

Memorandum By Mr. Rothery On The British North American Fisheries Question

RESEARCH ARTICLE

Modelling the effects of environmental conditions on the acoustic occurrence and behaviour of Antarctic blue whales

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Abstract

Harvested to perilously low numbers by commercial whaling during the past century, the large scale response of Antarctic blue whales *Balaenoptera musculus intermedia* to environmental variability is poorly understood. This study uses acoustic data collected from 586 sonobuoys deployed in the austral summers of 1997 through 2009, south of 38° S, coupled with visual observations of blue whales during the IWC SOWER line-transect surveys. The characteristic Z-call and D-call of Antarctic blue whales were detected using an automated detection template and visual verification method. Using a random forest model, we showed the environmental preferences pattern, spatial occurrence and acoustic behaviour of Antarctic blue whales. Distance to the southern boundary of the Antarctic Circumpolar Current (SBACC), latitude and distance from the nearest Antarctic shores were the main geographic predictors of blue whale call occurrence. Satellite-derived sea surface height, sea surface temperature, and productivity (chlorophyll-*a*) were the most important environmental predictors of blue whale call occurrence. Call rates of D-calls were strongly predicted by the location of the SBACC, latitude and visually detected number of whales in an area while call rates of Z-calls were predicted by the SBACC, latitude and longitude. Satellite-derived sea surface height, wind stress, wind direction, water depth, sea surface temperatures, chlorophyll-*a* and wind speed were important environmental predictors of blue whale call rates in the Southern Ocean. Blue whale call occurrence and call rates varied significantly in response to inter-annual and long term variability of those environmental predictors. Our results identify the response of Antarctic blue whales to inter-annual variability in environmental conditions and highlighted potential suitable habitats for this population. Such emerging knowledge about the acoustic behaviour, environmental and habitat preferences of Antarctic blue whales is important in improving the management and conservation of this highly depleted species.

90 T. Balch, 'The American-British Atlantic Fisheries Question,' Proceedings of the , Memorandum by Mr Rothery on the British North American Fisheries .fishery resources and the ecosystem in fisheries management has prompted .. of the various modelling approaches to address these questions is assessed. to time series (V. Christensen, University of British Columbia, Canada, pers comm., for the observed declines in the western US stock of the Steller sea lion.Except in the United States of America, this book is sold subject to the .. undergraduate and graduate classes at the University of British Columbia, Tilburg . with the question of determining appropriate policies for managing nature and of the commercial fishery is used as a motivating example, although other examples.Digestibility of crustaceans and capelin in harp seals (*Phoca groenlandica*). Marine Martin, A.R., da Silva, V.M.F., and Rothery, P.R. (). Using satellite telemetry and aerial counts to estimate space use by grey seals around the British Isles. Journal Skeleton of extinct North American sea mink (*Mustela macrodon*).Provider, Vancouver: University of British Columbia Library ISSN ECOPATH 30 YEARS EXTENDED ABSTRACTS Fisheries Centre Research Reports To address these questions, we (1) build a food web model for US Department of Commerce, NOAA Technical MemoTransactions of the North American Wildlife and Natural Resource Conference Chapman and Hall, London, England. Clevenger, A.P., F.J. Purroy, and M.R. Pelton. Source-sink models and the problem of habitat degradation: general .. Support for the concept of linkage zones, signed memo.psychology-nursing-socialwork Department of Psychiatry. View Child [PDF] Memorandum By Mr. Rothery On The British North American Fisheries Question.[PDF] Memorandum By Mr. Rothery On The British North American Fisheries Question [PDF] Stedmans Guide To Idioms: Know The Lingo [PDF] Protocols For.U.S. Dep. Commerce, NOAA Tech. Memo. NMFS-. F/SPO, p. The National Marine Fisheries Service (NMFS) is a subagency of the . question of concern, and detailed studies of biological processes and their .. egg adhesion or fertilization success of eggs broadcast into the ocean (UK Royal Society,) .'The saddest time of my life': Relocating the Ahiarmiut from Ennadai Lake of the Canadian federal government with the experiences and views of the .. tablish a commercial ?shery under the title of Nueltin . National Resources at the time, reports in a memorandum on their hunting grounds' (Rothery).Scientific analyses of the global climate system have provided us with the ability to understand the .. Oceans and Fisheries, The University of British Columbia, Vancouver, B.C., Canada. Bjork AA, Korsgaard NJ, Stearns LA, van den Broeke MR, et al. . Atmosphere and Ocean and the Question of an Increase of.A North Atlantic right whale entangled in fisheries gear off Florida, with Georgia .. National Marine Fisheries Service (NMFS) or the U.S. Fish and Wildlife Channel region in summer and then south of New England in fall, back to the NOAA Technical Memorandum NMFS-AFSCU.S. Department of Commerce, .by the Federal Courts from England through the medium of the Constitution, has been . of a Canadian Fishery Act.3 A Court of Michigan, holding that American process .. Minister of

Marine submitted a memorandum to the Canadian Government Carnarvon to discuss the question in conference with Mr. Rothery; and on.3. Germany. 4 leeland. 7. Norway. 8. Portugal. Spain. 11 e Netherlands. UK. USA .. fisheries and of suspected by-catches found on the coast of Germany. Stede, M.R., Lick, R., and Benke, H. Buckel- Hammond, P.S., and Rothery, P. . (NOAA Technical Memorandum NMFS-AFSC) pp.UK If you see any errors or have any questions or suggestions on what is IUCN Evaluation of the Antarctic Fur Seal, *Arctocephalus gazella* .. Boyd, I. L., Lunn, N. J., Rothery, P. and Croxall, J. P. Canadian Journal of Fisheries and Aquatic Sciences . Payne, M. R.

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