PhD: The Ecology and Distribution of European Seabass (*Dicentrarchus labrax*) in the south west UK

Progress update May 2017, Thomas Stamp, Plymouth University

This document is intended to provide a progress update towards the PhD entitled: The Ecology and Distribution of European Seabass in the southwest UK. The PhD is now in it's second year, and has three defined research chapters; 1) Acoustic tracking of juvenile European Seabass, 2) Assessing the quality of juvenile fish habitat within Managed Re-alignment Schemes, 3) Static netting review.

1) Acoustic tracking of juvenile European Seabass

Plymouth University and the Devon Severn IFCA submitted a successful funding application to the European Maritime and Fisheries Fund, for the amount of £241 685.40. The grant will be used to track 150 juvenile European Bass across 3 Bass Nursery Areas (BNAs) of the southwest UK; the Dart and Taw/Torridge estuaries, and Salcombe Harbour. The tracking system will work by implanting a small acoustic transmitter within the abdominal cavity. The transmitters will emit a unique ping which can be detected and recorded by strategically placed acoustic receivers. Receivers will be placed at and adjacent to boundaries, aswell as at major confluence and pinch/narrow points within BNA. Specifically, 2 age classes will be targeted within the project; 20-30cm & 31-42cm (total length), these age classes have been selected due to their potential vulnerability from capture in commercial and recreational fisheries. The data will have high relevance to management of coastal European bass fisheries in the southwest UK, as well as wider relevance within northwest Europe.

The project has involved obtaining various licenses and dispensation from statutory nature conservation bodies. To date permission has been secured from the Environment Agency, Natural England and the Marine Management Organisation. Permission has also been granted from relevant port authorities and the Crown estate to fix acoustic receivers throughout each estuary. Due to the implantation of transmitters within live seabass, home office licensing is also required for the project. In this regard, 6 staff members from Plymouth University have been trained and have successfully gained personal home office licenses. An application for a home office project license has also been written and is currently being assessed by Plymouth university ethical review board; following this the project license will be assessed by the home office. Currently it is hoped the acoustic receivers will be deployed from June 2017 and fish tagging will begin in July. Once setup the system will continuously monitor fish movement for a period of 1.5-2 years.

The project has also attracted additional funding from interested parties, who aim to monitor other fish species which use the same habitats as European Seabass. CEFAS have provided additional funding for 20 transmitter tags which will be used to monitor Gilthead Bream (*Sparus aurata*) in Salcombe Harbour. The Environment Agency has also provided additional funding to monitor Sea trout (*Salmo trutta*) movement in the Dart and Taw/Torridge estuaries.

The project will result in a number of peer reviewed publications, and directly inform European bass management in the southwest UK.

2) Assessing the quality of juvenile fish habitat within Managed Re-alignment Schemes

This chapter aims to quantify the quality of juvenile fish habitat within managed re-alignment schemes (man-made saltmarshes) when compared to natural saltmarsh. There will be emphasis on Steart marsh, the largest managed re-alignment scheme in the UK, however samples will also be collected from Medmerry Nature Reserve (Sussex) and Wallasea Island

(Essex). Fyke and seine nets will be used to record fish diversity, and a sub-sample of juvenile bass will also be retained to analyse diet and growth. Using otolith growth rings juvenile bass growth will be recorded when they have accessed managed re-alignment schemes. Furthermore stomach contents and stable isotope analyses will be used to measure if there is any difference in diet when seabass exploit managed re-alignment vs natural saltmarshes.

To date, permission has been granted from the Environment Agency, Natural England, the Marine Management Organisation, and land owners. Sampling for this project will begin 24th May and will continue until September.

3) Static netting review

During the consultation process for the D&S IFCA netting permit byelaw, the Environment Agency (EA) submitted a report to the IFCA which suggests that salmonids were highly associated with the top 0-5m of water depth. Therefore the EA recommended that in areas where salmonid bycatch is expected, coastal static net headline depth should be extended from 3 to 5m.

Within this chapter, it is proposed that static nets be deployed by local fishermen with 0, 3 and 5m headline depths. The catch from each net will then be used to identify if salmonid by-catch is significantly reduced when headline depth is increased to 5m. The catch will also be used to estimate the potential economic impact on individual fishermen if a 5m headline depth was imposed.

Devon and Severn IFCA Deputy Chief Officer Mat Mander is currently speaking with local fishermen to see if they would be interested in participating in the project. As mentioned previously, the EA are also interested in tagging seatrout with acoustic transmitters in the Dart and Taw/Torridge estuaries. It will be proposed that the EA tag sea trout with acoustic transmitter with in-built depth sensors. If depth sensors are included within the acoustic tracking, the depth data could compliment the static netting review and provide detailed information on sea trout movement in areas where coastal netting operates.