

NORWAY - PROGRESS REPORT ON MARINE MAMMALS 2021

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I INTRODUCTION

This report summarises Norwegian research on pinnipeds and cetaceans conducted in 2021 and covered to the compilation. The research presented here was conducted at, or by representatives and associated groups of,

The Academy of Marine Research (DMR): www.kim.no

The Norwegian Polar Institute (NP): www.polar.no

University of Tromsø – The Arctic University of Norway, Department of Arctic and Marine Biology, Research group Arctic Chronobiology & Physiology (UAT-AMB-ACP)

<http://arctic.chronobiologyandphysiology.hogskulen.no/>

University of Tromsø – The Arctic University of Norway, Department of Arctic and Marine Biology (UAT) www.uat.no

Norwegian University of Science and Technology (NTNU) www.ntnu.no

University of Oslo (UiO) www.uio.no

Directorate of Fisheries, Sea Farming and Aquaculture (DSM) www.fiskeridir.no

Norwegian Ocean Survey (NOF) www.norwegianocean survey.no

II RESEARCH BY SPECIES 2021

PINNIPEDS

The assessment model currently in use for **harp** and **hooded seals** is a deterministic, age-structured population model. It uses historical catch data, reproductive data, and estimates of pup production to estimate the current total population. Development of these models was initiated when pup production estimates becoming available in the 1980s – subsequently the availability of data has increased, and the time series now spans more than 30 years. The deterministic model treats several of the input data as exactly known (e.g. reproductive parameters) and interpolates these data linearly across periods when no data are available. In addition, it only estimates three parameters: initial population size and pup and adult mortalities. The model is therefore very inflexible, and unable to adequately account for rapid changes in e.g. pup production. While the model appears to give a relatively reliable reflection of current population status, it obviously fails to generate reliable future population trajectories over time. ICES and NAMMCO have recommended that further model development should be undertaken to improve its performance. A first modelling workshop, including seal scientists from the entire North Atlantic, was held in the autumn of 2020 to discuss current models and suggest ways of improvements. One way forward considered was to link the seal models more tightly to other ecological variables, for example variations in important prey species (such as capelin) and competitors (such as cod). The work with model development continued by correspondence in 2021, progress and results will be discussed in digital meetings throughout 2022. In addition, ICES has facilitated the establishment of a benchmark process for harp seals. This process was formally started during a kick-off meeting, which was held online on December 8, 2021. This meeting laid out the agenda for a