Home Office

NON-TECHNICAL SUMMARY

Fish Movements and Behaviour

Project duration

Years **5**
Months **0**

Project purpose

- (d) Protection of the natural environment in the interests of the health or welfare of man or animals.

Key words

Fish movements, Fish Behaviour, Fish Telemetry, Otolith micro-chemistry

Retrospective assessment

The Secretary of State has determined that a retrospective assessment of this licence is not required.

Objectives and benefits

Description of the project's objectives, for example the scientific unknowns or clinical or scientific needs it's addressing.

What is the aim of this project?

To gain a reliable and objective understanding of the movements, migrations, patterns of distribution and behaviour of marine fin-fish populations in relation to their environment, as well as discard survival. This will provide advice in support of rational management and conservation to stakeholders, national and international governments and other organisations.

Potential benefits likely to derive from the project, for example how science might be advanced or how humans, animals or the environment might benefit - these could be short-term benefits within the duration of the project or long-term benefits that accrue after the project has finished.

What are the potential benefits that will derive from this project?

Information on all aspects of fish migration and distribution in relation to the environment and discard survival will permit better advice to Defra policy customers, the Scientific, Technical and Economic Committee for Fisheries (STECF), International Council for the Exploration of the Sea (ICES) and relevant stakeholders (e.g. commercial and recreational fishing industry and NGO representatives) on the rational conservation and management of marine fish stocks. The information will also contribute to the development of improved methods for assessing marine fish stocks. The work will also help provide a fundamental understanding of the relation between the movements, behaviour and distribution of fish, and their environment, thereby improving our capability to advise on the likely impacts of commercial and recreational fisheries upon fish stocks.

Species and numbers of animals expected to be used

What types and approximate numbers of animals will you use over the course of this project?

Fish, adults, maturing and juveniles. Approximately 2500 animals will be used in the 5 year programme of work.

Predicted harms

Typical procedures done to animals, for example injections or surgical procedures, including duration of the experiment and number of procedures.

In the context of what you propose to do to the animals, what are the expected adverse effects and the likely/expected level of severity? What will happen to the animals at the end?

Most of the procedures are assessed as Moderate severity, some are Mild. Most animals will be involved in tagging studies and will be discharged from the Act and returned to the sea at the end of the procedure. Possible adverse effect would be infection of tagging wounds. Risk of infection will be minimised by conducting appropriate antiseptic and disinfection procedures and techniques to create aseptic conditions for tagging. Where appropriate, analgesia will be applied to the tagging site to reduce likely pain.

Application of the three Rs

1. Replacement

State why you need to use animals and why you cannot use non-animal alternatives.

The aim of the work is to use electronic telemetry methods (acoustic tags, data storage tags or pop-up satellite archival tags) together with (where appropriate) otolith microchemistry and population genetics, to advance our understanding of the movements and behaviour of marine fish of commercial or conservation concern (excluding endangered species listed in Annex 1 of CITIES), in relation to their environment. For this type of investigation there is no appropriate alternative to the use of conscious wild fish.

2. Reduction

Explain how you will assure the use of minimum numbers of animals.

The experimental methods and numbers of animals used are based on previous experience and research. As part of Cefas' Animal Welfare and Ethical Review Process, each programme of study is considered by staff from our in-house statistical team and their sign-off is required before any study is undertaken.

The post-release survival of discarded fish in commercial fisheries will be investigated using electronic data storage tags, an approach that uses fewer fish than mark-recapture studies.

3. Refinement

Explain the choice of species and why the animal model(s) you will use are the most refined, having regard to the objectives. Explain the general measures you will take to minimise welfare costs (harms) to the animals.

The aim of the work is to advance our understanding of the movements and behaviour of marine fish of commercial , recreational and/ or conservation concern in relation to their environment. Therefore, a range of species including sea bass, spurdog, common skate, porbeagle shark etc. need to be studied. The methods chosen are based on previous experience and research that has been shown to provide evidence that is valuable in formulating advice to Government on factors that may affect fish populations and possible mitigation. With tag technology continually improving as new fish species become the focus of management attention, electronic tags become smaller, with more benign attachment/implantation approaches. Tag attachment/implantation methods will be continually updated, reviewed and evidence based alongside tag technology developments to ensure that they are humane and that they minimise the effects on the fish's behaviour, long-term welfare and survival. Where fish undergo a procedure with recovery, an appropriate anaesthesia and analgesia will be administered to provide pain relief, and they will be monitored for a suitable period in order to assess any adverse effects and ensure minimum suffering .