



**EASTERN SEA FISHERIES JOINT COMMITTEE**

**FISHERIES MANAGEMENT POLICIES**



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The management of the molluscan shellfisheries in the Wash was strengthened considerably in 1993 with the introduction of the Wash Fishery Order 1992. The Order enabled the Joint Committee to continue managing the fisheries directly. The introduction of this new legislation also provided much greater potential flexibility in the management approach applied to these fisheries.

Cockle and mussel stock crashes in the mid 1990's prompted a comprehensive review of how the fisheries in the Wash were being managed. It was evident to the managers, conservationists and local fishermen that a more rigorous management was required in order to protect stocks and dependent wildlife. The Joint Committee was fortunate that it had a dedicated research vessel and staff that were able to provide shellfish monitoring data and expert advice necessary to inform decision makers.

Immediate changes were made to the management of the fisheries. A quota (Total Allowable Catch) was applied to the cockle fishery for the first time in 1998. The management approach has continued to evolve with the development of a suite of measures, many of which have now been recognised practice for many years. However, agreement on the policies set out in this document was only achievable through the adaptive co-management approach to the fisheries that has been taken during the last few years. Strengthening communication links between conservation bodies, fishermen and the Joint Committee has been crucial in leading to a greater mutual understanding of the issues facing the fisheries and conservationists. This approach has removed much of the misconceptions and mistrust on all sides and has accrued further benefits by promoting a high level of self compliance with the existing legislation and the policies by fishermen.

Significantly, the agreement of the management policies by the Joint Committee has enabled Natural England to change the conservation status of many parts of the Wash Site of Special Scientific Interest, from Unfavourable Declining to Unfavourable Recovering. Natural England also accept that the current management approach to the fisheries will not inhibit the Conservation Objectives for the Wash and North Norfolk Coast European Sites being reached, which in turn provides fishermen with a more certain future.

Matthew Mander  
Clerk and Chief Fishery Officer

This document outlines the broad principles and associated management measures that are applied by the Eastern Sea Fisheries Joint Committee (ESFJC) in its management of the Regulated cockle fishery in the Wash, UK. The Policy reflects current ideology behind the management of the fishery, based on rigorous principles that are demonstrated by a range of flexible measures that enable the management approach to be applied appropriately to each annual cockle fishery.

Two significant factors in the development of this Policy are the expansion of the inshore fisheries management remit to include wider environmental considerations, and the increased emphasis on stakeholder involvement in order to promote co-management of this fishery amongst the local fishing industry. The Wash is designated as a Site of Special Scientific Interest, a Special Area of Conservation, a Special Protection Area and a Ramsar Site, in reflection of its national and international importance for nature conservation – in particular for its waterbird populations. ESFJC has produced this Policy through liaison with members of the Wash fishing industry, marine conservation advisors at Natural England, shellfish scientists at Centre for Environment, Fisheries & Aquaculture Science, and the Dutch shellfisheries consultant MarinX.

The ESFJC's strategic aim is:

*To regulate, protect and develop the fisheries within the Committee's District in a manner that ensures sustainable viability for the foreseeable future and compliance with the Committee's environmental responsibilities*

and the principles within this Policy are thus derived as:

- (i) sustainable resource exploitation,
- (ii) fishery protection,
- (iii) fishery development, and
- (iv) environmental protection.

ESFJC applies the management measures described within this Policy using its power as a Local Authority to create and enforce byelaws, and its position as sole grantee of the Wash Fishery Order 1992 to protect and regulate the fishery. The management measures identified relate to one or more of the key principles.

The Policy sets out 23 management measures that will allow a cockle fishery to operate within the Wash Regulated Fishery whilst favourable condition status of the SSSI is achieved and sustained. Cockle stocks within the Wash will also vary in response to environmental parameters that are outside the control of fisheries managers. An important factor in the success of the Wash fisheries in recent years has been the Joint Committee's ability to be adaptive in its management. It is expected that this Policy will be updated as relevant information becomes available. Irrespective of this principle, the Joint Committee will also review the policy on a triennial basis to ensure that the management measures continue to support a sustainable fishery and do not prevent further recovery of stocks in order to meet the Conservation Objectives for The Wash.

One of the Conservation Objectives is to achieve a minimum of 11,000 tonnes of total stock in The Wash as a whole (including le Strange) measured at the time of the Joint Committee's annual spring stock surveys and prior to the opening of the public fishery.

A fishery can proceed below the Conservation Objective stated level, provided the appropriate assessment demonstrates that the proposed fishery will not prevent stocks returning to the minimum level as assessed by the following year's stock assessment. This can be demonstrated by providing information on recent trends in spatfall and recruitment to the cockle stock (analysis of size class distribution of stock), related to recent fishing activities (and other activities that may reduce stock levels – through the in combination assessment).

Overall, the site will be in favourable condition for this attribute if the 6 year mean achieves or exceeds 11,000t total stock.

## PRINCIPLES & MANAGEMENT MEASURES: COCKLES

### PRINCIPLE

- Sustainable exploitation:
- Requires good knowledge of stock characteristics and understanding of stock dynamics;
  - Effort limitation to prevent over-fishing;
  - Reduced fishing intensity, with increased recovery time and lower daily disturbance levels.

### MANAGEMENT MEASURE

1	<p><b>Extensive cockle stock surveys:</b> ESFJC conduct extensive surveys to evaluate the distribution, abundance and stock composition characteristics of the Wash cockle population prior to and following the fishing season. This enables the total fishable stock to be quantified, suitable fishing areas to be identified, fishing mortality to be quantified, and spatfall and recruitment levels to be assessed.</p>
2	<p><b>Minimum spawning stock biomass:</b> The fishery will not be opened unless a minimum of 3,000 tonnes adult cockle (<math>\geq 14\text{mm}</math> width) is identified in the ESFJC surveys.</p>
3	<p><b>Total Allowable Catch (TAC) quota:</b> The quota for the intertidal cockle fishery can be up to 33.3% of the total adult stock (<math>\geq 14\text{mm}</math> width) identified in the ESFJC surveys, provided stocks do not go below the thresholds stated in the policy. This quota is sub-divided into separate allocations for the dredged and handworked fisheries; allocations may be altered according to stock and socio-economic conditions.</p>
4	<p><b>Limited licence entitlement:</b> The maximum number of entitlements to a Wash Fishery Order licence, which is required to fish the Regulated cockle fishery, is limited to 68. The Order stipulates the conditions under which entitlement holders may purchase a dredging or handworked licence.</p>
5	<p><b>Limiting duration of fishery by using specified opening date/stated days:</b> The dredged cockle fishery is limited to four days per week, from an agreed opening date. The handworked cockle fishery is available seven days per week, but effectively operates in ten days per fortnight because of tidal restrictions.</p>

## PRINCIPLE

- Fishery (stock) protection:
- Protection of juvenile stocks to enable their growth into adult spawning stocks;
  - Minimising discarding, which equates to additional fishing mortality;
  - Ensuring fishing gear is appropriate type and scale for the fishery to minimise excessive damage to remaining stocks.

## MANAGEMENT MEASURE

6	<p><b>Minimum size for cockles:</b> no legal minimum landing size is stipulated. However, ESFJC's management measures are based on a differentiation between juvenile and adult cockles, the latter having achieved a minimum size of 14mm width (approx. 19-21mm length).</p> <p><b>Selection of cockle beds to be opened to the fishery (according to stock composition):</b> Cockle bed areas containing a significant proportion of juvenile stocks will not be opened to the cockle fishery. Usually, ESFJC requires that cockle beds contain at least 70% adult stock, but this level can be varied where it can be shown to benefit the fishery (see management measure 19). ESFJC provides charts to entitlement holders identifying areas opened to the fishery.</p>
7	<p><b>Approved design of fishing gear:</b> All equipment used in the fishery must be of a design approved by the Joint Committee.</p>
8	<p><b>Mandatory riddling of catch <i>in situ</i>:</b> Cockles fished by dredge must be riddled where they are fished, to return juvenile and small adult cockles to the substratum. ESFJC research has demonstrated that undersized cockles returned to the sea will survive and re-enter the cockle population.</p>
9	<p><b>Smash rate limit:</b> No more than 10% (by weight) of cockles may be smashed during the dredge fishing operation. A Certificate of Approval, issued by ESFJC, is required by each vessel wishing to participate in the dredge fishery, and can only be issued once that vessel has demonstrated a smash rate of &lt;10%.</p>
10	<p><b>Maximum dredge head width:</b> Hydraulic suction dredge head inside opening (horizontal) must not exceed 76cm.</p>
11	<p><b>Maximum number of dredges:</b> No vessel may deploy more than one dredge.</p>
12	<p><b>Maximum vessel length:</b> No vessel over 14m in length can participate in the Regulated cockle fisheries, unless subject to a derogation.</p>
13	<p><b>Monitoring and enforcement of quota:</b> ESFJC Fishery Officers conduct frequent quayside inspections to inspect cockle landings. Licence holders are also required to provide catch returns on a weekly basis. ESFJC enforcement presence in the Wash is increased during the cockle dredge fishery.</p>
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## PRINCIPLE

- Fisheries development:
- Maximise returns from the fishery whilst improving conservation benefits;
  - Encourage diversification within the Wash fisheries;
  - Ensure that the cockle fisheries do not have a detrimental effect on other fisheries.

## MANAGEMENT MEASURE

15	<p><b>Specified bar spacing:</b> The bar spacing on the riddle and dredge head will be specified by ESFJC. The appropriate bar spacing will depend upon the local stock composition characteristics. Usually 12mm will be the specified spacing for both dredge head and riddle. The bar spacing may be increased if deemed beneficial to the fishery (see management measure 19).</p>
16	<p><b>Limiting vessels to a single method of fishing:</b> Only one fishery (either dredged or handworked) may be targeted by a fishing vessel in one calendar day. No hydraulic suction dredging equipment shall be on board any vessel participating in the handworked cockle fishery.</p>
17	<p><b>Daily vessel quota:</b> A maximum of four tonnes of cockles per vessel participating in the dredged fishery and two tonnes per vessel in the handworked fishery may be taken per day.</p>
18	<p><b>Buffer zone around mussel beds:</b> Where cockle beds are adjacent to mussel beds, a 100m buffer zone should be introduced around the mussel beds, for the purposes of the dredged fishery. These buffer zones are identified on the charts provided by ESFJC to entitlement holders prior to the opening of a dredged fishery.</p>

PRINCIPLE	MANAGEMENT MEASURE
<p>Environmental protection:</p> <ul style="list-style-type: none"> <li>Proposed fisheries must be assessed in detail to ascertain likely impacts on wildlife and habitats [in addition to evaluating impacts on the fishery itself];</li> <li>Maximise opportunity for ESFJC to gather relevant environmental data, as practicable, during the course of stock surveys and other site visits;</li> <li>Further advice should be sought from appropriate environmental sources to inform impact assessment;</li> <li>Undertake own and support external research work as appropriate to improve knowledge and understanding of fishery impacts.</li> </ul>	<p>19 <b>Appropriate Assessment of cockle fishery proposals:</b> Proposed dredged and handworked cockle fisheries are subject to detailed assessments by ESFJC, under advice from Natural England, to ascertain their likely impact on conservation features of the Wash and North Norfolk Coast European Marine Site (EMS).</p>
	<p>20 <b>Monitoring of sediment characteristics within cockle beds:</b> Sediment maps are produced by recording sediment type at cockle sample stations, to identify which habitats are suitable for dredging. Muddy sediment areas are excluded from the dredged fishery.</p>
	<p>21 <b>Monitoring of indicator species:</b> The distribution of three indicator species <i>Macoma balthica</i> (Baltic tellin), <i>Lanice conchigela</i> (Sand mason), and <i>Arenicola marina</i> (Lugworm), is recorded during cockle surveys.</p>
	<p>22 <b>Protection of seal haulout sites during sensitive periods:</b> Cockle beds, or parts thereof, will not be opened to fishing if there is deemed to be risk of disturbing known seal haulouts with a particular focus on pupping, moulting and breeding periods.</p>
	<p>23 <b>Closure of fishery if fishing activity is found to be damaging:</b> The cockle fishery can be closed on the advice of the Clerk &amp; Chief Fishery Officer if he deems that fishing activities are damaging the site.</p>

This document outlines the broad principles and associated management measures that are applied by the Eastern Sea Fisheries Joint Committee (ESFJC) in its management of the Regulated mussel fishery in the Wash, UK. The Policy reflects current ideology behind the management of the fishery, based on rigorous principles that are demonstrated by a range of flexible measures that enable the management approach to be applied appropriately to each annual mussel fishery.

Two significant factors in the development of this Policy are the expansion of the inshore fisheries management remit to include wider environmental considerations, and an increased emphasis on stakeholder involvement in order to promote co-management of this fishery amongst the local fishing industry. The Wash is designated as a Site of Special Scientific Interest, a Special Area of Conservation, a Special Protection Area and a Ramsar Site, in reflection of its national and international importance for nature conservation – in particular for its waterbird populations. ESFJC has produced this Policy through liaison with members of the Wash fishing industry, marine conservation advisors at Natural England, shellfish scientists at Centre for Environment, Fisheries & Aquaculture Science, and the Dutch shellfisheries consultant MarinX.

The ESFJC’s strategic aim is:

*To regulate, protect and develop the fisheries within the Committee’s District in a manner that ensures sustainable viability for the foreseeable future and compliance with the Committee’s environmental responsibilities*

and the principles within this Policy are thus derived as:

- (v) sustainable resource exploitation,
- (vi) fishery protection,
- (vii) fishery development, and
- (viii) environmental protection.

ESFJC applies the management measures described within this Policy using its power as a Local Authority to create and enforce byelaws, and its position as sole grantee of the Wash Fishery Order 1992 to protect and regulate the Wash mussel fishery. The management measures within the Policy relate to one or more of the key principles.

The Policy sets out 23 management measures that will allow a mussel fishery to operate within the Wash Regulated fishery whilst favourable condition status of the SSSI is achieved and sustained. Mussel stocks within the Wash will also vary in response to environmental parameters that are outside the control of fisheries managers. An important factor in the success of the Wash fisheries in recent years has been the Joint Committee's ability to be adaptive in its management. It is expected that this Policy will be updated as relevant information becomes available. Irrespective of this principle, the Joint Committee will also review the policy on a triennial basis to ensure that the management measures continue to support a sustainable fishery and does not prevent further recovery of stocks in order to meet the Conservation Objectives for The Wash.

One of the Conservation Objectives is to achieve a minimum stock of 12,000 tonnes total stock of which there should be 7,000 tonnes fishable, sized stock ( $\geq 45\text{mm}$  in length) in The Wash as measured at the time of the annual autumn Joint Committee stock surveys and prior to the opening of the Regulated Fishery.

A fishery can proceed below the Conservation Objective stated level, provided the Appropriate Assessment demonstrates that the proposed fishery will not prevent stocks returning to the minimum levels as assessed by the following year's stock assessment. This can be demonstrated by providing information on recent trends in spatfall and recruitment to the mussel stock (analysis of size class distribution of stock), related to recent fishing activities (and other activities that may reduce stock levels – through the in combination assessment).

Overall, the site will be in favourable condition for this attribute if the 6 year mean achieves or exceeds 12,000t total stock and 7,000t fishable stock

## PRINCIPLES & MANAGEMENT MEASURES: MUSSELS

PRINCIPLE	MANAGEMENT MEASURE
<p>Sustainable exploitation:</p> <ul style="list-style-type: none"> <li>Requires good knowledge of stock characteristics and understanding of stock dynamics;</li> <li>Effort limitation to prevent over-fishing;</li> <li>Reduced fishing intensity, with increased recovery time and lower daily disturbance levels.</li> </ul>	<p><b>1 Stock monitoring:</b> ESFJC conduct extensive surveys to evaluate the distribution, abundance and stock composition characteristics of the Wash mussel population prior to and following the fishing season. This enables the total fishable stock to be quantified, suitable fishing areas to be identified, fishing mortality to be quantified, spatfall and recruitment levels to be assessed, and an estimation of future fishery characteristics to be made.</p>
	<p><b>2 Minimum spawning stock biomass:</b> The fishery will not be opened unless a minimum <u>overall</u> stock of 10,000 tonnes is identified in the ESFJC surveys. A minimum adult stock (<math>\geq 45\text{mm}</math> in length) would be set at 5,000 tonnes</p>
	<p><b>3 Total Allowable Catch (TAC) quota:</b> The quota for the dredged, intertidal, harvestable mussel fishery can be up to 20% of the total adult stock (<math>\geq 45\text{mm}</math> length) identified in the ESFJC surveys, and an additional 2% of the total for the handworked fishery. Stocks cannot go below the thresholds stated in the policy as a result of fishing activity. This quota is sub-divided into separate allocations for the dredged and handworked fisheries; allocations may be altered according to stock and socio-economic conditions.</p>
	<p><b>4 Daily vessel quota:</b> A maximum of four tonnes of mussels per vessel participating in the dredged and handworked fishery may be taken per day.</p>
	<p><b>5 Limited licence entitlement:</b> The maximum number of entitlements to a Wash Fishery Order licence, which is required to fish the Regulated mussel fishery, is limited to 68. The Order stipulates the conditions under which entitlement holders may purchase a dredging or handworked licence.</p>
	<p><b>6 Limiting duration of fishery by using specified opening date/stated days:</b> The dredged mussel fishery is limited to five days per week, from an agreed opening date. The handworked mussel fishery is available seven days per week, but effectively operates in ten days per fortnight because of tidal restrictions.</p>

## PRINCIPLE

- Fishery (stock) protection:
- Protection of juvenile stocks to enable their growth into adult spawning stocks;
  - Minimising discarding, which equates to additional fishing mortality;
  - Ensuring fishing gear is appropriate type and scale for the fishery to minimise excessive damage to remaining stocks.

<b>MANAGEMENT MEASURE</b>	
7	<p><b>Minimum size for mussels:</b> Only mussels ≥45mm length may be landed from the harvestable fishery.</p>
8	<p><b>Selection of mussel beds to be opened to the fishery (according to stock composition and bed vulnerability):</b> Mussel bed areas containing a significant proportion of juvenile stocks will not be opened to the harvestable fishery. Usually, ESFJC requires that mussel beds contain at least 70% adult stock, but this level can be varied where it can be shown to benefit the stock (see management measure 20). ESFJC provides charts to entitlement holders identifying areas opened to the fishery. Beds containing &lt;70% adult stock may be opened to the relaying fishery (see I6).</p>
9	<p><b>Approved design of fishing gear:</b> All equipment used in the fishery must be of a design approved by the Joint Committee.</p>
10	<p><b>Mandatory riddling of catch <i>in situ</i>:</b> Mussels fished by dredge must be riddled where they are fished, to return juvenile and small adult mussels to the substratum. ESFJC research has demonstrated that undersized mussels returned to the sea will survive and re-enter the mussel population.</p>
11	<p><b>Maximum exploitation level (per mussel bed) / Minimum bed density:</b> In order to prevent mussel beds being completely removed, a maximum exploitation level is selected for each bed, currently being set between 25-50% adult stock biomass. Management of exploitation of mussels at the bed level is being considered further, with a minimum density threshold under assessment as a management measure. Initially, a level of 25 tonnes/ha will be applied – if a mussel bed contains stocks at a density below this level, it will not be opened to the fishery.</p>
12	<p><b>Maximum dredge head width:</b> Dredge head inside opening (horizontal) must not exceed 1m.</p>
13	<p><b>Maximum number of dredges:</b> No vessel may deploy more than two dredges when targeting the Regulated mussel fishery.</p>
14	<p><b>Maximum vessel length:</b> No vessel over 14m in length can participate in the Regulated mussel fisheries, unless subject to a derogation.</p>
15	<p><b>Monitoring and enforcement of quota:</b> ESFJC Fishery Officers conduct frequent quayside inspections to inspect landings. Licence holders are also required to provide catch returns on a weekly basis. ESFJC enforcement presence in the Wash is increased during the mussel dredge fishery.</p>

## PRINCIPLE

- Fisheries development:
- Maximise returns from the fishery whilst improving conservation benefits;
  - Encourage diversification within the Wash fisheries;
  - Ensure that the mussel fisheries do not have a detrimental effect on other fisheries.

## MANAGEMENT MEASURE

16	<p><b>Promotion of seed fishery:</b> In recognition that mussel seed is important for stocking the Several fishery lays, a quota can be set for the purpose of relaying seed, if stock conditions permit. The priority for selection of seed beds to be utilised in this manner will be given to sublittoral mussel beds (see separate Policy), vulnerable (ephemeral) intertidal beds, and established intertidal beds respectively.</p>
17	<p><b>Use of vulnerable beds:</b> All stock from beds identified as being vulnerable will be opened to the relaying fishery. Vulnerable beds will be identified by the ESFJC based on knowledge and understanding of the site.</p>
18	<p><b>Minimum seed mussel biomass:</b> No relaying fishery will be opened from the established intertidal beds when the total intertidal stock of mussel of &lt; 45mm length is &lt; 5,000 tonnes.</p>
19	<p><b>Total Allowable Catch (TAC) quota (seed fishery):</b> The maximum quota for the dredged, intertidal, relaying fishery is set at 20% of the total juvenile stock (<math>\leq</math> 45mm length) identified in the ESFJC surveys, and an additional 2% of the total for the handworked fishery. This quota is sub-divided into separate allocations for the dredged and handworked fisheries, according to stock and socio-economic conditions.</p>

## PRINCIPLE

- Environmental protection:
- Proposed fisheries must be assessed in detail to ascertain likely impacts on wildlife and habitats [in addition to evaluating impacts on the fishery itself];
  - Maximise opportunity for ESFJC to gather relevant environmental data, as practicable, during the course of stock surveys and other site visits;
  - Further advice should be sought from appropriate environmental sources to inform impact assessment;
  - Undertake own and support external research work as appropriate to improve knowledge and understanding of fishery impacts;
  - Encourage biodiversity by protecting mussel bed areas that are locally significant in terms of their heterogeneity.

## MANAGEMENT MEASURE

20	<p><b>Appropriate Assessment of mussel fishery proposals:</b> Proposed dredged and handworked mussel fisheries are subject to detailed assessments by ESFJC, under advice from Natural England, to ascertain their likely impact on conservation features of the Wash and North Norfolk Coast European Marine Site (EMS).</p>
21	<p><b>Protection of mussel bed areas that contain a mix of year classes:</b> Size composition of mussels is assessed during stock surveys, which enables identification of heterogeneous mussel bed areas in terms of age and size structure that support high levels of biological diversity. These areas will be excluded from the mussel fishery, as appropriate, through liaison with Natural England.</p>
22	<p><b>Protection of seal haulout sites during sensitive periods:</b> Mussel beds, or parts thereof, will not be opened to fishing if there is deemed to be risk of disturbing known seal haulouts, with a particular regard to pupping, moulting and breeding periods.</p>
23	<p><b>Closure of fishery if fishing activity is found to be damaging:</b> The mussel fishery can be closed on the advice of the Clerk &amp; Chief Fishery Officer if he deems that fishing activities are damaging the site.</p>

## INTRODUCTION TO THE SUB LITTORAL MUSSEL MANAGEMENT POLICY

4

This document outlines the broad principles and associated management measures that are applied by the Eastern Sea Fisheries Joint Committee (ESFJC) in its management of the Regulated, sublittoral mussel fishery in the Wash, UK. The Policy reflects current ideology behind the management of the fishery, based on rigorous principles that are demonstrated by a range of flexible management measures that enable the management approach to be applied appropriately for each sublittoral mussel fishery.

Two significant factors in the development of this Policy are the expansion of the inshore fisheries management remit to include wider environmental considerations, and the increased emphasis on stakeholder involvement in order to promote co-management of this fishery amongst the local fishing industry. The Wash is designated as a Site of Special Scientific Interest, a Special Area of Conservation, a Special Protection Area and a Ramsar Site, in reflection of its national and international importance for nature conservation and in particular, for its waterbird populations. ESFJC has produced this Policy through liaison with members of the Wash fishing industry, marine conservation advisors at Natural England, shellfish scientists at Centre for Environment, Fisheries & Aquaculture Science, and the Dutch shellfisheries consultant MarinX.

The ESFJC's strategic aim is:

*To regulate, protect and develop the fisheries within the Committee's District in a manner that ensures sustainable viability for the foreseeable future and compliance with the Committee's environmental responsibilities*

and the principles within this Policy are thus derived as:

- (ix) sustainable resource exploitation,
- (x) fishery protection,
- (xi) fishery development, and
- (xii) environmental protection.

ESFJC applies the management measures described within this Policy using its power as a Local Authority to create and enforce byelaws, and its position as sole grantee of the Wash Fishery Order 1992 to protect and regulate the fishery. The management measures identified relate to one or more of the key principles.

The Policy sets out 17 management measures that will allow a sublittoral mussel fishery to operate within the Wash Regulated fishery whilst favourable condition status of the SSSI is achieved and sustained. Sublittoral mussel stocks within the Wash will also vary in response to environmental parameters that are outside the control of fisheries managers. An important factor in the success of the Wash fisheries in recent years has been the Joint Committee's ability to be adaptive in its management. It is expected that this Policy will be updated as relevant information becomes available.

## PRINCIPLES & MANAGEMENT MEASURES: SUB LITTORAL MUSSELS

PRINCIPLE	MANAGEMENT MEASURE
<p>Maximise use of a valuable, ephemeral resource:</p> <ul style="list-style-type: none"> <li>• Requires a knowledge of stock characteristics and understanding of stock dynamics;</li> <li>• Consider food requirements of natural predators;</li> <li>• Consider relative value of shellfish food supply in subtidal or intertidal position, for natural predators including protected bird species.</li> </ul>	<p><b>Annual sublittoral mussel surveys:</b> ESFJC conduct benthic surveys to evaluate the distribution, abundance and stock composition characteristics of sublittoral mussel beds in the Wash. Sublittoral mussel beds can be difficult to locate, because complete coverage of the subtidal area is not practical, and it is difficult to accurately determine the extent, density and overall abundance of mussels within identified beds. ESFJC surveys enable a total fishable stock to be estimated, suitable fishing areas to be identified, and annual changes to be recorded.</p> <p><b>Overall Total Allowable Catch (TAC) quota:</b> The overall quota is set at 80% total identified area. The ephemeral nature of sublittoral mussel beds means that unless the stocks are harvested, they are very likely to be lost to natural predation or physical scouring. The overall quota allows the majority of the resource to be transferred onto intertidal areas for cultivation and future harvesting. Leaving a proportion of sublittoral mussel stocks <i>in situ</i> ensures that this food source for natural predators (e.g. eider duck, starfish and shore crab) is not completely removed from its settlement location.</p> <p><b>Daily vessel quota:</b> No daily quota is specified, since there would be no benefit in doing so. Experience has shown that once a sublittoral mussel bed has been disturbed, it is quickly lost through predation and scouring.</p> <p><b>Fishery opening times / dates:</b> No restriction is placed on the number of days per week that the fishery may be targeted, since there would be no benefit in doing so. Experience has shown that once a sublittoral mussel bed has been disturbed, it is quickly lost through predation and scouring.</p>
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## PRINCIPLE

Fishery (stock) protection:

- Protection of juvenile stocks to enable their growth into adult spawning stocks;
- Ensuring fishing gear is appropriate type and scale for the fishery to minimise excessive damage to remaining stocks.

## MANAGEMENT MEASURE

5	<b>Limited licence entitlement:</b> The maximum number of entitlements to a Wash Fishery Order licence, which is required to fish the Regulated sublittoral mussel fishery, is limited to 68. The Order stipulates the conditions under which entitlement holders may purchase a dredging licence.
6	<b>Monitoring and enforcement of quota:</b> ESFJC conduct sublittoral surveys of mussel bed areas and inspections of vessels to estimate uptake of quota.
7	<b>Maximum dredge head width:</b> Dredge head inside opening (horizontal) must not exceed 2m.
8	<b>Maximum number of dredges:</b> No vessel may deploy more than two dredges at any one time.
9	<b>Maximum vessel length:</b> No vessel over 14m in length can participate in the Regulated sublittoral mussel fisheries, unless subject to a derogation.
10	<b>Approved design of fishing gear:</b> All equipment used in the fishery must be of a design approved by the Joint Committee. A Certificate of Approval, issued by ESFJC, is required by each vessel wishing to participate in the sublittoral mussel fishery.

## PRINCIPLE

## MANAGEMENT MEASURE

<p>Fisheries development:</p> <ul style="list-style-type: none"><li>• Maximise returns from the fishery whilst improving conservation benefits;</li><li>• Encourage diversification within the Wash fisheries;</li><li>• Ensure that the sublittoral mussel fisheries do not have a detrimental effect on other fisheries.</li></ul>	<p>11 <b>Seed mussel fished from sublittoral beds may not be taken for direct harvest:</b> The purpose of the seed mussel fishery from the Regulated sublittoral beds is to enable fishermen to develop the Several fishery.</p> <p>12 <b>No minimum size is specified:</b> Mussels fished from ephemeral sublittoral beds are seed mussels, used for the re-stocking of lays within the Several fishery. A minimum landing size is not applicable to this fishery.</p>
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## PRINCIPLE

- Environmental protection:
- Proposed fisheries must be assessed in detail to ascertain likely impacts on wildlife and habitats [in addition to evaluating impacts on the fishery itself];
  - Maximise opportunity for ESFJC to gather relevant environmental data, as practicable, during the course of stock surveys and other site visits;
  - Further advice should be sought from appropriate environmental sources to inform impact assessment;
  - Undertake own and support external research work as appropriate to improve knowledge and understanding of fishery impacts.

## MANAGEMENT MEASURE

13	<p><b>Appropriate assessment of sublittoral mussel fishery proposals:</b> Proposed sublittoral mussel fisheries are subject to detailed assessments by ESFJC, under advice from Natural England, to ascertain their likely impact on conservation features of the Wash and North Norfolk Coast European Marine Site (EMS). This assessment takes into account physical damage to subtidal habitats, disturbance to common seals at haul-out sites, and food supplies for shellfish-dependent bird species. Inter-relationships with the Regulated mussel and cockle fisheries will also be considered within this assessment.</p>
14	<p><b>Selection of sublittoral mussel beds to be opened to the fishery (according to nature conservation advice).</b> Sublittoral mussel bed areas containing <i>Sabellaria spinulosa</i> reef, or providing a key bird food supply, will not be opened to the fishery. The location of <i>Sabellaria spinulosa</i> reef is recorded during the ESFJC sublittoral mussel surveys. Value as a key bird feeding area is assessed using advice from Natural England.</p>
15	<p><b>Buffer zone around <i>Sabellaria spinulosa</i> reef:</b> Sublittoral mussel bed areas adjoining <i>Sabellaria spinulosa</i> reef will not be made available to the fishery, in order to protect the reef from physical damage. These buffer zones are identified on the charts provided by ESFJC to entitlement holders prior to the opening of a dredged fishery.</p>
16	<p><b>Protection of seal haulout sites during sensitive periods:</b> Sublittoral mussel beds, or parts thereof, will not be opened to fishing if that fishery would be likely to cause disturbance to identified seal haulouts, with a particular consideration for pupping, moulting and breeding periods.</p>
17	<p><b>Closure of fishery if fishing activity is found to be damaging:</b> The sublittoral mussel fishery can be closed on the advice of the Clerk &amp; Chief Fishery Officer if he deems that fishing activities are damaging the site.</p>