



The role of technical measures in the recovery of the UK sea bass (*Dicentrarchus labrax*) fishery 1980–2002

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Received 15 July 2004; received in revised form 6 June 2005; accepted 7 June 2005

Abstract

In the early 1980s, catch rates of sea bass in the inshore fisheries around English and Welsh coasts were decreasing rapidly, and growth-overfishing—allied to erratic recruitment—was threatening the sustainability of the stock and its fishery. A yield-per-recruit analysis, based on regional exploitation patterns, demonstrated that an increase in the age at first capture would improve long-term yields and boost recruitment to the spawning stock. A public discussion paper was widely distributed, explaining the management objective, to increase the size at first capture to a minimum of 38 cm total length, its scientific rationale and means of achievement. Thirteen regional consultation meetings were held with stakeholders to judge the practicality and likely impact of introducing appropriate technical measures. We describe the introduction of a package of technical measures aimed at protecting sea bass <36 cm and evaluate the effectiveness of a national minimum landing size, complementary mesh size regulations for enmeshing nets (both later adopted internationally by the EU), and seasonal closures of 34 inshore nursery areas in England and Wales where juvenile sea bass were considered to be particularly vulnerable to exploitation. We discuss the acceptability of these technical measures to stakeholders and evaluate this conservation package after its introduction, demonstrating that it has improved the exploitation pattern in the sea bass fisheries and provided both biological and economic benefits. We warn, however, that these measures may not by themselves be sufficient to achieve developing management objectives for the sea bass fishery.

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Keywords: Seabass; *Dicentrarchus labrax*; Exploitation pattern; Technical measures; Closed areas

1. Introduction

Around the coasts of England and Wales, juvenile sea bass (*Dicentrarchus labrax*) are accessible dur-

ing the greater part of the year to both anglers and commercial fishermen operating inshore, where large catches can be obtained by a variety of fishing methods. Partly because of this vulnerability, and the high prices offered for sea bass, the commercial fishery developed rapidly in the late 1970s and 1980s (Pickett and Pawson, 1994). A tagging study (Pawson et al., 1987) conducted as part of a research programme by the

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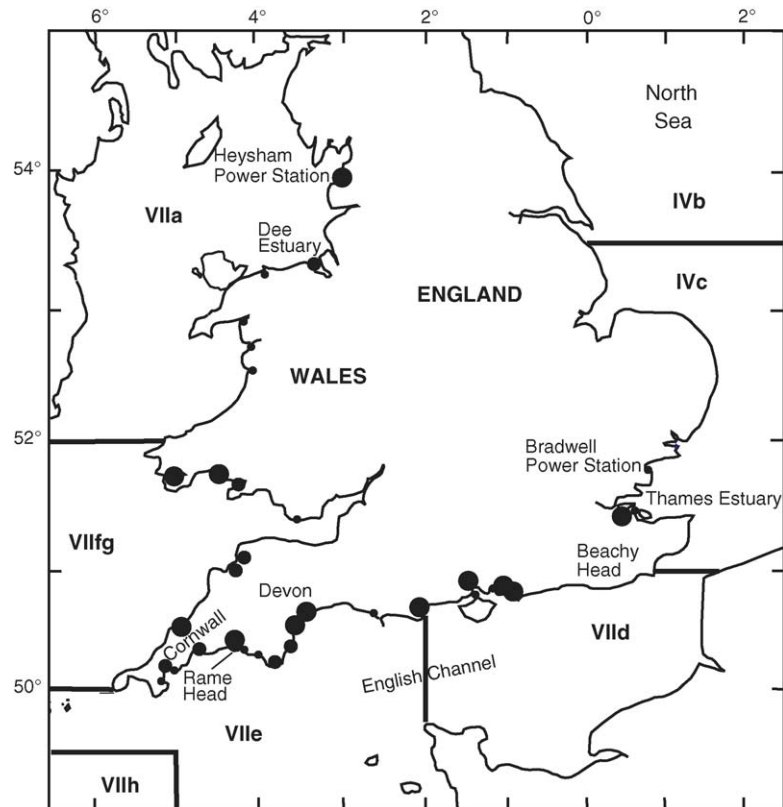


Fig. 1. ICES Divisions, sea areas and specific locations in England and Wales named in the text, and the location of 34 bass nursery areas designated by MAFF in 1990 (size of symbol indicates their relative status based on the probable proportional contribution of recruits to the adult bass stock as a whole and the significance of protecting juveniles there in terms of the benefits to local bass fisheries, Pickett et al., 1995).

Directorate of Fisheries Research (DFR, predecessor of CEFAS, the Centre for Environment, Aquaculture and Fisheries Science), showed that sea bass <32 cm total length (TL, used throughout) appear to remain in the inshore nursery areas to which they recruited as post-larvae (Jennings and Pawson, 1992), and later work (Pickett et al., 2004) has shown that fish >36 cm tend to emigrate from these areas and disperse widely around the coasts of England and Wales (Fig. 1). Once sea bass mature, they adopt the habit of migrating between summer feeding grounds and offshore pre-spawning and spawning areas to the south and west. As a consequence, sea bass >40 cm are less accessible to British inshore fishermen during winter and early spring, though they have become increasingly targeted by French mid-water pair-trawlers since the 1980s and more recently by British vessels (ICES, 2002).

Annual landings of sea bass in the UK commercial fishery fell from a peak of more than 1000 t in 1983–84 to around 600 t in 1985–86 (Pickett, 1990). With an estimated first sale value at £3–4 million in 1986, sea bass was still the seventh most valuable finfish species in England and Wales, where it accounted for a high proportion of the earnings of many inshore fishermen. Around 400 full-time commercial fishermen using 270 boats fished for sea bass as a (seasonal) target species in 1986, and about 2500 other fishermen using more than 1800 boats took sea bass as a valuable by-catch. Even so, some participants in the fishery had already been strongly affected by the declining availability of sea bass. For example, in 1981 more than 150 commercial fishermen employed trolled lines, in season, for sea bass around rocky headlands and reefs in south-west England, but by 1986 fewer than 20 people were

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