

EASTERN SEA FISHERIES JOINT COMMITTEE

STATEMENT

regarding

**ENGLISH NATURE'S REFUSAL TO CONSENT THE USE OF BIRD
SCARERS BY INDIVIDUALS ON MUSSEL LAYS IN THE WASH**

MAY 2006

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1. Shellfish management in the Wash and the role of Eastern Sea Fisheries Joint Committee (ESFJC)

1.1 Eastern Sea Fisheries Joint Committee (the Joint Committee) is an autonomous Local Authority established in 1894 having a remit to protect, regulate and sustainably develop inshore fisheries along the Lincolnshire, Norfolk and Suffolk coasts. The Wash shellfisheries are of major importance within this District in terms of landings, value and employment (Figure 1). The three main target species are mussel, cockle and brown shrimp, and although socio-economic and environmental influences can affect fishing activities – for example, it is likely that pink shrimp and razor shells will gain importance in the future – the historic mussel and cockle fisheries are unlikely to lose their significance in the long term. Mussel cultivation is a key component of the Wash fisheries, and critically provides a stabilising influence on the mussel standing stock biomass to the benefit of the wider ecology of the Wash¹.

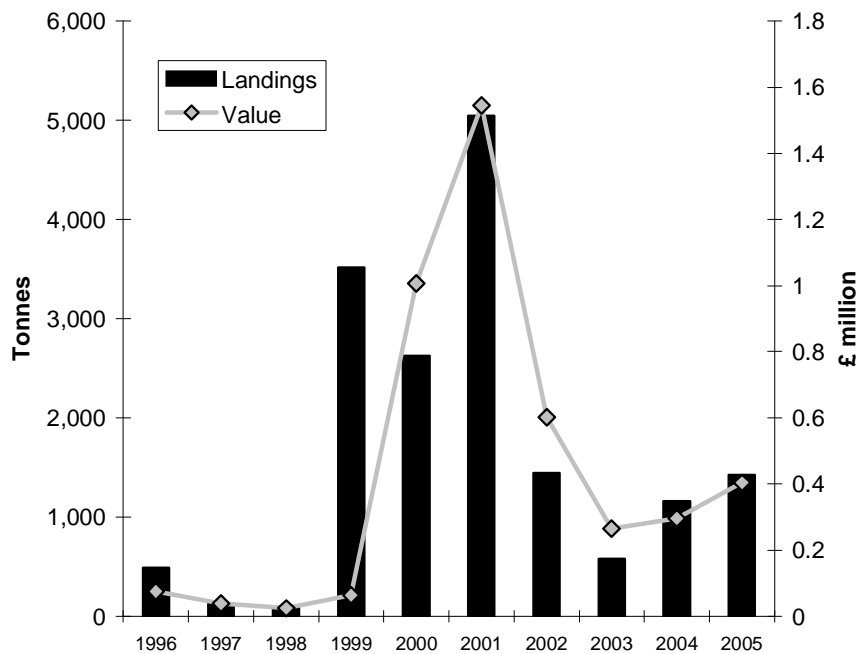


Figure 1. Wash mussel landings and first sale value, 1996-2005

1.2 The Joint Committee manages the Regulated (public) mussel fishery under the Wash Fishery Order 1992² and ESFJC Byelaws³. Management measures include a closed licence system; the imposition of annual and individual daily quotas; a minimum landing size; seasonal and area closure of mussel beds; and the specification of the size and type of fishing gear used. These technical and conservation measures are designed to maintain stocks within safe biological limits and to limit impacts on the habitats supporting the fishery and on dependent wildlife. The Habitats

¹ Dare PJ, Bell MC, Walker P & Bannister RCA (2004) *Historical and current status of cockle and mussel stocks in the Wash*. CEFAS Lowestoft, 85pp.

² ESFJC *Wash Fishery Order 1992*

³ Amos SC (1997) *Eastern Sea Fisheries Byelaws*. King's Lynn, Eastern Sea Fisheries Joint Committee

Regulations⁴ provide a further tier of environmental protection in the Wash. Under this legislation, the Joint Committee conducts an appropriate assessment of each seasonal opening of the cockle and mussel beds within the Regulated fishery and the fishery is only progressed if, based on its knowledge and experience of the Wash fisheries and their environment and on the nature conservation advice received, the Committee is satisfied that the fishing activity will result in no significant adverse effects on the Site's conservation features.

1.3 The national and international nature conservation designations granted to the Wash⁵ highlight the significant wildlife value of the Site, and bring managerial responsibilities for relevant and competent authorities as well as individual users of the Site. The Joint Committee's understanding of the wildlife value and processes within the Site is enhanced through its position as lead authority on the Management Group for the European Marine Site since its formation in 1996. The Joint Committee benefits from close and continuing liaison with Site stakeholders, including a well-established working relationship with English Nature regarding fisheries and wildlife interactions. Fisheries management measures are agreed and outlined within the Management Scheme for the Site; this is in addition to the appropriate assessment procedure outlined above.

1.4 The Joint Committee has a well-established involvement with other regional conservation initiatives, as a member of the Wash Estuary Strategy Group, the Wash National Nature Reserve consultation board, and the Waterbird Study Group for the Wash and North Norfolk Coast. This involvement contributes to the Joint Committee's comprehension of the wildlife value of the site and guides fisheries management decisions and advice to the fishing communities that could affect site integrity.

1.5 The Joint Committee's management of the mussel lays is limited because the lays exist within the private Several Fishery that is separate from the Regulated Fishery. Three ~~of the~~ Wash Fishery Order regulations are applied to the lays; these specify the maximum length of the vessel, and the number and size of dredges that may be used within the Several Fishery. The Regulated and Several Fisheries are inherently connected, for example: juvenile mussel seed from the public beds is transferred of onto mussel lays for cultivation, and mussel larvae from the lay stocks is released into the wider Wash. Fishermen who practise mussel cultivation in the Wash also work the Regulated Fishery and understand this fundamental relationship between the two fisheries. The influences of the lays are a major consideration when deciding the management for the rest of the Site's fisheries; the layholders provide a crucial input to this.

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1.6 Officers of the Joint Committee are currently undertaking an exercise to assess the impacts of mussel cultivation, for the purpose of ~~reviewing existing lay consents~~ within the Wash and North Norfolk Coast European Marine Site, as required under Regulation 50 of the Habitats Regulations 1994. The review process is being taken through close liaison with English Nature. Responsibility for this assessment lies with

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⁴ The Nature Conservation (Natural Habitats &c.) Regulations 1994

⁵ The Wash is a Site of Special Scientific Interest and contains a National Nature Reserve; it is also Special Protection Area, a Ramsar Site and forms part of the Wash and North Norfolk Coast marine Special Area of Conservation (collectively, the European Marine Site).

the Joint Committee because of its authority to designate lay areas and collect lay lease monies on behalf of the Crown Estate, who owns the seabed. The objective of the review is to identify key habitat and species indicators within and around mussel lays to enable an assessment to be made of the biological and physical changes caused by the presence and working of the lays. As a part of this review, Joint Committee officers estimated the quantities of mussel stocks held on individual mussel lays; this information has provided essential baseline data against which predation losses over the winter 2005/06 can be gauged.

1.7 The Joint Committee has played a key role in attempts to identify a solution to the eider predation problem, and is continuing to work closely with all the stakeholders involved. Joint Committee officer involvement has included researching examples of managing eider predation in mussel fisheries; facilitating negotiations between layholders, wildlife management and nature conservation interests; exploring all possible avenues for financial support to the layholders; and taking on the practical arrangements for the bird scaring trial that was undertaken between November 2005 and March 2006 to assess the effectiveness and impacts of bird scarers over a limited area.

1.8 Every effort has being made by the Joint Committee to support the layholders in their search for a practical solution to the predation problem that does not compromise the wildlife status of the site. In September 2005, the Joint Committee expressed "a genuine concern that the practice of mussel cultivation in the Wash could be abandoned if it is not supported at this critical time. This outcome would have serious negative implications for the fishing communities and the ecological integrity of the Wash"⁶. The Joint Committee now considers that this consequence has been borne out and that the serious negative implications are beginning to be realised.

⁶ ESFJC Submission to Defra's European Wildlife Division in comments regarding the layholders' appeal against English Nature's decision to refuse consent to scare Eiders from mussel lays dated 19th September 2005 and also contained in a subsequent submission dated 22nd November 2005

2. Eiders in the Wash

2.1 The number of eider in the Wash and their feeding habits have been monitored much more closely in the recent months by an avian ecologist from Central Science Laboratory as part of the bird scaring trials. The WeBS data is the major scientific information available with reference to the historical number of eider in the Wash. These data would suggest that historically the Wash has supported similar numbers of eider to those being reported to be on the site in the most recent scientific surveys. Anecdotal evidence derived from two of the main users of the site namely, the fishermen and officers of the Joint Committee, would suggest that the Wash is currently experiencing far greater numbers than that seen in the past. The significant increase in numbers of eider was seen from 2003 and continued throughout 2004 and 2005.

2.2 In the situation that now faces the Wash, the actual number of eider is somewhat immaterial. The key questions are:

- To what degree has the mussel in the Several Fishery affected the number of eider in the Wash?
- Have the current stock levels changed the feeding behaviour of these birds?

If the numbers of birds on the site are close to historical levels it could be argued that the high levels of stocks and densities of mussels on the lays have caused this switch in feeding behaviour. The Committee disputes this theory, for reasons set out below.

2.3 The majority of lays in the Wash have been operated for many years. However 1997 can be highlighted as a key point from which the Several Fishery regained a major influence on the Wash mussel fishery. Relaying of locally sourced (Wash) sublittoral seed mussel significantly increased the tonnage on the Toft lays in 1997 and 1998 (Figure 2a). The success of the Several Fishery as a result of these two years has allowed the industry the confidence and financial ability to maintain stock levels on the lays by re-seeding using mussel from elsewhere around the UK when Wash seed mussel was unavailable. Since 1997, the peak production from the Several Fishery of 5,000 tonnes was achieved in 2001 after which it has fallen back to average around 1,000 tonnes per year (Figure 2b). There has been an increase in lay allocation since 1997 but this is not believed to have increased the overall stock held within the Several Fishery. This would suggest that if any change to the feeding behaviour of eider already present in the Wash occurred due to the mussel held on the Several Fishery, then this would have been identified far sooner, i.e. around 1997 when the rate of restocking the lays rapidly increased, rather than seven years later when the layholders did begin to see an increase in eider numbers feeding on their lays.

2.4 If the number of eider has increased in the Wash, as argued by the fishermen and officers of the Joint Committee, has the mussel on the Several Fishery been a causal effect? The stocks of mussel held in the Several Fishery have been maintained at a consistent level since 1997. It would therefore be expected that any significant increase in eider numbers would have occurred prior to this date, i.e. when the stocks of mussels within the lays were being increased. Following the prolific spatfall in 2001, the mussel stock in the Regulated Fishery increased significantly, which would

also suggest that an escalation in bird numbers would have been recorded around that time.

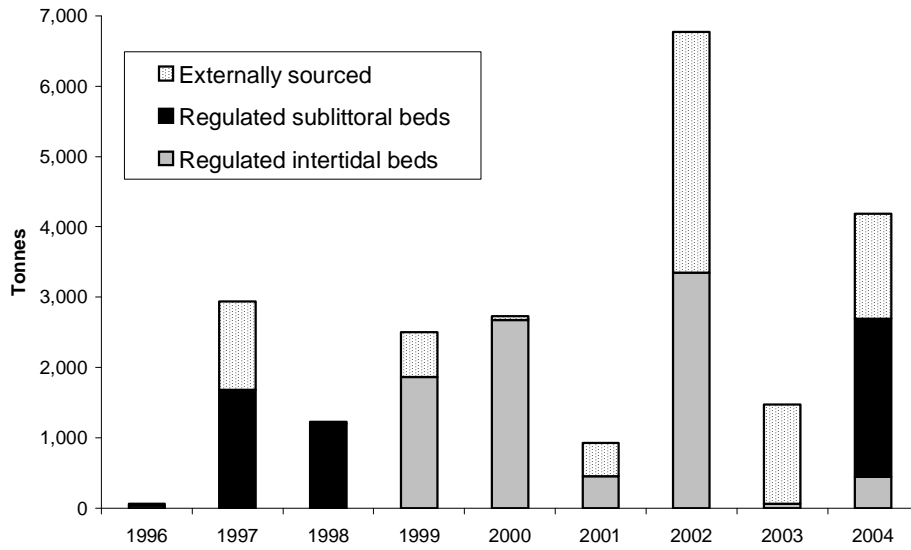


Figure 2a: Quantities of mussel relayed into Wash Several Fishery, 1996-2004

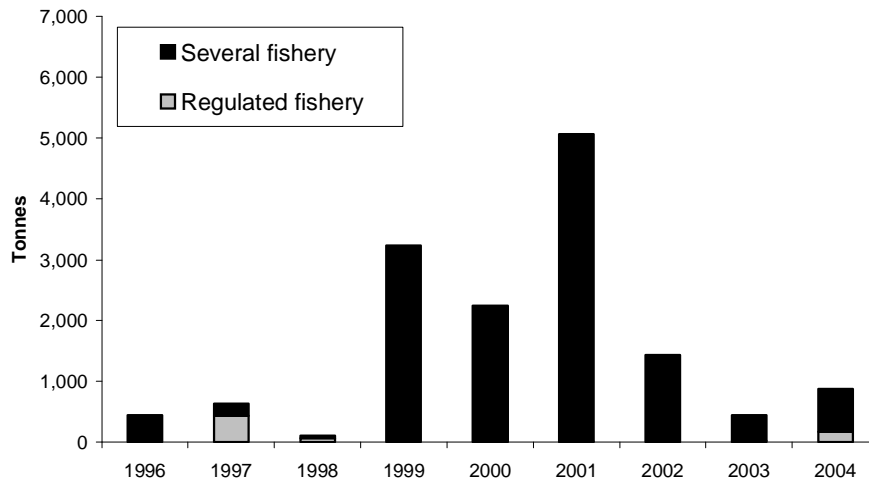


Figure 2b: Mussel landings from the Wash Regulated and Several Fisheries, 1996-2004

2.5 It is well documented that the mussel fishery in the Waddensee has been poor for at least the last three years. The fact the majority of the mussel that has been fished from the Several Fishery in the Wash has been sent to the Waddensee for on-growing is testimony to this fact. The lack of locally available seed mussel to the large population of eider using the Waddensee would have undoubtedly put pressure on these birds. A potential consequence of this pressure may well have resulted in the displacement of a proportion of these birds to the Wash⁷. This issue has not been formally addressed but there is some evidence that would indicate this has in fact occurred. Eider behavioural expert Professor Bob Furness of Glasgow University, recorded in correspondence to CSL, "I suppose it is likely that eider numbers wintering at the Wash are more a function of Waddensee ecology than of Wash ecology"⁸. Professor Furness also indicated that it would be worth looking at the data on ages and sexes of eider in the Wash to compare with data from other regions. His impression was of a high proportion of young birds and a relatively high proportion of females. He noted that most eider populations have about 1.5 males to every female and very few immature plumaged birds at all (normally less than 3% at most). If the Wash eider population was particularly skewed towards immature and females then that would also fit the idea of overspill of (subordinate) eider pushed out of the Waddensee by increased intraspecific competition for reduced resources.

2.6 The Joint Committee is of the view that there has been a significant increase in eider numbers in the Wash since 2003, and that it is possible that this increase has been influenced by unfavourable conditions for eiders in the Waddensee. Joint Committee officers who frequently operate across the Site have reported substantial increases in the aggregations of eider seen flocking in the Wash and feeding in the Several Fishery.

2.7 Eider are protected under the SPA legislation as part of the wider assemblage of non-breeding waterfowl. The inclusion of eider in the assemblage citation has only resulted from the increase in eider numbers to a nationally significant level. They are not listed as a priority species. Other birds with the same level of protection in the Wash include pink-footed goose, wigeon and pintail. These species are successfully managed within the site through licensed shooting by wildfowlingers.

2.8 It should be clarified that, should the layholders' scaring applications be consented (and shooting conducted as a supplementary measure), the intention would not be to significantly reduce the overall number of eider in the Wash by shooting to kill. The purpose of shooting would be to support non-lethal bird scaring techniques, which wildlife management advice⁹ suggests is likely to be the most effective method in this case.

2.9 It may be seen that the eider population is being afforded overprotection with respect to other similarly ranked bird species on the site. This is critical in the overall assessment of the effect on the site of English Nature's refusal to consent scaring of eider from the Several Fishery. The over protection of this species may have a greater

⁷ Advice from Nigel Clark and Phil Atkinson, senior ornithologists at British Trust for Ornithology, during discussions between BTO and ESFJC in June 2005

⁸ Professor Robert Furness, pers. comm., 17/01/06

⁹ Discussed by ESFJC, EN, Defra's Rural Development Service and Wash layholders at various meetings during 2005

adverse effect on other more significant features on the site, i.e. oystercatcher and mussel beds. This point is illustrated in the attached flow chart.

2.10 The Joint Committee considers that there is sufficient alternative food available in the Wash to support eiders and wader bird species if they are displaced from the mussel lays by controlled scaring. Eider diet is wide ranging¹⁰; although mussels are their preferred species, eiders have been observed in the Wash feeding on razors and cockle beds. Section 3 below provides details as to how the Several Fishery allows the Wash ecosystem to accommodate greater numbers of displaced eider.

¹⁰ See for example Leopold MF, Kats RKH, & Ens B (2001) *Diet (preferences) of Common Eiders Somateria mollissima* Wadden Sea Newsletter 2001-1

3. Role of the Several Fishery in the sustainability of the Wash ecosystem

3.1 Mussel cultivation provides clear ecological benefits to the Wash in addition to the commercial rewards it brings to the fishing communities that use this resource. The Joint Committee is of the view that critically, these benefits must be examined in order to fully evaluate the consequences of conservation guidance issued by English Nature in relation to predation management on the mussel lays. This section examines the influence of mussel lays on the ecology of the Wash.

3.2 The utilisation of mussel lays is consistent with the Wash & North Norfolk Coast European Marine Site objective of “ensuring the sustainable use of a living, working coast”¹¹ essentially by increasing productivity whilst reducing socio-economic pressures on the natural conservation features of the Site. It follows that mussel cultivation is entirely consistent with Defra’s vision for “clean, healthy, safe, productive and biologically diverse seas”.

3.3 Bivalve stocks fluctuate widely in natural systems. Cockle and mussel populations are often dominated by particular cohorts (year classes) that result from strong annual settlements (abundant spatfall coupled with low first-year mortality rates). This variation leaves natural predators vulnerable to starvation if alternative prey is not available. The conservation objectives for the Wash and North Norfolk Coast European Marine Site¹² take account of natural changes in habitat attributes and species populations. However, the natural variations in bivalve populations, when coupled with efficient fishing methods, have also created the unstable “boom-bust” scenario that characterised the Wash cockle and mussel fisheries in the late 1980s/early 1990s. In the period between 1988-96, consecutive poor spatfalls (Figure 2) followed the over-exploitation of natural mussel stocks and resulted in negligible recruitment to the natural mussel beds, with consequences for the fisheries and dependent wildlife. However, in recent years and coinciding with the expansion of the cultivated mussel fishery since 1997 (Figure 1), considerable improvements have been seen in the Regulated mussel fishery in terms of total stock biomass, geographical coverage and population composition. Critically, this leads the Joint Committee to the view that the natural mussel and cockle populations in the Wash are currently healthy. The development of the essentially self-regulating Several Fishery has undoubtedly been an influencing factor in the recovery of natural stocks following the prolonged deficits of the early 1990s, by significantly enhancing recruitment potential within the Site.

3.4 The level of adult stock has been identified as a key factor influencing the magnitude of the mussel spatfall (and therefore recruitment potential) in the Wash¹³. The placement and cultivation of stocks of mussels on lay ground, for a typical growing period of two years, provides a significant biomass of breeding stock that enhances natural recruitment levels by contributing to the total larval production within the system. Figure 3 and Table 1 show the increase in the magnitude of mussel spatfalls since 1997 when Wash shellfishermen began to cultivate mussels on a significant scale. It is noteworthy that following the unprecedented sequence of

¹¹ Mortimer D (ed) 2002 *Wash and North Norfolk Coast European Marine Site Management Scheme*

¹² English Nature (2000) *Wash and North Norfolk Coast European Marine Site: English Nature's advice given under Regulation 33(2) of the Conservation (Natural Habitats &c.) Regulations 1994*

¹³ Dare PJ *et al* 2004, previously cited

negligible spatfalls between 1988 and 1996, spatfall index level 2 (moderate), 3 (abundant) and 4 (superabundant) have all been recorded in the past four years – these levels had not been achieved since 1986, 1977, and 1940 respectively.

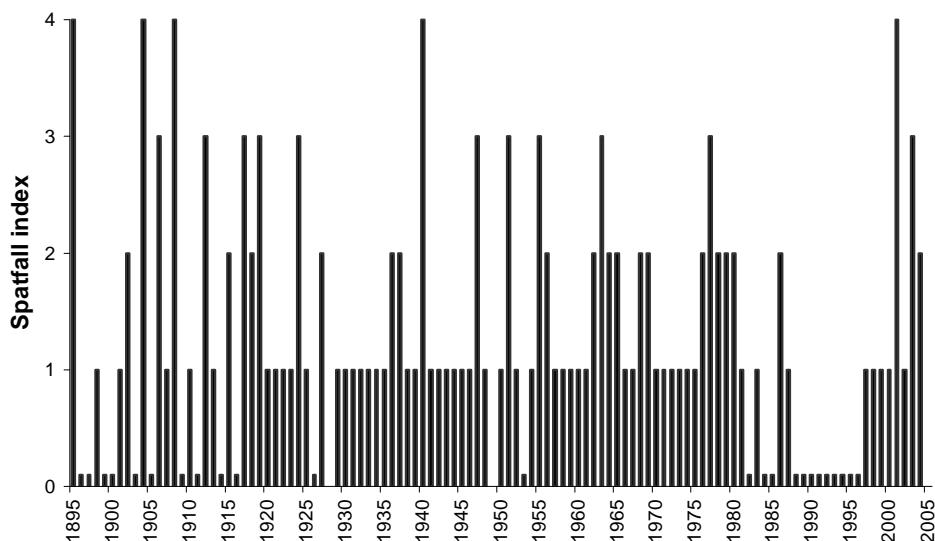


Figure 3. Wash mussel spatfall indices 1895-2004. Based on Dare *et al* 2004

Table 1. Decadal frequencies of Wash mussel spatfall of different magnitudes, 1890-2005. Based on Dare *et al* 2004

Decade	Inadequate	Adequate	Good
2000-05	3	1	2
1990-99	10	0	0
1980-89	8	2	0
1970-79	6	3	1
1960-69	4	5	1
1950-59	7	1	2
1940-49	(7)	(0)	(2)
1930-39	8	2	0
1920-29	(7)	(1)	(1)
1910-19	5	2	3
1900-09	6	1	3
1890-99	(4)	(0)	(1)
Total	75	18	16

Inadequate: index 0-1; adequate; index 2; good; index 3-4. Bracketed values indicate incomplete records for that decade.

3.5 The geographical extent of mussel beds is important for the Site integrity, for example by affecting distribution of food supply for natural predators, and also by affecting the recruitment potential for the development of mussel beds across the Site. The presence of mussel lays at different locations within the Wash is likely to expand the distribution of natural mussel beds by providing a local source of mussel larvae.

The location of mussel lays on several intertidal sandbanks across the inner Wash increases the area from which mussel larvae are sourced compared with larval production from natural beds, this is likely to increase the settlement potential over a wider geographical area. A wide distribution of mussel stocks across the Site also reduces the risk of total loss, for example from storm incidents. The Joint Committee's 2005 mussel stock surveys identified 19 distinct natural, intertidal mussel beds covering 425 hectares in addition to 220 hectares of Several Fishery lays. This compared favourably with mussel stock status in 1977, described by Dare *et al* as the most recent year when stocks were really abundant, within 14 identified beds over 510 hectares.

3.6 The Joint Committee stipulates, through agreement with the fishing community and confirmation by English Nature, that mussel lays are not located in positions likely to support natural cockle or mussel beds. The Several Fishery does not, therefore, inhibit natural expansion of mussel beds (a sub-feature for which the Wash and North Norfolk Coast Special Area of Conservation was designated), but for reasons described above, serves to augment natural mussel bed development.

3.7 The fishing of mussel seed for the purpose of stocking lays is carefully regulated by the Joint Committee, to manage against over-exploitation of natural resources and ensure that developing natural beds are allowed to mature. Mussel lays are stocked with juvenile (seed) mussel taken from natural intertidal or sublittoral beds in the Wash or imported from other mussel fisheries around the UK coast. The Joint Committee stipulates that mainly vulnerable mussel beds (i.e. beds that would typically be lost to invertebrate predation or weather if not fished) are targeted for relaying. This is in recognition of the ecological value of well-established mussel beds. During the period 1996-2004, a total of 11,488 tonnes of mussel was relaid from the regulated beds into the Several Fishery, whilst stocks on the regulated beds increased from approximately 2,000 tonnes in 1996 to 13,500 tonnes in 2005. This indicates that the Joint Committee's policy (developed through consultation with the fishing industry and English Nature) to manage the regulated stocks and encourage the development of the Several Fishery, has been successful in allowing the recovery of critically depleted stocks.

3.8 As explained in section 3.7, the development of the Several Fishery in the Wash has reduced commercial pressure to fish the Regulated beds. In addition to the increase in stock biomass and distribution of mussels across the Site, this reduction in fishing effort is a further key factor in the recovery of the natural shellfish beds. Figure 1 showed the landings from the Regulated and Several mussel fisheries in the Wash between 1996 and 2004; this illustrates influence of the cultivated mussel fishery in reducing effort on the natural beds. The total quantity of mussels harvested from the regulated beds over the nine years was 903 tonnes, almost negligible compared with the 14,608 tonnes landed from the Several Fishery.

3.9 The Several Fishery increases food availability for bivalve predators in two ways. As described above, it reduces fishing competition for natural stocks. Secondly, it provides an additional food supply for predators. The use of the mussel lay stocks as

a food source for birds is shown in the low tide survey of the Wash¹⁴, that outlined the importance of the lays for a variety of species including oystercatcher, shelduck, grey plover, sanderling, dunlin, bar-tailed godwit, curlew and turnstone. Layholders recognise the importance of mussel lays as feeding grounds for wild birds (as well as shore crabs and starfish) and accept a reasonable level of loss as an inherent risk associated with mussel cultivation. It was, however, the excessive level of predation by eider over the past two winters that threatened the viability of the whole mussel cultivation activity in the Wash that prompted the need for their management.

3.10 The food source that cultivated mussels provide is particularly significant (in terms of quantity and distribution) at times when natural mussel and cockle stocks are at a low level. This benefit of mussel lays has been notably demonstrated in the Wash over the last decade, when the scarcity of natural cockle and mussel stocks, repeated shellfish recruitment failure and declines in shorebird numbers raised serious concerns over the ecological health of the Wash. During these periods, the biomass of mussels within the Several Fishery outweighed the Regulated stocks. Atkinson *et al* (2003)¹⁵ stated "While both cockle and natural mussel stocks were still low in the Wash during the late 1990s, it may be that these farmed mussels provided sufficient food to prevent a major mortality of oystercatchers which the shellfish/weather survival model suggested would otherwise have occurred." Current management of the Regulated Fishery is based upon estimates of the total stock biomass on the public beds and ensures that 78% of the stock¹⁶ is retained therein for natural predation and ecosystem functions. The lay stocks act as a significant, additional buffer to this.

3.11 The socio-economic significance of the Several Fishery has increased in the past decade because of the availability and quality of the product produced by cultivation, and the stability that this activity has brought to the Wash fisheries. These points are covered in section 4.

¹⁴ Yates, Garbutt, Rispin & Brown (2004) *Low tide survey of The Wash Special Protection Area. Final report of the winter 2002/2003 shorebird survey*. English Nature Research Report 589. English Nature, Peterborough

¹⁵ Atkinson P, Clark NA, Clark J A, Bell MC, Dare PJ & Ireland PL (2000) *The effects of changes in shellfish stocks and winter weather on shorebird populations: results of a 30-year study on the Wash, England*. British Trust for Ornithology, Thetford. BTO Research Report no. 238

¹⁶ The 2004/05 mussel fishery quota was set at 22% of total stock biomass on public mussel beds; 11% for harvestable stock (i.e. removed from system) and 11% for relaying into the Wash Several Fishery.

4. Management and compliance

4.1 The Wash Several Fishery provides a clear example of “the very real opportunities for the expansion and maximisation of socio-economic benefits in coastal and estuarine communities that the molluscan cultivation sector offers” that were highlighted in the ‘Net Benefits’ report¹⁷. The same report goes on to suggest that: “Fisheries departments should focus on support for the development of the inshore/shellfish industry to take advantage of its large growth opportunities” (Net Benefits 2004:12) and “There is significant potential for further increasing the sector’s value and sustaining employment through the development of new fisheries and mariculture opportunities” (Net Benefits 2004:122).

4.2 Effective fisheries management resulting in sustainable catches with minimal detrimental environmental effects comprises of three elements: stock assessment; establishment of suitable control measures; and enforcement. If any one of these three components is inappropriate or ineffective then the goal of a sustainable fishery will not result. The most effective way of achieving successful fisheries management is to enable stakeholders (in this instance the fishermen) to contribute meaningfully to the three elements identified. By achieving this, fisheries management is transparent in that fishermen have confidence in stock assessments and they understand the reasons behind the implementation of control measures such as closed areas or quotas.

4.3 A transparent management regime will result in several benefits, namely increased self-compliance with regulations. Fishermen are also more likely to report detrimental/illegal activities that they see occurring within the fishery. Enhanced compliance with regulations reduces the financial burden associated with enforcement and fosters better working relationships between the fishermen and the management organisations charged with protecting and developing the Site. A high level of self – compliance with regulations is the ultimate goal within fisheries enforcement as it is unrealistic to police the fishery on a 24 hourly basis throughout the year.

4.4 Through inclusive management, and the existence of the Several Fishery, fishermen are able to plan for the future as the lays provide a critical element of stability and predictability in income. A productive Several Fishery provides an opportunity for fishermen to work throughout the year reducing fishing pressure on alternative target species, i.e. cockle and shrimp. Without potential fisheries that fishermen can legally target throughout the year there is greater incentive for fishermen to “poach” in order to maintain a source of income. In addition, inactive fishermen invariably pressurise management organisations to open fisheries or increase quotas in excess of the sustainable limits. In this environment when a fishery opens there is an initial rush by fishermen to exploit the fishery and secure their share - inevitably resulting in a closure of the fishery. In essence the more fisheries that are open and available for fishermen to target, the lower the level of fishing pressure exerted upon particular fishery. Multiple fisheries provide management organisations with greater ability to manage the Site holistically. In the case of the Wash, a viable Several Fishery increases the ability for the Joint Committee to: 1) develop aspects of the fishery in order to maximise future benefits; 2) protect particular interest features

¹⁷ Prime Minister’s Strategy Unit (2004) *Net Benefits: A sustainable and profitable future for UK fishing* Cabinet Office

(e.g. closures of natural intertidal mussel beds are more acceptable with them becoming *de facto* nature reserves).

5. Consequences of refusal or granting of consent to scare eider from mussel lays

5.1 This section is to be considered in conjunction with the attached flowchart. The basic premise is that regardless of whether or not consent is approved allowing eider to be scared from the lays, the end result will be that eider are displaced. If consent to scare is refused, then there will be significant detrimental implications for the environment of the Wash.

5.2 If consent is approved (and assuming scaring is effective) the eider will be displaced to feed elsewhere and the Several Fishery will continue to operate, providing significant and widespread socio-economic and environmental benefits throughout the Wash maintaining the integrity of the site. There is an argument that scaring conducted on the lays will potentially displace wader birds, this premise is misplaced as the most appropriate time to conduct scaring activities is whilst the lays are still covered by water when the eider are feeding and the wader birds are unable to access the site to feed. In any event, the scaring trial, which did operate briefly at low water, clearly demonstrated that scaring methods utilised during the trial did not affect the wader bird assemblage feeding on and around the lays. However, if any scaring method employed did result in the displacement of wader birds from the lays there are ample resources within the Wash suitable for these birds to utilise. These resources include the richer habitats of the regulated mussel beds, which comprise of significant areas of multiple year classes and greater bio-diversity of other species. Indeed displaced eider also have this resource available to them to use.

5.3 If consent is refused, economic pressures will force the layholders to remove the mussels from the lays. Eider will in turn be displaced but there will be additional significant impacts as a result of the mussel lays being removed. The wader birds dependant on the mussel lays and the surrounding associated habitats will be displaced resulting in increased intraspecific (bird v bird) and interspecific (bird v fishermen) competition for the shellfish resources of the Wash. Removal of the lays in effect displaces the fishermen so that they also have to target other fishable stocks to secure the continuation of their livelihood. Increased competition for resources is ultimately likely to reduce the economic and environmental sustainability of the Wash fisheries, resulting in stock collapse of the fished species with associated declines in bird populations. Whilst this scenario is unfolding, relationships between nature conservation organisations and the fishing industry will deteriorate significantly with obvious implications for the Wash. This is worrying, especially during a period where inclusive management was starting to result in a balanced approach to resource utilisation and environmental protection.

6. Nature conservation legislation restricts English Nature's vision to wider or longer term impacts on sites

6.1 In Section 5 and in the attached flow chart, we have considered that both the consent or refusal of the Layholders' applications to scare eider from their lays would be likely to have adverse impacts on the integrity of the site, and that it is the view of the Joint Committee that refusing to consent will produce more severe and longer term damage to the site than granting consent would do.

6.2 English Nature is bound by its remit to consider only the potential nature conservation effects of applicants' activities within protected sites, and have focused their argument on what was considered to be the immediate ecological effects of displacing eider and other bird species from the mussel lays. However, in taking this strictly limited view, English Nature has not considered the wider impacts of their decision, i.e. the indirect but predictable, longer-term ecological effects arising from the socio-economic circumstances. It is the Joint Committee's view, therefore, that English Nature has failed to prevent the greater likelihood of a significant adverse effect on the site through the widespread loss of the Several Fishery.

6.3 This situation raises the question: How can a nature conservation agency provide sound site management advice without taking into account the strongly influential socio-economic processes occurring within that site?

7. Recommendations for a realistic way forward

7.1 It is clear that, following the severe declines and subsequent, steady recovery during the past fifteen years, the Wash mussel fishery is once again in a highly unstable position. As argued in Sections 3, 4 and 5, without the Several Fishery, the future for the Wash shellfisheries is bleak. However, the Joint Committee considers that the Several Fishery could be restocked consistent with previous levels whilst safeguarding the nature conservation interests of the Site through continued discussions between stakeholders and expert advisers.

7.2 The Joint Committee has attempted to identify a practical means by which both nature conservation and sustainable fisheries interests can be achieved, and firmly believes that the two goals are closely linked. It has been suggested that the use of sacrificial mussel lays in the Wash would be effective in preventing heavy mortalities in wader bird populations during food shortages¹⁸. This option would require very careful planning from an ecological and socio-economic perspective, with close co-operation between the fishing industry and English Nature as well as ornithologists. However, it could succeed in providing additional "insurance" for birds displaced from mussel lays, whilst the future of the Several Fishery would be secured through carefully controlled and monitored predation management on the mussel lays.

7.3 Even if this opportunity is taken up, there will be a time lag of a minimum of two years before the cultivated fishery produces a harvestable stock. This interim period will be problematic for fisheries management because of the socio-economic pressures forced on the shellfishermen. To minimise these difficulties, it is essential that the Joint Committee continues to liaise closely with all stakeholders.

7.4 The shellfishermen cannot restock their lays unless there is a realistic likelihood of gaining protection for their stocks from excessive predation. The 2005/06 trial and monitoring has gone some way to answer questions over the effectiveness and impacts of certain scaring methods, but has demonstrated that sustaining a cultivated mussel fishery through predation management will not be easy. Further work is needed to continue to research and develop effective and acceptable eider management measures on the lays.

7.5 Ecological modelling work is currently being undertaken to assess the carrying capacity of the Wash for eiders under a range of weather and food availability conditions. The Joint Committee welcomes this study, whose findings should serve to enhance the understanding of the potential impacts of eiders on the ecology of the Wash.

7.6 Studies into the origin of the expanded Wash eider population could confirm whether outside influences, most likely the conditions in the Waddensee, have been an underlying factor in the eider predation problem in the Several Fishery. The British Trust for Ornithology has already expressed interest in conducting such a

¹⁸ Stillman RA, West AD, Goss-Custard JD, Caldow RWG, McGrorty S, le V dit Durrell SEA, Yates MG, Atkinson PW, Clark NA, Bell MC, Dare PJ & Mander M (2003) *An individual behaviour based model can predict shorebird mortality using routinely collected shellfishery data* Journal of Applied Ecology 40, 1090-1101

study and the Joint Committee believes this work would further inform the situation in the Wash.

8. Conclusion

8.1 The Eastern Sea Fisheries Joint Committee has an intimate knowledge and understanding of the shellfisheries and the ecology of the Wash, which is based upon historically developed experience and the Committee's central role in bringing together the input of local fishermen, fisheries scientists and nature conservation advisers.

8.2 The Joint Committee develops and enforces fisheries management measures that are designed to maintain stocks within safe biological limits and to limit impacts on the habitats supporting the fishery and on dependent wildlife. The Joint Committee carefully evaluates each fishery according to the Habitats Regulations¹⁹ in order to assess the impacts of fishing activities on the Site's conservation features. The Joint Committee works towards true sustainable development of the fisheries through the integration of environmental objectives and socio-economic factors to inform management decisions.

8.3 Mussel cultivation is a key component of the Wash fisheries; the Several and Regulated Fisheries are inherently connected, both biologically and financially. The Several Fishery critically provides a stabilising influence on the mussel standing stock biomass, supporting the existence of natural mussel beds by boosting recruitment potential and providing a food source for natural predators, including birds protected within the European Marine Site.

8.4 The ability to cultivate private mussel stocks in a Several Fishery under the Wash Fishery Order provides crucial socio-economic benefits to the Wash fisheries. The advantages of stock control, reliable availability of a good quality product and the element of forward planning that the Several Fishery brings to the layholders have importantly promoted self-compliance with regulations/management measures and consequently reduced enforcement requirements for the Joint Committee.

8.5 The Joint Committee is of the view that there has been a significant increase in eider numbers in the Wash, which was first noted in 2003. The number of eiders and sizes of eider flocks sighted in the Wash by Joint Committee officers has increased substantially. It is likely that this increase has been influenced by the unfavourable conditions for eider in the Waddensee, rather than by the changes in the level of stocking in the Several Fishery that took place in 1997 and 1998.

8.6 The cockle and mussel stocks within the Regulated Fishery in the Wash are currently in healthy condition. Therefore, the Joint Committee cannot agree with English Nature's conclusion, and main reason for refusal of consent, that disturbance of eider and other feeding birds from selected mussel lays would have significant adverse effects on the Site.

8.7 English Nature's strict nature conservation remit has not allowed for a consideration of what the Joint Committee considers to be the foreseeable consequences of the decision to refuse consent to scare Eiders from selected mussel lays. Eider have been displaced from the lays despite EN's refusal to consent scaring. In addition, wader birds have been displaced, but it is the displacement of the

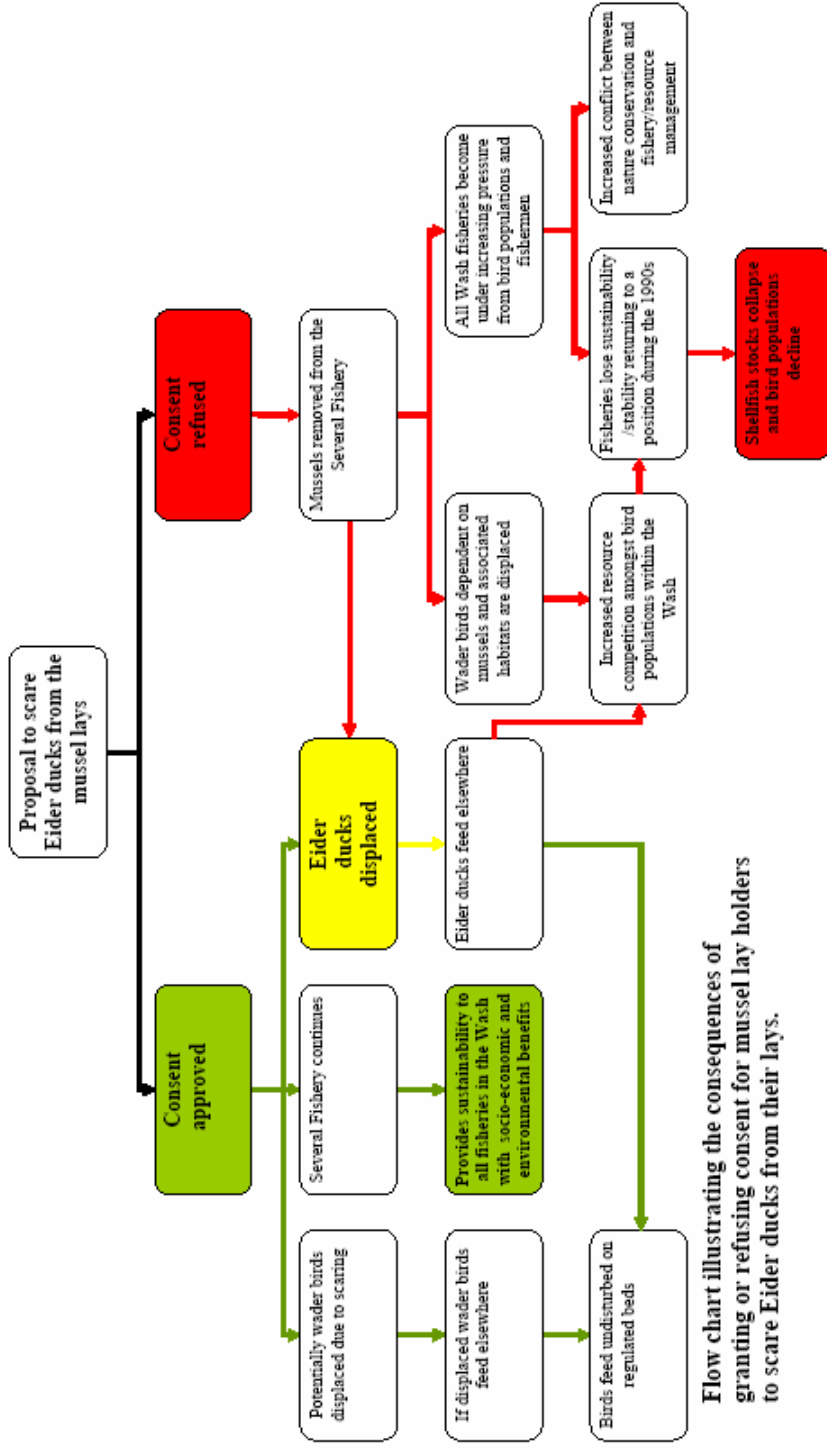
¹⁹ The Nature Conservation (Natural Habitats &c.) Regulations 1994

layholders themselves that has created the biggest threat to the stability of the Wash ecosystem. This point is illustrated in the attached Flow Chart. Thus, English Nature's over-protection of a low priority species (eider) will have wide and significant consequences across the European Marine Site. The Joint Committee believes that this case demonstrates the danger of managing for a single species rather than taking the widely advocated ecosystem approach.

8.8 It is the Joint Committee's viewpoint that there is a clear need to sustain the Several Fishery in the short term to ensure that the long-term integrity of the site is protected. In September 2005, the Joint Committee expressed "a genuine concern that the practice of mussel cultivation in the Wash could be abandoned if it is not supported at this critical time. This outcome would have serious negative implications for the fishing communities and the ecological integrity of the Wash"²⁰. In response to unsustainable predation losses, the majority of layholders cleared their stocks to recoup their remaining value in January and February 2006. The serious negative implications anticipated by the Joint Committee are beginning to be realised.

8.9 The Joint Committee appeals to the Secretary of State to direct the competent authorities governing activities in the Wash over the prioritisation of short-term species protection or sustainable utilisation of resources within the Site.

²⁰ ESFJC (2005) Submission to Defra's European Wildlife Division, previously cited



Flow chart illustrating the consequences of granting or refusing consent for mussel lay holders to scare Eider ducks from their lays.

