Supporting conservation of the European sea bass

Marine Theme Objective: Science for Integrated Marine Management

What's the issue?

Sea bass is a high-value, high-profile species targeted by commercial and recreational fisheries particularly in UK and France. Both sectors depend on healthy stocks and sustainable fishing however their objectives are often widely divergent. To gain the necessary control over fishing mortality whilst achieving a trade-off between each sector's objectives, a range of management approaches are possible. However, effective management is currently impeded by the lack of key information. Management decisions would be significantly helped by: i) a clear picture of the spatial fishing pressures on bass, and how fishing mortality is generated by the distribution and movements of the fish relative to fishing pressure zones; ii) models incorporating these aspects of behaviour relative to fishing pressure zones; and iii) the best available evidence of bass population structure, biology and movements to inform the development of the spatial population models.

What are the aims of the project?

The overarching aims of the project are incorporated in five linked work-packages (WPs):

WP1 will establish a communication plan and representative steering group, with continued engagement over the lifetime of the project.

WP2 aims to map spatial fishery pressures and impacts on bass, evaluate the relative benefits of different approaches to keep fishing mortality within sustainable limits, and identify uncertainties and data gaps affecting the ability to predict benefits of conservation measures.

WP3 is a large-scale programme of tagging, involving recreational anglers, carried out in parallel with the release of 100 mature bass tagged internally with floated electronic data storage tags (DSTs). A data workshop will promote cooperative interpretation of European bass tagging programmes and help steer future research.

WP4 will use data from WP2 & WP3 for the development of spatial, individual-based models to assess conservation strategies for sea bass.

WP5 will collate current knowledge of several other key species such as grey mullet, black bream and gilthead bream, and consider if they are amenable to the modelling approaches developed for bass.

Figure 1: European sea bass, *Dicentrarchus labrax*, in the Cefas Lowestoft aquarium.

Which policy areas will the research inform?

We aim to identify key uncertainties and data gaps to prioritise further data collection relevant to future management needs. Using spatial models, we will evaluate recreational and commercial fishing impacts, and conservation measures. The work will strengthen our ability to manage bass stocks sustainably. The focus is on bass due to the high policy and scientific profile, but we will explore the applicability of our approaches to other recreational fishing species.

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What are the results from the project and how will they be used?

The overall aim of this project is to build the evidence-base and methods required to successfully manage the European sea bass, and understand how these can be applied to other species that are important to both commercial fishers and recreational anglers. This will be achieved through a process that engages and builds trust with stakeholders.

Engagement with commercial fishing and recreational angling stakeholders
We will engage with a range of stakeholders to enhance the quality, utility and understanding of the outputs. This will be achieved through regular briefing and formation of a steering group.

Understanding the impact of management measures and identifying key data gaps.
We aim to identify the commercial and recreational fishing pressures on the bass population in the North Sea, English Channel, Celtic Sea and Irish Sea, and will explore the relative effectiveness of different conservation measures. This will include quantification of spatial fishery impacts on sea bass, exploration of the relative effectiveness of a range of possible conservation measures, and identification of the uncertainties and data gaps most influencing the predicted benefits of conservation measures.

Population dynamics of European sea bass
A combined approach to understanding and quantifying population dynamics of bass using both artificial and natural markers will be applied, involving stakeholder participation, and building on existing studies. The overall aim is to achieve a more comprehensive overview of bass stock structure and distribution and gain fundamental understanding of the life-history movements of bass. The objectives are to understand the movements of bass through tagging programmes that include stakeholders and better understand bass population dynamics through a data sharing workshop including invited European experts.

Scenario modelling to assess conservation strategies for European sea bass
We will develop individual-based models (IBMs) of the pelagic and adult phases and use these models to explore alternative conservation strategies for bass.

Application to other species
We will collate and evaluate existing knowledge on the biology and processes known to affect the abundance and distribution of several additional recreational fish species of interest to the UK like grey mullet, black bream and gilthead bream. Where possible, we will identify important gaps in understanding of population biology relevant to fish stock assessment, management and conservation, and examine the potential for the models developed for bass to be applied to these other species.

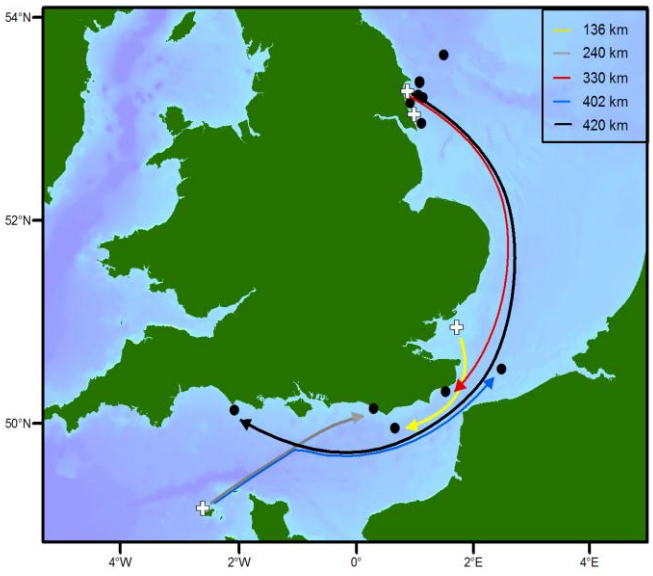

Figure 2: Movement patterns of bass tagged with archival tags by Cefas in 2005-2006.

Where can I find further information about this and related research?

For more information, please contact Ewan Hunter at Cefas (ewan.hunter@cefas.co.uk).

Alternatively, please contact Defra's Marine Evidence Team: marinescience@defra.gsi.gov.uk

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