

Cockle Suction Dredging in The Wash and North Norfolk Coast European marine site: Desk study to assess impacts

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Introduction

- The Wash has supported an important fishery for cockles *Cerastoderma edule* for more than a century. It has international and national wildlife importance as an SAC, SPA, Ramsar Site and SSSI reflecting the importance of the extensive intertidal and subtidal habitats of The Wash and their importance for shorebirds.
- Suction dredging has been the main method of fishing for cockles in The Wash since the late 1980s. A review of the Dutch shellfishery policy in the Wadden Sea concluded cockle suction dredging damaged the sediment, benthos and contributed to declines in shorebirds. The Dutch government ruled suction dredging in the Wadden Sea was incompatible with ecologically sustainable economic development and the fishery closed in 2005. Danish and German cockle fisheries in the Wadden Sea were already closed in 1991 on the basis of negative ecological effects caused by the fishery. Despite this it doesn't automatically follow that suction dredging for cockles in The Wash is incompatible with the nature conservation features of the sites.

What was done

- The report reviews available evidence on impacts of cockle suction dredging on cockles, their habitat and associated wildlife. Comparison is made with impacts of other cockle fishing techniques. The report describes the relevance of these studies to The Wash, identifies gaps in knowledge requiring research, and considers ways to mitigate any impacts of suction dredging by managing and modifying fishing activities. The available data on cockle fisheries, stocks and the environment and biota of The Wash which may allow further analysis of possible impacts is reviewed.

Results and conclusions

- Suction dredging for cockles has the potential to affect the cockles themselves, non-target benthic invertebrates, predators of cockles and the sediment.

- In cockles, the main effect is damage and mortality of undersized cockles rejected at the dredge head and deck riddle. It seems likely an average of about 27% additional fishing mortality in dredged areas can be inflicted on undersized cockles beyond the direct fishing mortality of the retained catch. Spatial management and technical measures (*e.g.* limits on discard rates) are likely to be effective in mitigating this.
- In areas of mobile sediment, suction dredging doesn't appear to have strong adverse effects on cockle spatfall success. Invertebrate communities in these exposed situations are, like their habitat, dynamic and dredge impacts are undetectable within days to weeks. Some concern remains about effects on structural components of such communities (*e.g.* polychaete tubes) and about effects on the bivalve *Macoma balthica*, an alternative food resource for cockle-eating birds particularly knot.
- In sheltered muddy areas, suction dredging can cause loss of fine silts. Cockles are important in promoting sediment stability and in adding fine particles to sediment through biodeposition. Loss of these functions may exacerbate loss of silts and cause prolonged recovery times. Invertebrate communities in muddy, sheltered areas are also much more vulnerable to disturbance by suction dredging than communities in more exposed areas. Eelgrass beds are particularly vulnerable.
- There is a lack of studies of suction dredging effects on environment and communities of The Wash. The Wash appears to be at the sandy, exposed end of the spectrum of sites where suction dredging occurs and for this reason, sediments and benthic communities over much of The Wash are thought to be relatively resilient to the effects of suction dredging. However, there are also sheltered, muddier, areas where suction dredging occurs. Greater impacts and longer recovery times would be expected in these areas. This may also apply to *Lanice* biotopes in sandy areas.
- Cockle fishing has been shown to affect knot and oystercatcher populations by direct competition for resources and by modifying their habitat. Oystercatcher populations in The Wash have been adversely affected by low cockle abundance in years when mussel stocks were also low. Suction dredging may have contributed to this effect by out-competing oystercatchers for larger cockles but the importance of this effect in comparison with natural variations in cockle abundance is not known. Effects of dredging on non-target benthic invertebrates are thought not to have affected bird populations in The Wash. There are some grounds for concern that dredging may affect populations of *Macoma balthica*. This could potentially impact knot but there is no evidence this has actually occurred possibly because the main concentrations of *Macoma* in The Wash are thought to be further upshore than the cockle fishing areas.

English Nature's viewpoint

- English Nature notes the potential for adverse impacts of cockle suction dredging on sheltered sediments and that these vulnerable areas occur in The Wash. We note the potential for impacts on undersized cockle, *Macoma* and structural components of sandy habitats, notably *Lanice* biotopes. These impacts may be addressed through spatial management and technical measures which we hope to discuss further with fisheries managers and industry. There are still significant uncertainties over impacts of this technique in The Wash which need to be addressed by research.

Selected references

ATKINSON, and others. 2003. Changes in commercially fished shellfish stocks and shorebird populations in the wash, England. *Biological Conservation*, 114, 127-141.

DARE, and others. 2004. *Historical and current status of cockle and mussel stocks in The Wash*. Lowestoft: CEFAS.

Further information

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