered through an Eastern IFCA byelaw) to balance flexibility with proportionate deterrent for non-compliance. This option is proportionate and presents a low risk to fisheries sustainability. Other options considered include; do nothing, non-flexible permitting scheme, and total closures.

Will the policy be reviewed? It will be reviewed. **If applicable, set review date:** 6 years

Does implementation go beyond minimum EU requirements?	Yes				
Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base.	Micro Yes	< 20 Yes	Small Yes	Medium Yes	Large Yes
What is the CO ₂ equivalent change in greenhouse gas emissions? (Million tonnes CO ₂ equivalent)	Traded: N/A		Non-traded: N/A		

I have read the impact assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible SELECT SIGNATORY: _____ Date: _____

Description:

FULL ECONOMIC ASSESSMENT

Price Base Year 2014	PV Base Year 2014	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)			
			Low: Unknown	High: Unknown	Best Estimate: Unknown	

COSTS (£m)	Total (Constant Price)	Transition Years	Average (excluding transition) (Constant Price)	Annual (transition)	Total (Present Value)	Cost
Low	£57,915		£173,799		£1,553,922	
High	£169,290		£578,060		£5,145,049	
Best Estimate	£113,602		£247,829		£2,249,836	

Description and scale of key monetised costs by 'main affected groups'

Fishers will incur costs associated with reducing effort (and landings as a result), lost catch as a result of using riddle screens, the charge for a permit and the modification of fishing gear. Public costs include the likely increase in sea patrols (estimated 2-3 per month for 6 months and as required on a risk assessed basis subsequently) and the cost of personnel involved in assessing the presence of undersize whelks based on previous experience, administration and research associated with collecting and analysis of permit holder data (relevant for achieving MSY). Public costs have been partially offset by the permit charge.

Other key non-monetised costs by 'main affected groups'

Fishers will likely incur additional costs associated with loss of catch due to an increased minimum landing size which cannot be estimated due to variable size of maturity of whelks across the district and loss of fishing gear marking items (buoys and dhans).

BENEFITS (£m)	Total (Constant Price)	Transition Years	Average (excl. transition) (Constant Price)	Annual (Transition)	Total (Present Value)	Benefit
Low	Unknown		Unknown		Unknown	
High	Unknown		Unknown		Unknown	
Best Estimate						

Description and scale of key monetised benefits by 'main affected groups'

Monetised benefits cannot be estimated.

Other key non-monetised benefits by 'main affected groups'

A long-term, sustainable whelk fishery will provide income over a longer period resulting in a net gain over time. The whelk fishery within Eastern IFCA's district had a first sale value of £1.32 million in 2014. The main benefit of the measures will be to maintain this valuable fishery in the long-term and prevent the 'boom-and-bust' fishing culture historically associated with whelk fisheries in the district. The vulnerability of whelk populations to overfishing and historical 'boom-and-bust' nature of the fishery indicates that costs will only actually be short-term and be offset by longer-term income over time resulting in a net benefit.

Key assumptions/sensitivities/risks

Discount rate (%) 3.5%

Assumption: MSY can be achieved and reflected in flexible permit conditions. Sensitivities/risk: whelk fisheries are already overfished and recovery not possible.

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:	In scope of Measure qualifies
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Costs: N/A	Benefits: N/A	Net: N/A	OITO? No	as N/A
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Evidence base

1. Introduction

Eastern IFCA has a duty to take action to ensure the sustainable exploitation of fisheries within its district as per section 153 of the Marine and Coastal Access Act 2009. Furthermore, in carrying out its duties Eastern IFCA is obliged to ensure Good Environmental Status of fish and shellfish stocks as per the Marine Strategy Framework Directive (2008/56/EC) namely; sustainable fisheries with high long-term yields, stocks functioning at full reproductive capacity, and to maintain or increase the proportion of older and larger individuals.

2. Rationale for intervention

Eastern IFCA currently has in place an emergency byelaw to manage a sustainable whelk fishery – this byelaw will expire on 29 April 2016. Best available evidence has indicated that whelk stocks within Eastern IFCA's district were at a high risk of over-exploitation and potential collapse as a result of a sudden increase in fishing effort in 2014. The Emergency Whelk Byelaw has had the effect of reducing effort in the whelk fishery thus far. Failure to implement permanent management measures would potentially result the resumption of previous high levels of fishing activity and fishing mortality - historically the fishery has operated under a 'boom-and-bust' model where populations are reduced through intense fishing mortality to the point that fishing is no longer viable, whelk populations have anecdotally been reported to then recovery over several years or decades. Operating the whelk fishery under these conditions does not constitute maximum sustainable yield and would not meet the requirements set under the Marine Strategy Framework Directive.

3. Policy objectives and intended effects

The key objectives of the measures are as follows:

1. Acquisition of accurate effort and landings data to build models to identify maximum sustainable yield;
2. Introduce flexible effort controls which can be varied based on best available evidence to achieve maximum sustainable yield;
3. Introduce flexible permit conditions which can be added to, varied or removed to reflect the needs of a long-term, sustainable fishery including requirements for effective enforcement;
4. Introduce byelaw provisions relevant to a long-term, sustainable fishery and effective enforcement;
5. Initial precautionary cap on effort (pots per vessel) until such a time as assessments can determine appropriate levels of effort; and
6. Prevent or reduce removal of pre-spawning whelk.

The intended effect of the measures is to secure a long-term, sustainable whelk fishery which operates at maximum sustainable yield. Initially a precautionary approach to effort limitation has the intended effect of limiting the damage to the inshore whelk fisheries until such a time as Eastern IFCA can determine maximum sustainable yield. To cater for the dynamic nature of the marine environment and inshore fishing sector, flexible measures likely present the most effective method of achieving this. That said, flexible permit conditions represent a lower penalty level than byelaw provisions and as such, a balance is sought between the appropriate deterrent (i.e. an appropriate penalty level) and flexibility. A combination of both is proposed as the most effective method to achieve this.

4. Background

It is well established in scientific literature that whelk are vulnerable to overfishing; primarily due to their slow growth and low mobility (Caddee et al 1995, Fahy et al 2000). In addition, the national minimum landing size for whelks (45mm) is generally considered to be far below the size at which whelks are sexually mature (Fahy et al 1995) which is also thought to vary at relatively small spatial scales (Lawler 2014).

Whelk fishing activity increased dramatically within Eastern IFCA's district over a four year period (2010-2014) and more so in 2014 than was expected. This reflects a national growth in the UK's whelk fisheries thought to be driven in part because of low quota's for controlled species (particularly in the inshore sector) and increased demand (including an increase in the price) from Asian Markets (primarily South Korea). This dramatic increase in effort preceded collapses, near collapses or poor performance in whelk fisheries in several case studies including the Irish Sea (Fahy et al 1995), the Wadden Sea (Caddee et al) and the Normandy Whelk fishery (Gascoigne et al 2015).

Whilst the increase in effort in the whelk fishery represents a greater risk to its sustainability, it also reflects the importance of whelk to the inshore fishing sector. Landed whelk in the district had a first sale value of £1.32 million in 2014 making it the most valuable fishery that year. Ensuring a long-term, sustainable fishery will have a positive effect on the local inshore fishing industry and local economy.

Using limited effort and landings data Eastern IFCA analysis determined that there was a potential reduction in catch per unit effort, reflecting a high risk to the whelk fisheries in the district in January 2015. An emergency byelaw was introduced to prevent irreparable damage to the sustainability of the fishery. The measures introduced were precautionary in nature to reflect the limited available data.

5. The options

Option 0: Do nothing – *Given the vulnerability of whelk fisheries to over-fishing, historical fishing activity (i.e. boom-and-bust) and the 2014 (current) peaks in fishing activity this option presents a very high risk to fisheries sustainability and potential long-term impacts on the local inshore fishing sector and local economy.*

Option 1: Introduce a generic permitting byelaw which will enable flexible permit conditions to be introduced, removed and varied to reflect the needs of a fishery. This byelaw will allow for additional species to require a permit to future proof against fisheries sustainability needs of any species or fishery within the district. Also introduce a specific whelk byelaw with fixed provisions which will not benefit from flexibility. Introduce flexible permits conditions which are precautionary in nature until such a time as available evidence allows Eastern IFCA to determine Maximum Sustainable Yield and appropriate minimum landing sizes of whelks across the district. This approach allows for Eastern IFCA to balance the benefits of flexible permit conditions, where required, and higher penalty level byelaw provisions which are fixed to achieve long-term, sustainable fisheries.

Eastern IFCA Permitting Byelaw (see annex 1)

Requires fishers to obtain a permit which is endorsed for certain fisheries or species, as defined in an associated byelaw. The byelaw also allows Eastern IFCA to set flexible permit conditions for fishing through a process which includes a proportionate level of consultation and evidence gathering. This byelaw also includes the provision that permit holders return catch data to Eastern IFCA on the 10th day of each month.

Flexible permit conditions (see annex 2)

The initial Permit Conditions Notice issued will include the following; pot limitation (500 pots), requirement for a minimum of two escape holes per pots of a minimum diameter of 24mm, catch to be riddled using a screen of a minimum of 24mm spacing, a minimum landing size of 55mm, a maximum internal pot volume of 30 litres.

Eastern IFCA Whelk Byelaw (see annex 3)

This byelaw includes the provision that the species Whelk (*Buccinum undatum*) is listed on Schedule One of the Eastern IFCA Permitting Byelaw and requires an endorsed permit to fish for this species. The byelaw also includes provisions which reflect management measures which do not benefit from the flexibility of being flexible permit conditions. These include; whelk pots must be marked with tags provided by the Authority, Lost tags shall be reported and replaced by the permit holder, the use of fishing gear of any other description than whelk pots, set gear must be marked with buoys or dhans.

Option 2: *Introduce an Eastern IFCA whelk byelaw with provisions which will have the effect of capping effort in the whelk fishery, reduce/prevent the removal of pre-spawning whelks. . Introduce*

flexible permits conditions which are precautionary in nature until such a time as available evidence allows Eastern IFCA to determine Maximum Sustainable Yield and appropriate minimum landing sizes of whelks across the district.

Option 3: *Introduce a Whelk permitting byelaw which would allow for flexible permit conditions to meet the requirements of the fishery as evidence becomes available.*

6 Analysis of costs and benefits

Option 0 – Do nothing

The cost and benefits of the 'do nothing' option cannot be monetised due to the massive uncertainties associated with the whelk fisheries within Eastern IFCA's district.

Case studies of other whelk fisheries have shown that, because whelk are so vulnerable to over-fishing, the potential cost of a do-nothing option in the long term can range from poor quality catch to collapse of the fishery entirely.

In 2014 the first sale value of the whelk landed into Eastern IFCA's district was £1.32 million – most of which is thought to have been caught in the inshore region. The down-stream value of whelk fisheries cannot be estimated but include a range of businesses from selling cups of whelks to tourists in sea-side towns to a large export from a processing factory in King's Lynn which supports several jobs and skills including engineers, drivers and factory workers.

The benefit associated with the 'do nothing' option are likely – based on case studies – only to be felt in the short-term.

Option 1 – Combination of fixed byelaw provisions and flexible permit conditions (preferred option)

The estimated monetised costs associated with Option 1 are incomplete and the benefits could not be monetised.

The monetised costs to businesses include the transitional costs associated with fishers purchasing additional fishing gear to meet the requirements of the proposed measures. This includes the following; riddle screens, gear markers (including dhans and buoys) and the time (in loss of earnings) to make and deploy these gear markers and adapt fishing gear (including modifying whelk pots to include escape holes. The transitional costs to businesses was estimated at £113,602.

Annual costs to businesses have been estimated for the loss in earnings associated with a pot limitation and the charge associated with permits. A minimum estimate of this costs was estimated by reducing the earnings of each vessel in proportion to the reduction in the pots they were able to use and then offset by that amount for vessels which are able to travel outside of the 6nm (i.e. outside of Eastern IFCA's district) where the byelaw has no application. This is a fair assumption given that several vessels have indicated this is the approach they will take. The high estimate for these costs was estimated by reducing the earnings of each vessel in proportion to the reduction in the pots they can use, including no offset for vessels which can travel outside the 6nm boundary and using zero earnings for vessels which have indicated that 500 pots is not viable and so would not fish. The 'best' estimate includes an offset for vessels which can transit to outside of the 6nm boundary but does also subtracts the amount earned by vessels which have indicated they would not fish for whelks under a 500 pot limitation. The best estimate associated with the pot limitation was £125,693 annually.

500 pot, pot limitation

The 500 pot, pot limitation was identified in the informal information gathering exercise as the most divisive measure. Ideally Eastern IFCA would set a pot limitation in accordance with maximum sustainable yield however, the evidence base for this is not yet available (it will likely require several years of landings and effort data to calculate) and as such, the initial objective of the pot limitation is

to be precautionary and prevent detrimental impacts on the whelk fishery until such a time as the evidence is available.

Informal consultation has indicated that several fishers feel the 500 pot limitation is too low to make the fishing activity viable. This view is associated with the owners and skippers of the larger vessels within the fleet which naturally have higher running costs. In contrast, several whelk fishers are written representation to the effect that the 500 pot, pot limitation is too high and risks the long-term sustainability of the whelk fisheries.

An analysis of the potential earnings per crew has highlighted that there will be a disproportionate effect on company owned, larger vessels within the district (see box 1).

Box 1 – impacts of measures on different business models

Table 1. Fixed parameters used in crew earnings model

kg whelk per pot	2.5
Bait cost (per pot)	0.4
First sale price whelk	0.775
Cost per pot (markers and tag)	8.84
Annual number of trips	49

Information gained during consultation was used to develop and run a model to determine the earnings of crew members of whelk fishing vessels. Details of the model are not shown to protect the identity of the fishers who passed on information.

Fixed parameters used in the model are shown in table 1 (left) and the outputs are shown in the table 2 (below).

Table 2. OUTPUTS

Crew earnings per trip	No limit	Number of pots	
		500	750
Company vessel (average)	£ 198.70	£ 103.75	£ 192.29
Independent (10 and over)	£ 215.42	£ 215.42	£ 351.13
Independent (less than 10)	£ 216.85	£ 443.03	£ 669.21

Earnings hatched out in red are associated with a number of pots greater than that actually used in practice.

When the model is run with the number of pots set to 500, it is clear to see that the earnings associated with a company owned vessel are less (less than half) than that of an independent vessel. This is primarily due to company owned vessels being larger (thus having higher fuel and insurance costs) and operating with more crew. With no limit, the company owned vessels would have in the region of 750 to 800 pots which does bring the crew earnings more in line the independent vessels. That said, it has been anecdotally reported that, although the crew of independent vessels could earn as much as set out in table 2, crew for independent fishers often operate under a fixed daily rate which is sometimes as little as £30 per trip.

One representation made during the informal consultation indicated that the 500 pot limit could constitute a safety risk as larger vessels feel forced to operate with fewer crew to allow for lower earnings in whelk catch. It is important to note that, the model for crew earnings does also include a share of the catch for 'the vessel' which is the share of catch which goes to the company in ownership of the vessel; - effectively increasing the number of crew by at least one.

Several representations from the larger, company owned vessels indicated that a pot limitation of 750 pots would make fishing within the Eastern IFCA district viable and as such, has been considered alongside the current (Emergency Byelaw) pot limitation of 500.

The case study of the Normandy Whelk fishery was used to test whether there would be a case for increasing the initial pot limitation form 500 to 750. A detailed report on the productivity and management of the Normandy Whelk fishery was prepared by Gascoigne *et al.* The report shows how the fishing effort on the Normandy whelk fishery increased to the detriment of the fishery, resulting in

poor catch per unit effort. This increase in effort was sudden and unfortunately, management of the fishery could not affect quickly enough the fishing mortality on the Normandy whelk population. A series of management measures have been used to reduce effort including pot limitations and daily quotas.

Currently, the pot limitation is set at 720 pots per vessel. Given also that the number of vessels permitted is 70, the effort within the Normandy whelk fishery is well in excess of that in Eastern IFCA's district. However, the daily catch quota is currently set at 300kg per person (crew) up to a maximum of 900kg per vessel per day. If vessels are having to use the full 720 pots to catch 900 kg this represents a poor catch per unit effort, well below that which is anecdotally thought to be the case within Eastern IFCA's district.

The management of the Normandy whelk fishery currently includes a one-in-two-out policy to try and continue to reduce the effort in the fishery. Unless voluntarily relinquished, the management measures of the Normandy whelk fishery do not include an ability to limit the number of permits for fisheries sustainability and instead, each vessel has had to accept poor catch per unit effort and small daily quotas.

By comparison, vessels fishing within the Eastern IFCA district under the 500 pot pot-limitation are thought to catch between 1000 and 1500 kg per trip, representing a healthier catch per unit effort. At 750 pots, the estimated catch per vessel per day would be between 1500 and 1875 kg, far in excess of the current limitations in place for the Normandy fishery.

As such, the 500 pot pot-limitation still appears to be the most appropriate limitation. Given the paucity of data on the current health of the whelk stocks within the district a precautionary approach is required until such time as the IFCA can determine maximum sustainable yield. The 500 pot limitation will not restrict fishers to the same extent as in the Normandy fishery due to the higher catch per unit effort.

It is also important to note that costs of the measures have been estimated based on 2014 data which represents a peak in whelk catches which is unlikely to be sustainable in the long-term. Calculating the impacts of the measures based on the 2014 data has likely inflated the potential impacts. Furthermore, the majority of vessels who have made representation to the extent that they will not be able to go fishing have a very limited track record according to MMO landings data. The majority of the larger, company owned vessels who will be disproportionately affected by these measures have only landed whelks in one out of the last 5 years (most often 2014) and most of those landed less than 1 tonne in that year. As such, the impacts on these vessels should be considered as lost opportunity rather than an actual impact on current activity.

Granting of additional permits

The proposed initial measures do not include a limitation on the number of permits however, the Permitting Byelaw has a provision such that whelk fishing endorsements can be limited should there be a need via a proportionate process (including consultation). Several representations were made regarding concerns that additional permits granted would lead to over fishing.

An analysis was conducted to estimate the number of pot days (the number of days each pot from each vessel had fished) based on the 2014 landings data. Using this information, estimates on the number of pot days resulting from the pot limitations were determined. The results are shown in table 3.

Table 3. Estimates of the fishing effort in the whelk fishery based on 2014 data.

Estimates on the reduction in fishing effort were calculated using an average catch per unit effort of 2.5 kg per pot and an average soak time of 2 days. Latent capacity was estimated assuming an average number of trips per year of 49 and shows the number of additional vessels which could join the fishery before effort reaches the peak levels seen in 2014.

Pot limitation	Pot days	% reduction	Latent capacity (number of vessels based on average)
2014 estimate (no limitation)	617,202	0	0
500 pot limitation	401,464	34.95	9.93
750 pot limitation	538,075	12.82	2.66

The analysis indicated that, assuming average fishing effort per year, an additional 10 vessels could join the fishery if operated at a 500 pot, pot-limitation compared to an additional 3 vessels in the case of a 750 pot, pot-limitation.

As such, the 500 pot, pot-limitation has the benefit of increasing the latent capacity of the fishery based on 2014 landings and effort (which saw 38 vessels actively fish in the inshore region). That said, it would not be beneficial to allow effort to increase to the levels seen in 2014 as the increase in effort is thought to have been partly responsible for the decrease in catch per unit effort (in addition to removal of pre-spawning individuals).

Permit charge

The permit charge is set at 50 pence per pot. The estimated cost has taken into account to the fishers is based on 13 vessels with 500 pots (low), 38 vessels with 500 pots (high) and 25 vessels (best). The permit charge is an annual charge which contributes to the annual cost of the whelk fishery to the public. The estimated cost to the public is £16,131 annually of which the permit charge offsets £5,838 (best estimate) reducing the cost to the public to an estimated £10,294 annually.

Public costs include the administration requirements (such as the cost of the pot tags, entering landings data into the database and processing permit applications), research requirements (developing a maximum sustainable yield model, projects regarding the size of maturity of whelks) and the enforcement costs (which includes 6 extra sea patrols and the time in man-hours to check the catch for undersize).

Increase in minimum landing size

The increase in minimum landing size will potentially reduce the amount of catch per trip in comparison to the 2014 landings data. The extent to which catch is reduced cannot be monetised for two reasons. Firstly, the size distribution of whelks within different stocklets is highly variable (for example it is thought to be different in The Wash in comparison to the North Norfolk Coast) and as such, the amount of catch lost though an increase in the mls will differ. Secondly the requirement to use escape holes in whelk pots is thought to offset the loss of catch, as has been reported from some fishers. A whelk pot will usually stop fishing when the bait has been eaten or the pot is full. By using escape holes, some fishers have reported that the whelk pots have the same number of whelks in as before but the majority are closer to 55mm in length as the smaller whelks can escape through the holes – i.e. the pots do not stop fishing when full as smaller whelks can leave the pots.

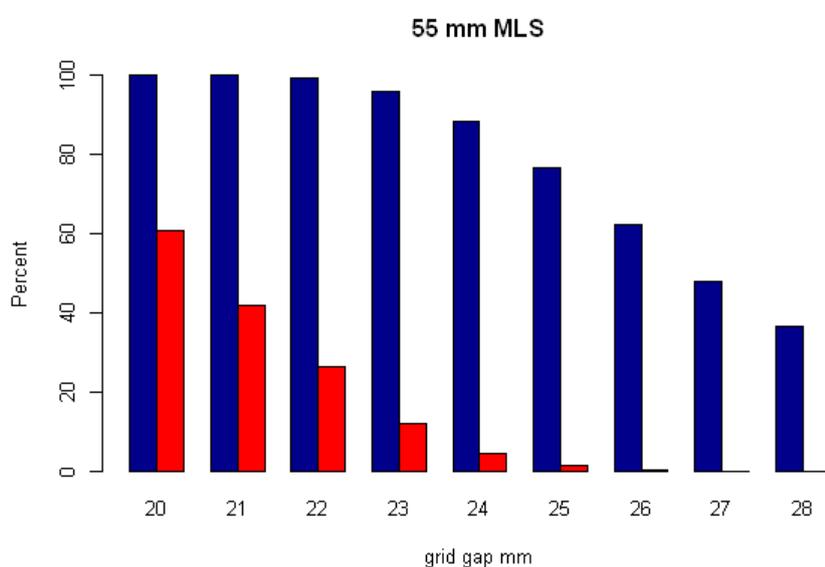
The current minimum landing size is considered in the scientific literature to be well below the size at which whelk are sexually mature. A study conducted using whelks caught off the North Norfolk coast found that the size of maturity is closer 67mm. The removal of pre-spawning individuals from a population can very quickly reduce the capability of the population to recover from fishing mortality and potentially lead to a collapse of the fishery given enough fishing effort. It is likely that the 'boom-and-bust' nature of this fishery in the past is a consequence of the removal of pre-spawning individuals given that the national mls is only 45mm.

Whilst the increase in mls may have the effect of reducing the catch of fishers in the short term, this is more than offset by potential fishing opportunities in the long-term which, without intervention, are unlikely to occur.

Requirement to riddle catch – bar spacing of 24 mm

Sorting gear (e.g. riddles or grids) are used to separate undersized whelk catch from commercial whelk catch. Informal consultation with the fishing industry has indicated that bar spacing of sorting gear varies from 20-25mm; a spacing of 20mm has been shown to be effective at selecting whelks of greater than the 45mm minimum landing size (Lawler et al 2012). Lawler et al 2012 found that the effectiveness of a riddle size depended on the location of the fishery with differences found in the width/length relationship between the four sample sites. The bar spacing at which whelk of a size of 55mm was retained varied between 23 and 24mm.

Whelks vary in width for a given length. For a given minimum landing size (length) the width of these whelk will vary and, as such, fit through riddles of different sizes. The intension of choosing a minimum bar spacing for riddles is to balance the amount of undersized whelk which will be discarded with as smaller loss of commercial sized whelk as possible.



The most effective size of riddle for discarding cockles of the length 55mm would be 27 or 28mm – no whelks of 55mm will be retained (figure 1). However, this

Figure 1 – extracted from Lawler et al 2012. Catch retention by riddle grid gap of both commercial (blue) and undersized (red) whelks for different assumed minimum landing sizes.

will also result in a loss of commercial whelk in the region of 50-60%.

A riddle size of 24mm would reduce the proportion of under 55mm whelk retained to under 10% and would result in the loss of commercial sized whelk in the region of 10%.

A riddle of 25mm would result of a reduction in the retention of undersized whelk to only a few percent but would reduce the retention of commercial sized whelk to around 80%.

A small study was conducted with whelk caught from within Eastern IFCA’s district to ascertain if the Cefas study was comparable. As riddles select for whelks based on their width (rather than length), differences in the width-length relationship may result in differences in whelk retention. The study indicated that, for a riddle with bar spacing of 24mm, the proportion of commercial catch lost was comparable to that of the Cefas study.

A minimum riddle size of 24mm represents the best balance between a limited economic impact on the fishers whilst still having a protective effect. A study will be conducted over the next 12 months which will provide more evidence towards the most effective riddle size.

Benefits

The overriding non-monetised benefit to this option is that the fishery will operate as a more stable, long-term fishery rather than as a ‘boom-and-bust’ fishery as it has in the past. Given the worth (first

sale value) of the whelk fishery in 2014, this could provide an important source of income to the inshore fishers and local economy.

In addition, the flexibility of this option will allow for measures to be tailored to minimise the impact on fishers where there is enough evidence – removing the necessity to rely on a precautionary approach. This will also have the effect of saving public money with regards to a streamlined process for adding, removing or varying permit conditions rather than conducting revisions to byelaws which involves more time and process.

Option 2 – Fixed byelaw provisions

The monetised costs and benefits estimated for this option are essentially the same as for option 1. The main difference between the two options relate to the non-monetised benefits of the options.

Without the flexibility of flexible permit conditions, over time the fishery may be over-fished (possibly resulting in a cost relating to reduced catch per unit effort) or under-fished with regards to maximum sustainable yield. The benefits of this option are not as great as in option 1.

In addition, this option would not allow for effort to reflect maximum sustainable yield on an annual basis and would likely not reflect Eastern IFCA's obligations under the Marine and Coastal Access Act (2009) or the Marine Strategy Framework Directive.

Option 3 – introduce flexible permit conditions only

The monetised costs and benefits estimated for this option are essentially the same as for option 1. The main difference between the two options relate to the potential reduced effectiveness of measures as flexible permit conditions.

Permit conditions have a lower penalty level (Fixed Administrative Penalties) than byelaw provisions. The benefit of using a combination of byelaw provisions and flexible permit conditions is that, where measures do not benefit from flexibility they can remain as fixed byelaw provisions to maintain the deterrent of non-compliance. In the case of all the measures being flexible permit conditions, the deterrent for non-compliance may be perceived as worth the risk and encourage offending to the detriment of the fishery's sustainability.

One In Two Out (OITO)

OITO is not applicable for byelaws as they are local government byelaws introducing local regulation and therefore not subject to central government processes.

Small firms impact test and competition assessment

No firms are exempt from this byelaw as it applies to all firms who use the area, it does not have a disproportionate impact on small firms. It also has no impact on competition as it applies equally to all businesses that utilise the area.

Conclusion

Recommended option:

The recommended option is option 1 – a combination of a flexible permit conditions issued through a generic permitting byelaw and fixed byelaw provisions as set out in a Whelk byelaw.

The implementation of a generic Eastern IFCA permitting byelaw will future proof the regulatory framework to allow for new species requiring management measures. The permitting byelaw will also allow for flexible measure which can reflect the needs of the fishery (i.e. maximum sustainable yield). In addition, the whelk byelaw will contain byelaw provisions for measures which do not require flexibility.

The cost of the measures to businesses is likely to be offset by the long-term gains of a sustainable whelk fishery. Historically the fishery has run in accordance with a 'boom-and-bust' model with high levels of fishing mortality (and the removal of pre-spawning individuals) contributing to the rapid collapse of whelk stocks within an area. These measures should reduce the risk of this occurring such that inshore fishers benefit from a more stable catch of whelks.

Annex A: Policy and Planning

Which marine plan area is the MPA and management measure in?

Have you assessed whether the decision on this MPA management measure is in accordance with the Marine Policy Statement and any relevant marine plan?

- Yes/No.

If so, please give details of the assessments completed:

- Which policies support this management measure and which policies this management measure may not comply with. For the latter, the assessor will be asked to explain the case for proceeding.
- The assessment must not consider the marine plan policies in isolation but all policies where relevant.
- Where an assessment takes place in a marine plan area that does not have an adopted marine plan consideration must be given to the MPS in the assessment.