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BY EMAIL ONLY

Dear Will

Kent and Essex District cockle fishery outside the Thames Estuary Cockle Fishery Order 1994 – Area 7, request for advice relating to Hand-raking permits

Thank you for your letter dated 02 September 2014, consulting Natural England on the above. The following constitutes Natural England's advice relating to the issues you raised in your correspondence.

The Conservation of Habitats and Species Regulations 2010 (as amended) and The Offshore Marine Conservation (Natural Habitats, & c.) Regulations 2007 (as amended)

We can confirm that Area 7 is located within the Dengie SPA and Ramsar; Essex Estuaries SAC; Foulness SPA and Ramsar, the Outer Thames Estuary SPA and is immediately adjacent to the Crouch and Roach Estuaries SPA and Ramsar.

Earlier on in 2014, an appropriate assessment was undertaken to assess the impacts of opening the cockle fishery outside the Thames Estuary Cockle Fishery Order (TEFCO). Whilst this appropriate assessment concluded no adverse effect on integrity of the Natura 2000 sites assessed, it only focussed on impacts arising from cockle *dredging* activities. As you noted in your correspondence no hand raking has occurred within the Thames since the early 1970s and as such, this activity has not gone through a Habitats Regulations Assessment.

The activity of hand raking could potentially include six different operations occurring over low water. Natural England is of the view that this potential activity is not directly connected with or necessary to the management of the European and international sites listed above; and is therefore likely to have a significant effect on the sites, either alone or in combination with other plans or projects.

Prior to issuing any permits for hand raking, Kent and Essex Inshore Fisheries and Conservation Authority (as the competent authority) must make an appropriate assessment of the implications for the sites in view of each site's conservation objectives.

We would expect the assessment to cover all the potential operations which could occur over low water, specifically:

- access from land on foot
- access from land on mechanical vehicles such as All-terrain Vehicles (ATVs)
- access from sea either on foot or using ATVs
- tractor dredging which uses a 4-wheel drive vehicle or tractor to tow a dry dredge on wheels

- over the sand
- prop-washing

and as a minimum consider:

1. Impacts to designated habitats arising from both access and operation - in particular physical damage, physical loss and biological disturbance through selective extraction of species;
2. Impacts to SPA bird interest arising from both access and operation – in particular disturbance by noise or visual presence, physical disturbance through the removal of supporting habitat and selective extraction of prey species;
3. In combination impacts – in particular with other fishery operations in the area.

The table below indicates the conservation features on which the activity is likely to have a significant effect, either alone or in combination with other plans and projects:

Designated site(s)	Conservation feature	Likely impact
Dengie SPA and Ramsar; Foulness SPA and Ramsar; Crouch and Roach Estuaries SPA and Ramsar; Essex Estuaries SAC;	Intertidal mudflat and sandflat communities	Physical damage from trampling and/or compaction from both access and operation, possibly leading to erosion or reduced extent, Biological disturbance to marine communities which typically include lugworm, ragworm, sand mason worms, Baltic tellin and cockles (N.B: A list of biotopes can be found in Appendix 2 of our Regulation 33 Conservation Advice package) .
Foulness SPA and Ramsar; Essex Estuaries SAC	Eelgrass bed communities	Damage to eelgrass beds and possible reduced extent or density as a result of access and/or operation.
Foulness SPA and Ramsar; Outer Thames Estuary SPA;	Shallow coastal waters	Removal or damage of non-target species through operation (e.g. small fish including eels, sprats, herrings, worms and crustaceans).
Foulness SPA	Shell, sand and gravel shores	Damage to potential nesting sites for Annex 1 bird populations (Little tern, common tern; sandwich tern and Avocet) from access and/or operation.

Dengie SPA and Ramsar; Foulness SPA and Ramsar; Crouch and Roach Estuaries SPA and Ramsar	Internationally important assemblage of waterfowl (including internationally and nationally important populations of regularly occurring migratory species)	Reduction in cockles and small non-target prey species (small invertebrates) causing reduction in available food for birds, specifically specialist shellfish feeders. There is the potential for small cockles returned to the bed to become damaged by tractor or other vehicle wheels as they pass over. Consideration of the tide is important in any assessment – strong tides may push exposed cockles and other species up the shore, potentially preventing them re-burying (this may be more of an issue for dry tractor dredging as the ground may be firmer). Direct disturbance to feeding birds from access and operations.
Foulness SPA and Ramsar	Internationally important Annex 1 bird populations (Little tern; Common tern; Sandwich tern; Avocet). Although these species qualify for breeding populations during the summer months (April to August) they should be considered as part of the HRA.	Reduction in cockles and small non-target prey species (small invertebrates) causing reduction in available food for birds, specifically specialist shellfish feeders. Direct disturbance to feeding birds from access and operations.
Essex Estuaries SAC; Dengie SPA and Ramsar; Crouch and Roach Estuaries SPA and Ramsar; Foulness SPA and Ramsar.	Annex 1 Saltmarsh	Abrasion and/or compaction from access and operation.

There are a range of intertidal sediment habitats within Area 7 with mixtures of estuarine muds, sands, muddy sands, sandy mudflats and gravel. Both the Ray Sands and the Buxey Sands are generally made up of stable muddy sand, with the mud fraction making up between 10 and 30% of the sediment with the remaining sand fraction typically fine. The level of impact and the recoverability of benthic communities will vary between the different proposed operations and the different substrates they're proposed to occur on. In Annex 1, we reference several reports available on the Fisheries Evidence Impacts Database which should be used to inform any Habitats Regulations Assessment (a brief summary is provided but we would advise a detailed review).

In the absence of a detailed methodology relating to the operations which would be used to undertake hand-raking of cockles (in particular details around access), Natural England is unable to at this stage provide a detailed indication of what mitigation methods could be used to allow the fishery to proceed.

Wildlife and Countryside Act 1981 (as amended)

We can confirm that Area 7 is located within Foulness SSSI and Dengie SSSI. The conservation features under consideration are the same as those being considered for the European and international sites. Natural England's advice on these sites applies in relation to SSSI's.

Other Matters

Natural England is concerned that the recent emergency byelaw which was passed to address issues of biosecurity is not fit for purpose for hand raking and its associated operations. If the granting of permits for hand raking was given, Natural England would expect to see the same level of biosecurity measures applied to these operations as those covered under the byelaw for dredging operations. Alongside this, we would wish to understand how this activity would be enforced over the period in which the Area is open.

Seals (an Annex II species) are known to haul out on both Foulness and Buxey Sands. Both these areas are within Area 7, and as hand raking would occur over low water we would encourage the IFCA to also consider potential impacts to these species.

For any queries relating to the content of this letter please don't hesitate to get in touch.

Yours sincerely



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Annex 1 – Reports available on the Fisheries Evidence Impacts Database

- **Tractor dredging:**
 - **Ferns et al., 2000. Effects of mechanical cockle harvesting on intertidal communities. Journal of Applied Ecology 37: 464-474.** This paper found that intertidal tractor-towed cockle harvesting resulted in the loss of a significant proportion of common invertebrates found in muddy sand. Recoverability in muddy sand varied between species but several populations of gastropod remained significantly depleted for more than 100 days after harvesting. Recoverability was quicker for invertebrates in sandy environments although these areas had fewer cockles. The paper also discusses increased bird feeding activity after the harvesting as gulls and waders took advantage of exposed invertebrates. However this feeding activity declined in harvested areas, compared to non-harvested areas, as there were decreased feeding opportunities later in the winter. This paper concludes that tractor dredging for cockles should 'therefore be excluded from use in those areas in which the conservation of intertidal communities is given priority'.
 - **Cotter et al., 1997. Trial of tractor dredger for cockles in Burry Inlet, South Wales.** The paper assesses the mortalities caused by a tractor dredger on cockles of different age classes and possible implications on subsequent spat fall.
 - **North Western SFC 'Interim report on wet dredging trials and cockle stocks in the Ribble Estuary, April 2003'.** This report by the NWSFC discusses the impacts of tractor dredging on the cockles themselves.
- **Hand-collection:**
 - **Dernie et al (2003). Recovery of benthic communities following physical disturbance 72: 1043-1056.** The paper investigated the effects of disturbance on marine benthic communities, concluding that communities from muddy sand habitats had the slowest physical and biological recovery rates. The experiment discussed in the paper was performed at a scale relevant to hand-collection of cockles.
 - **Kaiser and Hall (2001). Disturbance of intertidal soft-sediment benthic communities by cockle hand raking. 45: 119-130.** This study analysed the effects of hand-raking on the non-target species and under-sized cockles. Hand-raking was found to result in an initial three-fold increase in the damage rate of under-sized cockles compared with control plots. The communities in different sized plots showed community changes relative to control plots 14 days after disturbance. The study concludes that small-scale variations in habitat heterogeneity had been altered and effects of hand-raking may still be significant within a year.
 - **Wheeler et al (2014). Ecological impacts of clam and cockle harvesting on benthic habitats and waterfowl. Bournemouth University.** Section 6 of this report details the impacts of hand harvesting on intertidal soft-sediment habitats, referencing literature mentioned above. It discusses both the impact on soft sediment communities and the recoverability of species richness in mud which can be much slower than in sandy habitats. The report also discusses impacts of harvesting on birds from removal of prey species, availability of alternative prey species and direct disturbance. The report identifies the current evidence gaps on ecological impacts of different harvesting techniques.
 - **Sewell and Hiscock (2005) Effects of Fishing within UK European Marine Sites: Guidance for Nature Conservation Agencies:**
http://www.marlin.ac.uk/PDF/FishGuidance05_Final_Report_screen.pdf
 - **Prop washing: Pears S, Finbow LA & Worsfold TM (2011) Assessment of potential impacts of experimental cockle fishing on the benthos at a sandbank in the Wash,**

July – November 2012. Unicomarine Report ESFWASH10 to Natural England and Eastern Sea Fisheries Joint Committee, February 2011