Title:	Impact Assessment (IA)
Byelaw XXVIII: Crustacea Conservation Byelaw	**IA No:**
IA.No:	**Date: 25th June 2015**
NEIFCA_IA_02_15	**Stage:** Development/Options
Lead department or agency: NEIFCA	**Source of intervention:** Domestic
Other departments or agencies: MMO, Natural England	**Type of measure:** Secondary legislation
	Contact for enquiries: David McCandless (01482 393 690) Chief Officer

Summary: Intervention and Options

What is the problem under consideration? Why is government intervention necessary?

North Eastern IFCAs potting fishery has expanded significantly over the last 20 years leading to increasing exploitation of stocks, which are currently being harvested beyond safe biological limits (CEFAS 2011). Independent assessments by CEFAS (2011) and Mott McDonald (2006) have verified that the regional fisheries for European lobster and edible crab are currently unsustainable attributed to; a significant increase in pot numbers, increasing effort intensity, technology creep and expansion into unexploited grounds. These stocks are currently reliant on knife-edge recruitment, with high but stable mortality rates.

What are the policy objectives and the intended effects?

1. To sustainably manage edible crab (*Cancer pagurus*) and European lobster (*Homarus gammarus*) stocks.

2. To increase spawning stock biomass and recruitment for both species.

3. To make Crustacea regulations easier to navigate for resource users and increase rates of compliance.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

The following policy options have been considered (Full details in Evidence Base section 2):-

0. Do nothing
1. Regulatory management - Umbrella byelaw encompassing appropriate regulations
2. Use of non-regulatory/voluntary measures
3. Regulatory management -A separate byelaw for each regulation.

Option 1 is recommended; an umbrella byelaw will unify several crustacea specific provisions, thereby allowing for ease of communication of the regulations to the target audience. Each of the regulations have common objectives and similar impacts on the fishery.

Will the policy be reviewed? It will be reviewed. **If applicable, set review date:** 05-2019

What is the basis for this review? Not applicable. **If applicable, set sunset clause date:** Month/Year

Are there arrangements in place that will allow a systematic collection of monitoring information for future policy review?	Yes

SELECT SIGNATORY Sign-off For consultation stage Impact Assessments:

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

Date: 25/06/2015

Summary: Analysis and Evidence

Policy Option 1

Description:

Impact Assessment for the amendment of NEIFCA Byelaw XXVIII: Crustacea Conservation

Price Base Year 2012	PV Base Year 2016	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)		
			Low: Option	**High:** Optional	**Best Estimate: -£325,000**

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	Optional		Optional	**Optional**
High	Optional		Optional	**Optional**
Best Estimate	**£325,000**		**£292,500**	**£2,797,498**

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

Cost estimates have been developed based upon quayside sampling evidence and stakeholder consultation, leading to assumptions of a 1 year displacement of catch. Individual cost components are estimated as; 7.25% loss of male lobsters in 87-89mm size range (£50,000) and displacement of 130-139mm edible crab catch from within 6nm (£275,000). The combined European lobster and edible crab fisheries in the region are estimated to be worth £8.3 million, therefore the projected cost impacts are estimated in the region of 4% of the overall fishery value.

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

Operator time to fit escape gaps.

Captial Cost of purchasing AIS for vessels utilising the deeming clause

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Optional		Optional	**Optional**
High	Optional		Optional	**Optional**
Best Estimate	**£0**		**£292,500**	**£2,472,498**

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

Conservative estimates have been presented assuming that all displaced animals retain their value and will be recaptured in the proceeding year. In reality, displacement and growth will be associated with a net increase in weight, leading to an uplift in first sale value.

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

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5%

Benefits assume 100% compliance rates.

A 3.5% annual discount rate has been applied over the 10 year appraisal period for cost and benefit estimates.

Direct impact on business (Equivalent Annual):			In scope of OIOO?	Measure qualifies
Costs £ 2,797,498	**Benefits: £2,472,498**	**Net: - £325,000**	**No**	N/A

Enforcement, Implementation and Wider Impacts

What is the geographic coverage of the policy/option?			Other NEIFCA District		
From what date will the policy be implemented?					
Which organisation(s) will enforce the policy?			NEIFCA		
What is the annual change in enforcement cost (£m)?			£0m		
Does enforcement comply with Hampton principles?			Yes		
Does implementation go beyond minimum EU requirements?			Yes		
What is the CO_2 equivalent change in greenhouse gas emissions? (Million tonnes CO_2 equivalent)			**Traded:** 0	**Non-traded:** 0	
Does the proposal have an impact on competition?			No		
What proportion (%) of Total PV costs/benefits is directly attributable to primary legislation, if applicable?			**Costs:** n/a	**Benefits:** n/a	
Distribution of annual cost (%) by organisation size (excl. Transition) (Constant Price)	**Micro**	**< 20**	**Small**	**Medium**	**Large**
Are any of these organisations exempt?	No	No	No	No	No

Specific Impact Tests: Checklist

Set out in the table below where information on any SITs undertaken as part of the analysis of the policy options can be found in the evidence base. For guidance on how to complete each test, double-click on the link for the guidance provided by the relevant department.

Please note this checklist is not intended to list each and every statutory consideration that departments should take into account when deciding which policy option to follow. It is the responsibility of departments to make sure that their duties are complied with.

Does your policy option/proposal have an impact on…?	**Impact**	**Page ref within IA**
Statutory equality duties[1] Statutory Equality Duties Impact Test guidance	No	
Economic impacts		
Competition Competition Assessment Impact Test guidance	No	
Small firms Small Firms Impact Test guidance	No	
Environmental impacts		
Greenhouse gas assessment Greenhouse Gas Assessment Impact Test guidance	No	
Wider environmental issues Wider Environmental Issues Impact Test guidance	No	
Social impacts		
Health and well-being Health and Well-being Impact Test guidance	No	
Human rights Human Rights Impact Test guidance	No	
Justice system Justice Impact Test guidance	No	
Rural proofing Rural Proofing Impact Test guidance	No	
Sustainable development Sustainable Development Impact Test guidance	No	

[1] Public bodies including Whitehall departments are required to consider the impact of their policies and measures on race, disability and gender. It is intended to extend this consideration requirement under the Equality Act 2010 to cover age, sexual orientation, religion or belief and gender reassignment from April 2011 (to Great Britain only). The Toolkit provides advice on statutory equality duties for public authorities with a remit in Northern Ireland.

Evidence Base (for summary sheets) – Notes

Use this space to set out the relevant references, evidence, analysis and detailed narrative from which you have generated your policy options or proposal. Please fill in **References** section.

References

Include the links to relevant legislation and publications, such as public impact assessments of earlier stages (e.g. Consultation, Final, Enactment) and those of the matching IN or OUTs measures.

No.	Legislation or publication
1	Byelaw XXII. Permit to fish for and sell lobster, crab, velvet crab and whelk.
2	Byelaw XIV. Removal of parts of lobsters from any fishery: prohibition of.
3	Byelaw X. Shellfish: re-deposit of
4	Byelaw XIX. Parts of a Crab (removal of)
5	Byelaw XX. Prohibition on Use of Crab (*Cancer pagurus*) for Bait.
6	Byelaw XXI. Protection of 'V' notched lobsters
7	Byelaw XXVIII. Crustacea Conservation Byelaw.
8	NEIFCA Potting Effort Report 2011
9	Strategic Environmental Assessment – Shellfish – Environmental Report Mott Macdonald July 2008
10	Strategic Environmental Assessment Consultation Notes 2010
11	Strategic Environmental Assessment Consultation Outputs 2010
12	Strategic Environmental Assessment Consultation Notes 2011
13	CEFAS Question and Answers on Escape Gaps May 2004
14	CEFAS NESFC Joint Study on the effects of escape gaps in Flamborough Head SAC November 2002
15	NEIFCA Newsletters 2011
16	Smith M (2010) *Development of a multiple indicator framework macro-crustacean fishery assessment and management* - Interim/Stage 1 Report (Seafish project D108; Cefas project C3609)
17	CEFAS (2011): *Stock Status: European lobster (Homarus gammarus) in Yorkshire Humber.* http://cefas.defra.gov.uk
18	CEFAS (2011): *Stock Status:* Edible Crab *(Cancer pagurus) in Southern North Sea.* http://cefas.defra.gov.uk

Evidence Base

Ensure that the information in this section provides clear evidence of the information provided in the summary pages of this form (recommended maximum of 30 pages). Complete the **Annual profile of monetised costs and benefits** (transition and recurring) below over the life of the preferred policy (use the spreadsheet attached if the period is longer than 10 years).

The spreadsheet also contains an emission changes table that you will need to fill in if your measure has an impact on greenhouse gas emissions.

Annual profile of monetised costs and benefits* - (£m) constant prices

	Y_0	Y_1	Y_2	Y_3	Y_4	Y_5	Y_6	Y_7	Y_8	Y_9
Transition cost	**325,000**									
Annual recurring cost – Best estimate		**314,010**	**303,391**	**293,131**	**283,219**	**273,641**	**264,388**	**255,447**	**246,809**	**238,463**
Total present value of annual costs:*										***£2,797,498***

**For the estimation the Impact Assessment Calculator (https://www.gov.uk/government/publications/impact-assessment-calculator--3) was used considering a 3.5% discount rate, a 10 years appraisal period and 2012 as the price and present value base year.*

Net Impact

	Y_0	Y_1	Y_2	Y_3	Y_4	Y_5	Y_6	Y_7	Y_8	Y_9
Transition Costs	**325,000**									
Annual Costs		**314,010**	**303,391**	**293,131**	**283,219**	**273,641**	**264,388**	**255,447**	**246,809**	**238,463**
Annual Benefits		**314,010**	**303,391**	**293,131**	**283,219**	**273,641**	**264,388**	**255,447**	**246,89**	**238,463**
Net Impact	**- £325,000**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

**For the estimation the Impact Assessment Calculator (https://www.gov.uk/government/publications/impact-assessment-calculator--3) was used considering a 3.5% discount rate, a 10 years appraisal period and 2012 as the price and present value base year.*

Evidence Base (for summary sheets)

1. Background and Rationale

1.1 Ecology

The key commercial Crustacean stocks within the NEIFCA district include European Lobster (*Homarus gammarus)*, Edible crab (*Cancer pagurus)* and to a lesser extent Velvet crab (*Necora Puber*).

Lobster populations are usually concentrated around complex substrate types with a preference shown for mixed sediment cobble and mud habitats (Nicosia & Lavalli 1999; Liannane *et al* 2000). The habitat types in the district are therefore prime habitat creating some of the most productive shellfish grounds in Europe. Crustacean species grow by moulting with variable growth rates; the growth rate of lobster seems to be a function of moult increment and frequency which varies significantly with age class. Estimates for female size at maturity, based upon observations of ovigerous condition identify FB50 at 83 mm carapace length (CL), and FB95 at 98 mm CL, with the smallest ovigerous individual observed at 63 mm (Free & Tyler 1992; *Pers. Comm.* NEIFCA). Mating occurs between a hard shelled male and a soft shelled female in the summer, following which females will host their eggs for a period of 9-10 months. Fecundity is linearly related to size with a female at the minimum landing size (MLS) of 87mm CL carrying about 7,000 eggs, while at 120mm CL fecundity is about 18,000 eggs (Agnalt 2008). Stock boundaries for lobster are poorly understood; consequently uncertainties exist over larval distribution and sources of recruitment (CEFAS 2010). To address this knowledge deficit, NEIFCA conducted a lobster migration study from 2007-2010, preliminary findings identified a high regional site fidelity for lobster. A general stock unit was identified from the River Humber to River Tees, with a transitional region from Hartlepool north into Northumberland (*Pers. Comm. J. Wood*).

Edible crab larvae settle inshore in shallow water preferring a habitat consisting of a mosaic of bottom substrates such as gravel, pebbles, crevices and seaweed where they can find refuge. Juvenile crabs remain in such a habitat for the next 4 – 5 years (Woll 2006), growing at a consistent rate of approximately 10mm per moult period. Sexual maturity of the edible crab varies between the sexes. A study by Ungfor, (2007), indicates that the carapace width at which 50% of females are mature (FB50), based on development of the gonads, is 132 mm. Male physiological and functional maturity was found to be more synchronized: FB50s based on advanced sperm production and allometric changes in the chelae were within 5 mm (117–122 mm). Based on this study, recommendations for a minimum landing size (MLS) of 140 mm and a change of escape gap size to 90 mm width were given as a method of enhancing stock sustainability. Bannister (2009) links distribution of crab larvae in the North Sea with temperature, stating that north of Flamborough Head, the water is stratified and too cold for embryonic development (CEFAS 2010). Dispersion data from edible crab suggest crab larvae are found further south in warmer mixed water suitable for larval development, indicating significant recruitment may occur South of the Humber, within the Eastern IFCA district (*Pers. Comm.* CEFAS). However, the minimum landing size for Cromer Crab off the North Norfolk Coast is only 115mm which may be impacting dispersion and recruitment into the NEIFCA region.

Velvet crabs are most commonly found on rocky substrates down to about 25m. Size at maturity in the velvet crab varies according to location which may be due to differences in water temperature or other factors such as population density, genetic makeup and fishing pressure (The Fish Site 2012). A study by Gonzalaez-Gurriaran & Freire, 1994, found that sexual maturity occurs at approximately 50mm FB50 in females and 55mm CW50 in males in North West Spain, whereas in Orkney and Shetland, stocks are estimated to reach maturity at 40mm CW (NAFC 2006). Velvet crabs mate during the period when the female is still soft. Studies in the Shetland Islands found a mean reproductive potential of 160,000 eggs in females of 56 mm CW to 190,000 million eggs in females of 96 mm CW (Tallack 2007).

1.2 Commercial exploitation

Pot fisheries for lobster and edible crab have expanded over the last few decades, in part due to declining alternative fishing opportunities as whitefish stocks have declined (Cefas 2010). Parlour pots are used to target crustacean stocks throughout the district although there are seasonal and temporal variations in how they are fished depending on the target species. The district is experiencing a transition from smaller traditional vessel types to fast workers and catamarans resulting in increasing potting efficiency. There are 267 vessels commercially permitted for potting across the district, however only 191 of those are currently active in the fishery. While the number of vessels has remained relatively stable over the last five years, there has been a clear increase in potting effort from 3.5 million pots hauled in 2007 to 4.2 million pots hauled in 2011.

The NEIFCA district lobster fisheries are predominantly inshore with around 80% of landings from within the 6 nm limit (Hough 2005). UK commercial landings have remained consistent throughout the 2007-2010 period at approximately 2,700 tonnes with a fluctuating first sale value ranging from £26.6-£31.2 million (*Pers. Comm.* MMO). Within the district, landings have increased from 406 tonnes in 2007 to 545 tonnes in 2011 (NEIFCA 2012). In 2011, using an average price per kilo across the year of £10.00, the lobster fishery was estimated at a first sale value of £5,450,000.

The edible crab fishery has traditionally been an inshore fishery operated from shore-launched cobbles. However, the development of the fleet has led to the expansion into significant offshore fishery grounds on the Holderness Coast. Accordingly, there are now two distinct fisheries – an inshore fishery (within 6 nm) operated from cobble day boats and smaller vessels from Bridlington and a predominantly offshore fishery operated from larger vessels out of Bridlington (offshore duration of 1-3 days). Some vessels operate across both fisheries – setting pots at different distances offshore depending on the time of year. Reported landings within NEIFCA jurisdiction increased from 1,174 tonnes in 2007 to 1,345 tonnes in 2011 (NEIFCA 2012). Combined landings from inshore and offshore were estimated at 3150 tonnes for 2012 (MMO 2012; Hough 2005). For 2012, using an average price per kilo across the year of £1.10, the combined edible crab fishery was estimated at a first sale value of £3,465,000.

Traditionally, velvet crabs were caught as bycatch in edible crab and lobster fisheries, and were not targeted in their own right until the 1980's following a collapse in the Spanish fisheries (Henderson & Leslie, 2010). They are now targeted in the earlier months of the year when lobster and edible catches are scarce. Landings data has shown a sharp decline in stock over recent years from 130 tonnes in 2007, to 39 tonnes in 2011. In 2011, using an average price per kilo across the year of £2.20, the velvet crab fishery was estimated at a first sale value of £85,800.

1.3 Current management

Current management approaches in the UK are directed from a jurisdiction perspective based upon regional, national or European boundaries, representing management units rather than biologically distinct populations (Bowlby *et al* 2008). In the UK the main management system for lobster and edible crab is a European adopted minimum landing size of 87mm carapace length and 130mm carapace width respectively, with additional specific conservation measures introduced on a regional basis. Within the NEIFCA district there are seven existing NEIFCA byelaws (see Annex 2-8) specifically applicable to crustacean species:

(a) Byelaw XXII. Permit to fish for and sell lobster, crab, velvet crab and whelk.
(b) Byelaw XIV. Removal of parts of lobsters from any fishery: prohibition of.
(c) Byelaw X. Shellfish: re-deposit of.
(d) Byelaw XIX. Parts of a Crab (removal of)
(e) Byelaw XX. Prohibition on Use of Crab (*Cancer pagurus*) for Bait.
(f) Byelaw XXI. Protection of 'V' notched lobsters.

(g) Byelaw XXVIII. Crustacea Conservation Byelaw.

NEIFCA also have a shellfish permit scheme restricting access to the inshore fishery to vessels up to 16m only. Permit conditions require recording of effort and landings. There is currently no overall limit on effort although this is expected to be addressed during Phase 2 of the implementation of the Crustacea Conservation Byelaw, when additional regulations will be proposed.

1.4 Strategic Environmental Assessment

Strategic Environmental Assessment (SEA) is a statutory process which aims to provide high level protection of the environment. It seeks to ensure the integration of environmental considerations in the preparation and adoption of plans and programmes, with a view to promoting sustainable development. During 2006, NESFC commissioned a consultant, Mott MacDonald, to pilot this process for assessing the environmental impacts of the NESFC shellfish management programme within its district, representing the first time, both in the UK and Europe, that the SEA process had been developed for a fisheries management regime. The assessment, delivered in full in 2008, provided a foundation for the consultation and in turn, creation of a set of management options for the shellfisheries within the NEIFCA district. The management recommendations that came out of the SEA were:

(a) Seasonal closures – restrictions on landing berried lobsters
(b) Increase minimum landing size – lobster, edible crab, whelk
(c) Introduction of maximum landing sizes
(d) Prohibition on landing cripples (clawless)
(e) Further restricted areas for trawling and dredging
(f) Restrictions on vessel size, e.g., large potters inside the 3nm
(g) Minimise discarding
(h) Pot limitations – suggested 500 per vessel
(i) Cap on number of (potting) permits issued
(j) Limit shore gathering mussels, winkles, cockles, 5 kg per day
(k) Improve habitat mapping and monitoring
(l) Greater use of zoning.

The first phase of the Crustacea Conservation Byelaw seeks to implement management recommendations a, b, d, f, and g; the second phase seeks to implement management recommendations h and i.

1.5 Rationale for Intervention

Larger vessels and improvements in gear design and other fishing equipment (e.g. roller haulers, self-shooting and electronics) have increased efficiency of the shellfish fleet, leading to more intense and sustained targeting of crab and lobster (Smith 2010). Reported landings data show a positive correlation between pots hauled and landings for lobster, however a decline in LPUE is apparent (NEIFCA 2012). Mortality estimates for the *H. gammarus* fishery have determined that fishing mortality is consistently high over the time series with lobster fishery dependent on the new shelling cohort and reliant on pre-recruit egg production (CEFAS 2011). Landings per unit effort (LPUE) for edible and velvet crab on the other hand are negatively correlated, notably the velvet crab fishery declined to 39 tonnes in 2011. In 2007, the North East England Lobster Pot Fishery was assessed against the Marine Stewardship Council (MSC) Principles and Criteria for Sustainable Fishing. Assessments of lobster stock status indicated that while the stock is stable, fishing pressure is high and the stock is not at a level consistent with attaining maximum sustainable yield and that levels of relative spawning potential are low. The assessment also demonstrated evidence that the edible crab stock was over-exploited and the status of velvet crabs is uncertain (Moody Marine MSC Assessment, 2008).

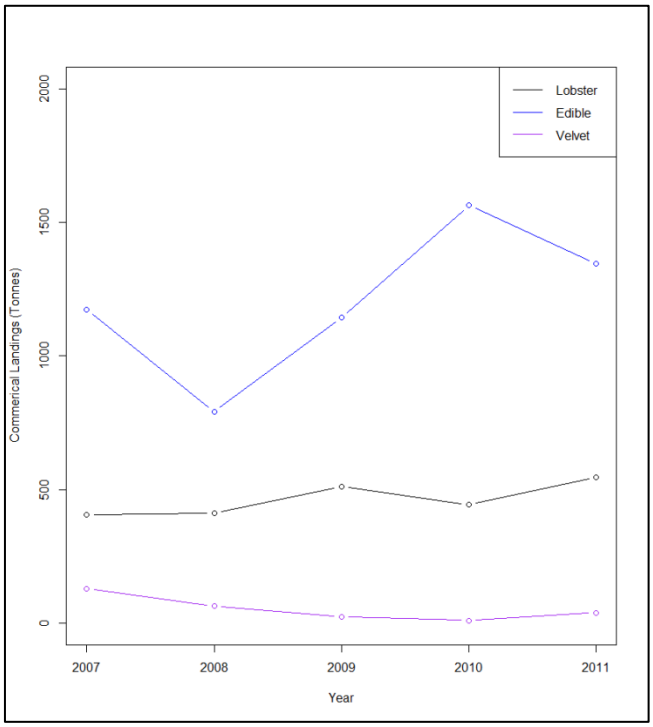

Figure 1: Landings trends for Commercial Crustacean Stocks within the NESFC District 2007 – 2011.

2. Options

The following policy options have been considered:

Option 0: Do nothing

This option would involve allowing the existing NEIFCA management regime to continue unchanged. Evidence suggests that to continue without any further management intervention would result in intensified effort and subsequent decline in crustacean fish stocks. In terms of the lobster fishery, it is expected that, due to the nature and structure of the lobster stock, this decline would be sudden thereby not allow sufficient response time for management authorities.

Option 1: Regulatory management A

A new conservation regulation encompassing legacy byelaws and new provisions specific to crustacean species. Such a regulation would unify multiple provisions that have a common conservation and economic objective and allow for a phased approach to improved management.

Option 2: Use of non-regulatory/voluntary measures

Due to the size of the district, the large number of vessels operating in the potting fishery and the need for 100% compliance to be effective, it is believed that voluntary agreements would not enable NEIFCA to achieve the stated objectives.

Option 3: Regulatory management B

A separate byelaw for each regulation. Currently, there are seven crustacea specific byelaws regulating the potting fishery within the district. The provisions contained within the proposed umbrella Crustacea Conservation Byelaw would create a further five. Processing numerous and disparate byelaws individually would increase regulatory and consultation fatigue within the industry and increase paperwork burden.

3. Preferred Option

Option 1 was determined as the most appropriate method of managing the commercial crustacean stocks within the NEIFCA district. The new byelaw will unify several Crustacea specific provisions, thereby allowing for ease of communication of the regulations to the target audience. Each of the regulations has common objectives and similar impacts on the fishery. This initial submission represents the first of two phases of regulatory implementation under the byelaw, where Phase 2 will focus on effort limitation.

4. Objective

This new and revised conservation byelaw is being created as a mechanism by which to implement some of the SEA management recommendations, incorporating existing regimes, and make crustacean relevant regulations easier to navigate for the user. To enhance the resilience of commercial crustacean fisheries within the NEIFCA district by increasing and protecting the spawning stock biomass and relative reproductive potential of each species.

5. Byelaws Revoked in Full

The following byelaws are being revoked and subsumed under the Crustacea Conservation Byelaw without any regulatory amendment. Therefore no regulatory impacts have been identified.

- Existing Byelaw XIX. Parts of a Crab: Removal of.
- Existing Byelaw XIV. Removal of Parts of Lobsters from Any Fishery: Prohibition of.
- Existing Byelaw XX. Prohibition on Use of Crab (*Cancer pagurus*) for Bait

6. Impacts

The following section assesses the regulatory impact, both ecological and economic, from new or amended regulations proposed under the Crustacea Conservation Byelaw.

6.1 Vessel Length

6.1.1 Ecological

Significant effort is congregated inshore during the summer months, leading to focused and intense static gear concentrations. The fleet is continually upgrading with both vessel efficiency and effort increasing, however operational range and effort distribution isn't necessarily extending further offshore. The current harvest regime encourages focused high intensity extractions over a limited seasonal period, resulting in high fishing mortality and an inshore aggregation of the fleet.

6.1.2 Socio-economic

No formal landings have been reported from within ICES belt A for vessel which would be impacted by this regulation, therefore NEIFCA is unable to accurately quantify the removals associated with this demographic. However, NEIFCA quayside monitoring and patrol vessel sightings can confirm the presence of large vessels fishing within the 3nm, particularly during the late summer months. Eleven registered vessels have been identified that fall outside the proposed restricted vessel length within the Authority's district however, as there are no formal reported landings within the 3nm, no negative economic impact could be estimated.

Overall positive impacts are anticipated to include:

- Decreased inshore effort density

- Decreased market saturation and possible higher market price
- Increased spawning stock biomass and decrease in Q3 mortality
- Stabilised fleet composition, effort capacity and efficiency

6.2 Escape Gaps

Existing Byelaw XXVIII. Crustacea Conservation Byelaw.

The purpose of this byelaw is to reduce undersize bycatch and damage associated with discards. The restrictions imposed under the existing byelaw will remain in place out to the 3nm limit between Tyneside and Teesside. In addition to this, the regulation is being extended South of Teesside out to the 6nm limit. The escape gaps provide a selective gear restriction in that they effectively only retain sized lobsters, >87mm.

6.2.1 Ecological

NEIFCAs 2007-2011 offshore monitoring program highlighted the significant level of discards in the static pot fishery (annual range of 71-83%). In addition, the SEA proposed reducing discards from potting as one of the management recommendations as, after a trap has been hauled, discarded animals are likely to be displaced from their original home ground and are probably more vulnerable to predation. Discard animals may also suffer damage during the clearing process (Mott MacDonald 2008). The escape gaps will provide size selectivity on the seabed rather than on the boat thereby reducing discard associated mortality.

Numerous trials have been carried out to determine the effectiveness of escape gaps in enhancing selectivity and reducing discards. The results show:

- Minor loss of 87-89mm lobster in seeded pots in 2012 trial (NEIFCA data)
- No loss of >MLS lobster in seeded pots in 2011
- No statistically significant loss of >MLS lobsters in pots worked in the 2000 trial (CEFAS data)
- Decrease <MLS mortality
- Decrease target and non-target in-pot mortality
- Decrease target and non-target in-pot damage

6.2.2 Socio-economic

NEIFCA carried out extensive consultations through 2008-2011 with the industry on the SEA management recommendations via a series of workshops and open meetings and a short questionnaire based survey, conducted in 2010, indicated 40% (n=87) support for escape gaps across the district. Increasing the MLS for lobster to 90mm was examined as an alternative option to the installation of escape gaps however the fishing industry stated a preference for escape gaps. NEIFCA conducted further trials in 2012 to assess the retaining/loss of sized lobsters when these were installed in pots. Results showed that 7.25 % were lost, all male, within the 87-89mm size range. Previous study work, undertaken in 2000, showed some loss of lobster above the minimum landing size from pots with escape gaps installed but these losses were not large enough to be statistically significant (CEFAS 2002). Based upon these estimates a financial impact of £50,000 has been projected, although this is considered a temporary displacement as animals will become retainable within 1 moult.

A series of one-to-one consultations with operators during February 2013 identified 53% support, 30% neutral and 17% opposition to the introduction of escape gaps.

6.3 Edible Minimum Landing Size 140mm

6.3.1 Ecological

Moult frequency for edible crabs is approximately once per year at an average of 10mm growth rate per moult period for animals at 130mm. Average female CW50 is at approximately 132mm, therefore by increasing the MLS to 140mm, spawning stock biomass is being retained in the fishery for at least one spawning period.

6.3.2 Socio-economic

A one year direct impact has been identified for the fishery generated by the first year displacement of animals from 130 mm to 140 mm, estimated at £275,000.

A series of one-to-one consultations with operators during February 2013 identified 47% support, 46% neutral and 7% opposition to the introduction of a 140mm MLS.

6.4 Edible and Velvet Crab for Bait

Existing Byelaw XX. Prohibition on Use of Crab (*Cancer pagurus*) for Bait.

In addition, the Velvet Crab (*Necora puber*) has been included. While the Velvet Crab is landed commercially in the earlier months of the year, during the main lobster and edible crab season it forms a by-catch species. Recent years have seen the velvet fishery collapse from 130 tonnes in 2007 to 39 tonnes in 2011, although market forces may also be playing a part. However, the remaining fishery is partly being impacted by the retention and use of velvet crab by-catch as a bait source.

6.5 Clawless Lobsters

6.5.1 Ecological

Anecdotal evidence has highlighted that retaining no-clawed / non-functional clawed lobsters is increasing within the district with the advent of roller haulers. It is difficult to accurately quantify the landings of non-clawed lobsters as they are not being recorded on either DEFRA returns or through quayside data collection. However, based on officer observations, inference has been made that approximately 5 tonnes are retained by vessels per year that enter the local market.

By retaining clawless lobsters in the fishery, the following benefits have been identified:

- Increased spawning stock biomass
- Increased egg production
- Increased weight with claw regrowth
- Improvement of product quality and regional brand

6.5.2 Socio-economic

There is no negative economic impact anticipated for this regulation. Due to their sub-market value, merchants will not accept clawless lobsters; however, there is anecdotal reference to a direct sale market for these lobsters. While they have little standard market value, they can potentially saturate local retail outlets with poor quality substandard products.

7. Consultation

The proposed new provisions contained within this umbrella regulation have been subject to discussion and consultation over a number of years including through the development of the SEA process during 2007 and 2008 and more recently at focused SEA meetings and workshops during 2010 and 2011 (NESFC 2010, 2011). They have also been highlighted in newsletters circulated throughout the Authority's area during 2011. In addition to this historic consultation the measures will be subject to a further and final 28 day process, throughout the Authority's area, exceeding the minimum guidelines.

8. Implementation

It is envisaged a grace period of 6 months will be allowed for full compliance with the escape gap provision due to the labour and time involved in installation. The remaining provisions will be implemented immediately upon confirmation and inception of the byelaw. Any subsequent changes in compliance and enforcement actions will be monitored through the Post Implementation Review Plan.

Annexes

Annex 1 should be used to set out the Post Implementation Review Plan as detailed below. Further annexes may be added where the Specific Impact Tests yield information relevant to an overall understanding of policy options.

Annex 1: Post Implementation Review (PIR) Plan

A PIR should be undertaken, usually three to five years after implementation of the policy, but exceptionally a longer period may be more appropriate. If the policy is subject to a sunset clause, the review should be carried out sufficiently early that any renewal or amendment to legislation can be enacted before the expiry date. A PIR should examine the extent to which the implemented regulations have achieved their objectives, assess their costs and benefits and identify whether they are having any unintended consequences. Please set out the PIR Plan as detailed below. If there is no plan to do a PIR please provide reasons below.

Basis of the review: [The basis of the review could be statutory (forming part of the legislation), i.e. a sunset clause or a duty to review , or there could be a political commitment to review (PIR)]; All NEIFCA byelaws are periodically reviewed on a rolling basis through the Authority's internal Science and Governance Working Group. A 3 year review in 2018 has been proposed for this regulation.
Review objective: [Is it intended as a proportionate check that regulation is operating as expected to tackle the problem of concern?; or as a wider exploration of the policy approach taken?; or as a link from policy objective to outcome?] The review will check the continued appropriateness of the umbrella regulation, in consideration of stock sustainability and any other issues that may arise post implementation.
Review approach and rationale: [e.g. describe here the review approach (in-depth evaluation, scope review of monitoring data, scan of stakeholder views, etc.) and the rationale that made choosing such an approach] Review of stock reports in relation to long-term LPUE trends, monitoring proxies and stock reference points
Baseline: [The current (baseline) position against which the change introduced by the legislation can be measured] 2010-2014 data sources
Success criteria: [Criteria showing achievement of the policy objectives as set out in the final impact assessment; criteria for modifying or replacing the policy if it does not achieve its objectives] Positive response in relation to monitoring proxies and stock reference points
Monitoring information arrangements: [Provide further details of the planned/existing arrangements in place that will allow a systematic collection systematic collection of monitoring information for future policy review] Catch returns, quayside sampling, offshore sampling, fishing effort survey and stakeholder consultation
Reasons for not planning a review: [If there is no plan to do a PIR please provide reasons here]