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Impact of dredging activity on the distribution and diet of demersal fish species in a commercial marine aggregate extraction site of the eastern Channel (Dieppe, France)

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Marine aggregate extraction activities are known to impact the marine environment in a variety of ways, some of which have the potential to affect fish and fisheries. Physical damage to the seabed is resulting from direct removal (extraction) and plume deposition with corresponding biological consequences on benthic organisms including fish/shellfish populations. While the direct and indirect effects of marine aggregate dredging on benthic macrofauna are well documented, little is known of the effects of dredging upon demersal fish communities. Potential effects on fish mainly include alteration or loss of habitats in the direct spatial extent of aggregate dredging, but also outside through deposition of fine sediments arising from overspill. This study proved the feasibility of trawling benthic and demersal fish communities within dredged areas and to describe the impact of aggregate extraction on the occurrence, abundance and ecology of fish species, directly or indirectly affected by this activity.
Whereas benthos and fish abundances were strongly reduced in the case of intensive dredging activity, the fish community was only modified by extensive extraction with creation of new food-webs according to the diversification of habitats, and trophic relationships between benthos and commercial fish species could be studied through stomach contents analysis. Results showed that sound aggregate extraction practices are able to minimise the effects of aggregate dredging over licensed areas, thus minimizing the traditional competition for space between fishermen and mining companies.

Keywords: marine aggregate extraction; demersal fish; habitat diversity; trophic relationships.

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