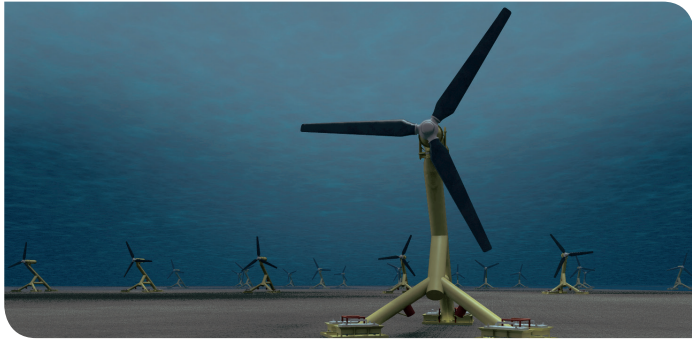


MARINE MAMMAL RESEARCH – SCIENCE INTO POLICY



ARTIST'S IMPRESSION OF AN ARRAY OF UNDERWATER TIDAL GENERATORS. (CREDIT: HAMMERFEST STRØM).



COMMON SEAL (CREDIT: A CORAM SMRU).

Introduction

The Scottish Government is funding a major strategic marine mammal research programme to provide advice to Scottish Ministers across a range of key marine policy areas. The Sea Mammal Research Unit (SMRU) at the University of St Andrews, working with a number of collaborating organisations, will be carrying out this research over a five year period which

started in 2015, and builds on work previously funded by the Scottish Government.

Three specific research themes have been prioritised because information and resolutions are urgently needed to inform Scottish marine policy decisions.

Theme 1 – Marine renewable energy

There is a particular focus on offshore marine renewable energy in this research programme. Interactions between marine mammals, and renewable devices are being evaluated. There is also a need to progressively improve assessment and monitoring methods for marine mammals and management approaches to avoid or minimise any potential adverse effects of renewable energy devices. The tasks in this theme include:-

- tracking the fine scale, underwater movements of marine mammals around

operational tidal devices;

- quantifying the likelihood of seal mortality due to interactions with tidal device rotors;
- producing contemporary data-derived estimates of collision risk between harbour seals and operational tidal devices;
- quantifying the movement patterns of harbour seals to predict and manage risks from tidal energy developments;
- advising regulators and regulatory bodies on specific issues relating to marine renewable energy devices as they arise.

Theme 2 – Harbour Seal Decline

Significant declines in many harbour (or common) seal populations around the coast of Scotland were first identified following aerial surveys carried out in 2006. The numbers of animals hauled out on land during their annual moult in August are counted by the SMRU. The dramatic reduction in these counts has caused concern, particularly in Shetland and Orkney where counts have declined by up to 30% and 78%, respectively, and in the Firth of Tay where the decline in the number of harbour seals counted was over 95%.

The results of the surveys from 2001 to 2006 indicated a general decrease in harbour seal abundance within many of the Seal Management Areas. The latest data presented to the Special Committee on Seals (SCOS) in 2015 indicated that the populations Orkney and the East Coast were continuing to decline, while different parts of the West Scotland Seal Management Area were either stable or increasing (the SCOS report is

available at <http://www.smru.st-andrews.ac.uk/pageset.aspx?psr=411>). This research theme will therefore:

- assess the factors that can be ruled out as being involved in the harbour seal decline;
- estimate the survival and birth rates for harbour seals at sites within the Seal Management Areas that show contrasting population trajectories;
- improve understanding of harbour seal population dynamics and of the main (potential) extrinsic factors driving survival and reproduction and therefore population change using a modelling approach;
- investigate the spatial overlap between grey and harbour seals and the effects, if any, of harbour seal predation by grey seals;
- identify management and mitigation measures and discuss their potential effectiveness in altering harbour seal population trends.

Theme 3 – Seal and Salmon Interactions

There is a long history of conflict between salmon fishermen and seals. Seals are highly visible predators of salmon, are regularly seen taking salmon from traditional salmon fishing nets and are also seen targeting salmonids in Scottish river systems, which can severely restrict angling opportunities. Both angling and coastal salmon fisheries play an important role in the rural economy. Understanding the behaviour of seals

around nets and in rivers, the way in which they catch salmon in these locations and the extent to which these behaviours are attributable to a few or many individuals is important to help develop methods to limit the impact on fisheries. It is also important to understand the role of salmon predation in the ecology of these animals. The tasks here are to:

- discover the extent of the role of 'salmon specialist' seals in these activities;
- determine the effectiveness of modifications to fishing nets that aim to limit the ability of seals to take captured salmon from nets;
- test acoustic deterrent devices as a means of deterring seals from rivers and from netting sites;
- investigate the behaviour and movements of seals that predate on salmon.



FIGURE 3.
A COMMON SEAL EATING A SALMON

