# EPIF Project Updated Workplan 2016

## May 20th 2016

This brief document provides an update to the workplan for 2016. The main change from the proposed workplan is the substitution of quota optimisation with a detailed focus on the economic implications of a select number of gear modifications for the mixed fishery of haddock and whiting in the Celtic Sea. Each topic is presented separately with requirements needed to complete the tasks.

## Gear technology

Plan:

* Continue to work closely with gear technology experts at BIM on both the design and analysis of the gear trials as they arise;
* Contribute to summary analyses for publication of summary results across trials; e.g., advantages and disadvantages of a range of gear technology experiments conducted to date to address the requirements of the Landing Obligation;
* Capacity building via an analysis workshop in September, focussed on the automation of data processing steps with quality control and the multinomial random effects model;
* Outreach of the methods via the development of a straightforward implementation in R (under the github repository) to ease application of the method.

Requirements:

Meetings and discussions with the gear technology team at BIM. Use of meeting room for September workshop.

## Economic implications of gear modifications

This component is a main deliverable of the EPIF project. Here we will build on implication analyses such as the *Nephrops* mesh size analysis report to provide information on the effects of various mitigation measures under the LO. We will specifically focus on the mixed whitefish fishery in the Celtic Sea for haddock and whiting. As demonstrated in the gear trials, some gears may reduce catches of unwanted size classes of one species but increase those of the other species. The implications of this will be explored using a simplified bioeconomic model of the catch process and the economics under the LO.

Plan:

* Use FLR to set up the stocks and fleets. A key factor here will be to balance complexity with practicality. Modelling the stock and fleet in space and time could become very complex but we will begin with simplified assumptions on the distribution in space and time (including the unit of time – daily, weekly, monthly?);
* Alter the catchabilities of the fleet via gear modifications;
* Implement a Landings Obligation where the fishery stops when the quota is hit based on the results of the LO simulation trials (needs extension);
* Translate the catches into revenue using the price model below;
* Compare and contrast alternative solutions both in terms of cost of the modification and revenues accrued over the course of the season.

Requirements:

Meetings with the gear and fleet experts at BIM to ensure the simulations are set up accurately (fleet definitions, gear settings), reflecting uncertainties where they exist. As this is a potentially complex analysis, we should establish clear deadlines whereby the work needs to be completed. This will limit the modelling complexity and contribute to an intuitive understanding of the output.

## Price dynamics

Inasmuch as dynamics are included in the biological components of the models, so dynamics should be included in the prices used to infer the implications of gear modifications. The aim of price modelling is to derive theoretically justified and empirically estimated models for the dynamics of the prices of haddock and whiting in the mixed demersal fishery in the Celtic Sea.

Plan:

* Require completely anonymized sales note data containing:
  + Species (haddock or whiting);
  + Date;
  + Quantity sold (kg);
  + Revenue/value or price (price = revenue / quantity);
  + Grade;
  + Size class;
  + Other variables of potential interest, to be decided by economic experts within BIM and GMIT.

Using this level of detail will enable fitting of dynamic price models to be incorporated into the economic implications above. Note that simpler summary price statistics (e.g., average price per size class) will also be used to compare against more dynamic price models.

* Fit cutting-edge univariate (single whiting or haddock) and bivariate dynamic price models including elasticity to the quantity landed as well as stochastic models (time series analysis).
* Summarise the results so that they can be included in the price module of FLR for use in the bioeconomic implications analysis above.

Requirements:

* Data access will need to be discussed;
* Where feasible data agreements will need to be drawn up.