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Our ref: Native Oyster byelaw consultation 161017
Your ref: Native Oyster Permit byelaw consultation



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VIA EMAIL ONLY

Dear Will,

Native oyster permit byelaw consultation

Thank you for your consultation dated 20 September 2017. The following constitutes Natural England's formal statutory response in relation to the questions posed through the consultation process.

Question 1: Do you have any comments or views based on the opening times proposals (above)? (March-April)

NE would want to ensure that if harvesting was to take place, it would be at the most appropriate point, ecologically, in the native oyster lifecycle to ensure a long-term sustainable population. Avoiding spawning events as well as spat fall is welcomed. Ensuring sufficient younger year classes are present and are as resilient as possible to anthropogenic pressures would be advisable. Reducing the population in the spring prior to spawning will remove sexually mature native oysters and therefore the population should be robust to withstand anthropogenic pressures, for example considering age/size structure. NE's online conservation advice¹ states that optimal breeding is in June/July (Cole, 1941²), with spawning mostly completed by late August (Kamphausen, 2012³). Multiple spat fall events may be possible in single years.

Question 2: Do you have any comments or views based on the areas and boundaries proposed?

Dividing the site into spatial units is a well-established and useful management measure as referred to in fisheries management guidelines⁴.

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<https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UKMCZ0003&SiteName=&SiteNameDisplay=Blackwater%2c+Crouch%2c+Roach+and+Colne+Estuaries+MCZ&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=>

² Cole, H. A. 1941. The Fecundity of *Ostrea edulis*. Journal of the Marine Biological Association of the United Kingdom, 25, 243-260.

³ Kamphausen, L. M. 2012. The reproductive processes of a wild population of the European flat oyster *Ostrea edulis* in the Solent, UK. Ph.D., University of Southampton.

⁴ <http://www.fao.org/fishery/topic/16200/en>

Consideration should be given to dividing areas with greater abundances of oysters into more than one sub-unit to ensure that there is opportunity for a proportion of the area (with higher levels of oysters) to remain un-fished. However management measures within units may negate the need for this approach. Setting a TAC, broken down by percentage of a sub-area could ensure that 'good' areas are never completely devoid of oysters due to anthropogenic influences.

Question 3: Do you have any comments or views on how sub-areas should be opened and closed and the process behind making this decision?

An overall increase (to be determined in the management plan) of the native oyster population in the whole MCZ should be seen prior to the consideration of opening specific sub-units. Recovery is needed of the native oysters (as well as native oyster bed habitat) as a designated feature of the MCZ. Assessments of sub-areas should be a secondary consideration to determine the viability of opening an area to fishing. Impacts on the long-term health and resilience of the native oyster population in the context of the MCZ conservation objectives will need to be assessed through an MCZ assessment, ensuring a 'thriving population' where declines have previously been seen.

Spatial distribution of native oysters within the site is important for reproduction. If there's a large 'nearest neighbour distance' between individuals and / or beds this may affect recruitment by making fertilisation less likely (Kamphausen, 2012).

If the native oyster population in the MCZ becomes robust and is thriving in the future, there should be no assumption that if once a native oyster fishery is opened, it will always be open to fishing in subsequent years. Evidence will need to be reviewed annually to ensure the population is sustainable given the vulnerability of the species and considering non-anthropogenic factors such as storm events and bad weather.

Question 4: Do you have any comments or views on the minimum size or comments on the review process?

NE considers that oysters should have reached maturity and have reproductive capability before being considered as minimum size. Setting a ring size at 70mm is in line with NE's conservation advice which states that native oysters usually reach sexual maturity at about 3 years, or approximately 70 mm (Kamphausen, 2012). This would allow for regeneration of the population prior to removal of sexually mature individuals.

Consideration should be given to keeping larger oysters which are more fecund within the system⁵ if it is shown that reproductive capability increases with size, although age often has a detrimental impact on reproductive capability past a given point.

Given NE's conservation advice, it would be preferable that 70mm is a minimum size unless evidence supports the lowering of this size. Any review process will need to go through the relevant procedure, engaging stakeholders and ensuring that the Conservation Objectives of the MCZ will be least hindered.

Question 5: Do you have any comments or views on how permit fee costs should be set or the cost of the permit fee?

No comment.

Question 6: Do you have any comments or views on the maximum size of vessel that could fish for native oysters under the permit?

⁵ Breitburg, D.L. et al. 2000. Oyster reef restoration: Convergence of harvest and conservation strategies. J. Shellfish Res. 19: 371-377

The context of the location should be considered in that the fishery would be targeting a species of conservation importance, for which it is designated within the Blackwater, Crouch, Roach and Colne MCZ. The site is also a Special Area of Conservation, protecting the Essex estuaries, including all subtidal habitats as well as a Special Protection Area for birds, a Ramsar site for wetlands and intertidal areas are nationally designated as Sites of Special Scientific Interest. The status of the native oyster is as follows; a UK BAP priority species under the 1992 Convention on Biological Diversity; a species of principal importance under the Natural Environment and Rural Communities Act 2006 and is on the OSPAR List of Threatened and/or Declining Species and Habitats.

Prior to opening a fishery for native oysters, we all need to ensure that the species is, firstly, recovered to a good condition and secondly, that any temporary deterioration to the population would not impact the long-term resilience and recovery of the species. Given the vulnerability of the species and uncertainty regarding how successful recovery of the species will be due to a lack of UK case studies, a precautionary approach should be applied. Limiting vessel size to under 10m would be a suitable precautionary measure for opening the fishery to limit capability of native oyster collection in our opinion.

Question 7: Do you have any comments or views on the gear controls being suggested?

Due to the nature of the site and the overlapping designations (as above), the gear type and controls should ensure that the conservation objectives of the MCZ and SAC (principally) are not hindered or significantly impacted. A Habitats Regulations Assessment (HRA) and MCZ Assessment will need to be conducted using best available evidence to demonstrate whether significant impacts will be caused by the fishery and therefore affect the achievement of the conservation objectives (for multiple designations), including consideration of in-combination (with other activities) effects^{6,7}. Natural England would recommend that shadow assessments are undertaken prior to the fishery opening and for information alongside the byelaw. Standardisation of gear type used will aid the production of any assessment as well as future enforcement.

Gear should be as light-weight and non-penetrative as possible to minimise the impact to subtidal habitats that all contribute to the mosaic of habitats, for which the Essex Estuaries SAC is designated. Consideration should be given to possible modifications that minimise impacts to the seabed and its flora and fauna. Gear type and control should remain a consideration open to review into the future once new technologies and evidence is available on low-impact options and adaptations.

Question 8: Will conforming with these potential requirements incur any additional costs on your business. If yes please could you provide a breakdown of those costs?

No comment.

Question 9: Do you have any comments or views on using vessel tracking systems as a management tool within the fishery?

This is a useful management tool and one that NE would support given the delicate balance of protected species and habitats within the ecosystem.

Question 10: Do you have any comments or views on:

- **The detail of the proposed management plan?**

NE would encourage the production of a fisheries management plan as outlined in the consultation as best practice. There are many factors affecting the success of native oysters in Essex including

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https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/410273/Marine_conservation_zones_and_marine_licensing.pdf

⁷ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/82706/habitats-simplify-guide-draft-20121211.pdf

infection by *Bonamia ostreae*, lack of supporting habitat and changing physico-chemical factors that lead to a complex journey to recovery. Given the uncertainty of the long-term self-sustainability of oysters in Essex, it is a sensible approach to ensure that the management plan includes a level of flexibility (within agreed limits) to adapt to further evidence in the future. A clear structure for review of the management plan, such as setting up a technical management sub-group or including separate meetings for authority members, at agreed timelines would also be beneficial.

Recognising the vulnerability of the native oyster, consideration should be given to whether a stable population is sufficient to describe it as resilient and thriving notwithstanding a temporary deterioration. The carrying capacity of the site should also be considered if possible. A stable population, for a given period of time, at a low level may not be considered resilient however a stable population at a high level may be. External factors affecting the population should also be considered such as potential weather and sedimentation events and other environmental stresses which may weaken the native oyster's resilience, as individuals and as a population. The time period that a population should be stable or increasing for should also be discussed and set clearly. A longer time series of evidence will help reduce the uncertainty of the data and give added confidence in decision-making. Collaboration with ENORI may be useful in providing information on the factors affecting the limitation of the native oyster population in Essex.

• **Using 800 tonnes as the starting point?**

800 tonnes represents an increase of at least double the current population estimate of 300-400 tonnes. It would be advisable to obtain a picture of the contemporary historic context to aid the discussion on the abundance trigger point if possible, noting that the site is dynamic and habitat distribution may now have changed. The evidence or reasoning behind local expert opinion used to derive the figure should be made available.

Information on whether the population has been subject to wide-scale aquaculture practices and whether sub-populations have been self-sustaining naturally would give more certainty to a realistic and evidenced trigger point. Information on whether the abundance has increased since the closure of the public areas to fishing would also aid perspective of the level of increase and provide evidence of the recoverability of the species in the absence of certain human pressures. If information is known about the lowest estimated abundance of native oysters in the estuaries in recent times, this would help to provide context. This information should be included in any shadow HRA and MCZ assessment.

It should be noted that abundance isn't the sole consideration when determining whether the native oyster is in a favourable condition. Information should be reviewed from the point when the public areas of the estuaries were closed to determine whether other factors, such as the age/size structure are of equal, if not more concern. For information, the document 'Shellfish reefs at risk' reports that the Rivers Crouch and Roach were in fair condition in 2009 at the time of writing however caution is required as this represents a possible 50-89% decline⁸.

NE acknowledges that the trigger points are set for the purpose of fisheries management and do not aim to describe favourable condition. We will keep the IFCA updated on discussions on this topic.

• **The management plan process?**

NE supports the management process in principle, however this is subject to the outcome of an HRA/MCZ assessment. We recommend that a shadow Habitats Regulations Assessment and Marine Conservation Zone assessment are produced alongside the byelaw to determine whether the activity is likely to have significant impacts on the designated sites.

⁸ Beck, M.B, Brumbaugh, R.D, Airoidi, L, Carranza, A., Coen, L.D, Crawford, C, Defeo, O., Edgar, G.J, Hancock, B., Kay, M., Lenihan, H., Luckenbach, M.W., Toropova, C.L., Zhang, G. 2009. Shellfish Reefs at Risk: A Global Analysis of Problems and Solutions. The Nature Conservancy, Arlington VA. 52pp.

Population surveys should be carried out in a way that is least impacting to the ecosystem, where practicable. Scientific surveys should be included within the shadow HRA/MCZ assessment.

• **The criteria used to reach decisions?**

NE is generally supportive of discussions at the meeting on the 6th July about management criteria and the sections outlined in the consultation under 'key features of the byelaw' and 'developing a management plan'. We would appreciate being involved in ongoing discussion of criteria in the management plan and reserve comment until production of the detailed management plan.

• **The make-up of the expert group?**

I am unclear where in the document it mentions an expert group but NE would support the creation of such a group if it is to support an adaptive management approach as outlined in the management plan (note other comments on a review group).

• **Do you think anything else should be added or removed from the proposed management process, plan or criteria?**

Ensure that the management plan is in line with NE's conservation advice, specifically the Supplementary advice on conservation objectives (link above). New evidence and literature could also feed in information on temperature-related responses of native oysters (research at the University of Southampton – unpublished, Laing et al., 2005). Consideration of the development of native oyster beds should also be included. Please note our response to consultation question above apply to this question also.

Question 11: Do you have any comments or views based on the closure of the restoration box (area 2a) applying to oyster dredging and harvesting activities?

NE advises that the native oysters are not subject to anthropogenic declines by harvesting in the restoration box⁹. NE would like to see development of native oyster beds in the restoration box, which could contribute to the wider ecosystem as broodstock as well as providing an area for use in experimental science to further our understanding of the native oyster population and habitat in the Essex estuaries. The restoration box should be subject to strict controls, by proportionate means.

Question 12: Do you have any comments or views based on the closure of the restoration box (area 2a) applying to fishing gears that could interact with the sea bed (e.g. trawling)?

The restoration box is a community-led initiative, managed through the Essex Native Oyster Restoration Initiative. It is an area for targeted research and to restore the habitat of native oyster beds. NE would recommend that no bottom-towed gear is used within the restoration box. Scientific exception may apply but would be subject to its own assessment.

There are numerous limitations to restoring native oyster beds including but not limited to removal of the species (as discussed above) and lack of supporting habitat, including the depletion of 3-dimensional structure and vertical relief causing the habitat to become less suitable¹⁰. Hewitt et al 2005¹¹ wrote that 'no take' reserves are (also) useful for reducing impacts from fishing gear on the bottom, which can alter the distribution of shelly habitat and affect overall biodiversity. More information

⁹ Brumbaugh, R.D., Beck, M.W., Coen, L.D., Craig, L. and Hicks, P. 2006. A practitioner's guide to the design and monitoring of shellfish restoration projects: An ecosystem approach. The Nature Conservancy. Arlington, VA.

¹⁰ Rothschild, B.J, Ault, J.S, Gouletquer, M., Heral, M. 1994. Decline of the Chesapeake Bay oyster population: A century of habitat destruction and overfishing. Mar. Ecol. Prog. Ser. 111: 29-39

¹¹ Hewitt, J.E., Thrush, S.F, Halliday, J. and Duffy, C. 2005. The importance of small-scale habitat structure for maintaining Beta diversity. Ecology 86(8): 1619-1626

can be found on the habitat, species and community effects of bottom trawling in sedimentary habitats in 'A review of the effects of fishing within UK European marine sites'¹².

The location of the box is still being discussed and consideration of the impact to other fisheries, alongside the best location for oyster bed development, should be understood and may aid the implementation of restrictions.

Question 13: Do you have any comments or views on the concept of identifying smaller set-a-side areas in preferred oyster bed habitat.

NE would support this concept as a way of managing areas for comparison and in the hope that native oyster bed habitat may be created, supporting other biodiversity and supplying ecosystem services. NE's conservation advice states that 'undisturbed areas, or 'nuclei areas' of sufficiently large oysters in a suitable density could allow oysters to provide larvae to the wider system, providing the population with much greater resilience (Laing et al., 2005¹³), (Haelters, 2009¹⁴)'.

If oyster beds are to be found in the future, the MCZ conservation objectives should be taken into account. Native oyster beds are only designated within the Blackwater, Crouch, Roach and Colne MCZ and nowhere else within England. A precautionary approach, particularly given the national setting, should be implemented.

Question 14: Do you have any comments or views regarding the location or design of the proposed additional set-a-side areas?

Areas set aside should represent areas that have a good likelihood of recovering to oyster beds. The hydrodynamics and supporting processes (from the conservation advice) should be considered as well as historic information of where beds were once located.

For any queries relating to the content of this letter please contact me using the details provided below.

Yours sincerely,

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¹² Gubbay, S. & Knapman, P.A. 1999. A review of the effects of fishing within UK European marine sites. English Nature (UK Marine SACs Project).

¹³ Laing, I., Walker, P. and Areal, F. 2005. A feasibility study of native oyster (*ostrea edulis*) stock regeneration in the United Kingdom: Cefas.

¹⁴ Haelters, J. K., F. . 2009. Background document for *Ostrea edulis* and *Ostrea edulis* beds: OSPAR Commission.