

MareFrame



Scientific Conference “Advances in Ecosystem-based Fisheries Management”

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Towards ecosystem-based fisheries management
Modelling multispecies interactions
between grey seals and demersal fish species in the West of
Scotland

N.G. Fallon, V. Bartolino, A. Baudron, P.G. Fernandes

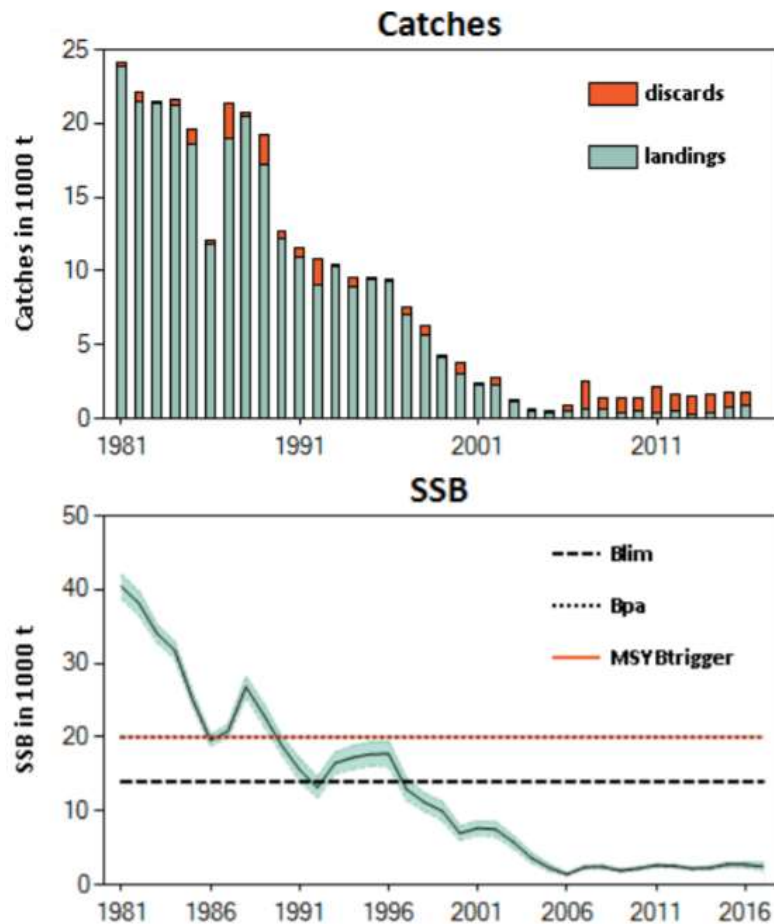


Overview

- **Case study system and objectives**
- **Model development**
- **Scenarios and Preliminary results**
- **Issues and Future work**



West of Scotland Case Study



ARTICLE

The effects of grey seal predation and commercial fishing on the recovery of a depleted cod stock

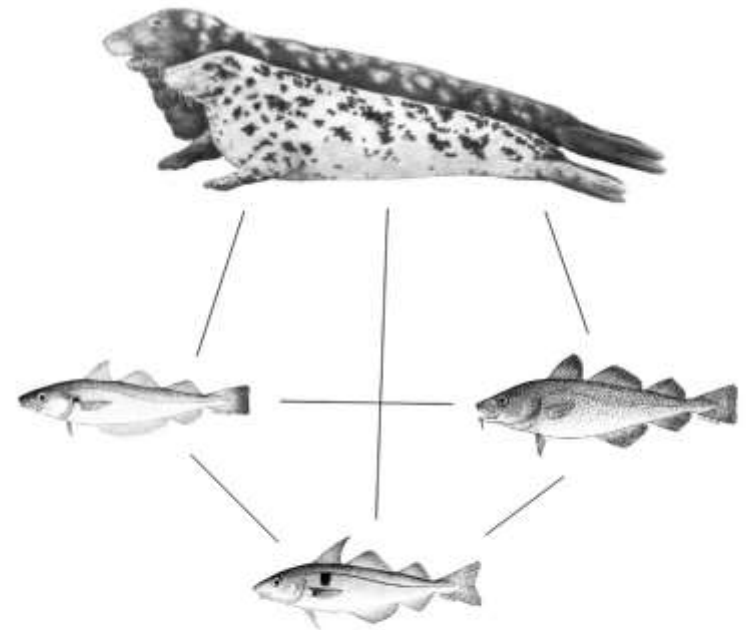
Robin M. Cook and Vanessa Trijoulet



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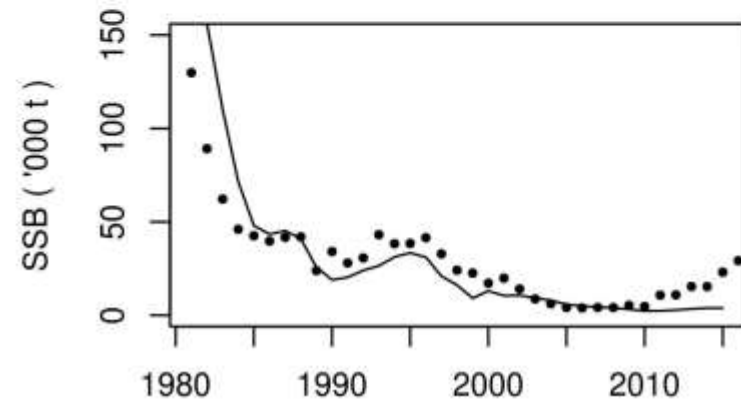
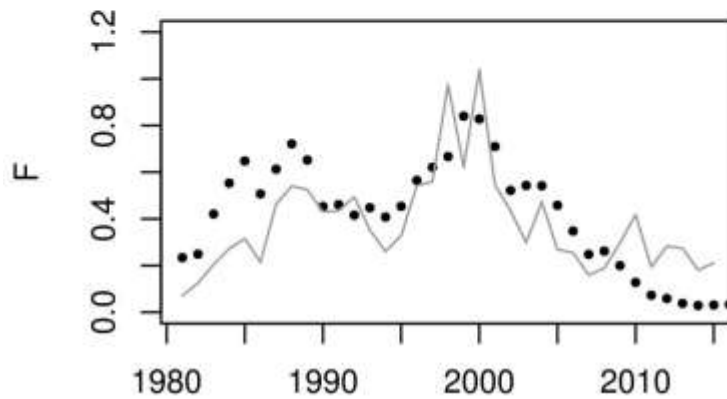
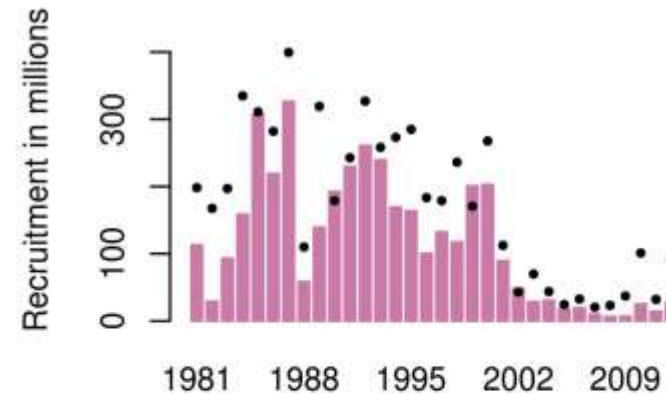
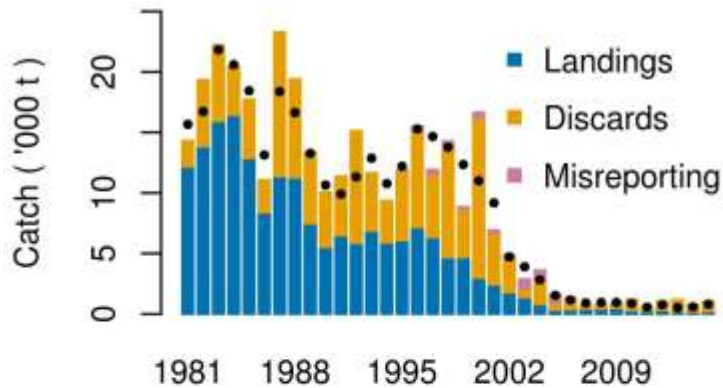
Objectives

- **Develop GADGET multispecies model**
- **Project model under different scenarios**
- **Compare with EwE model**



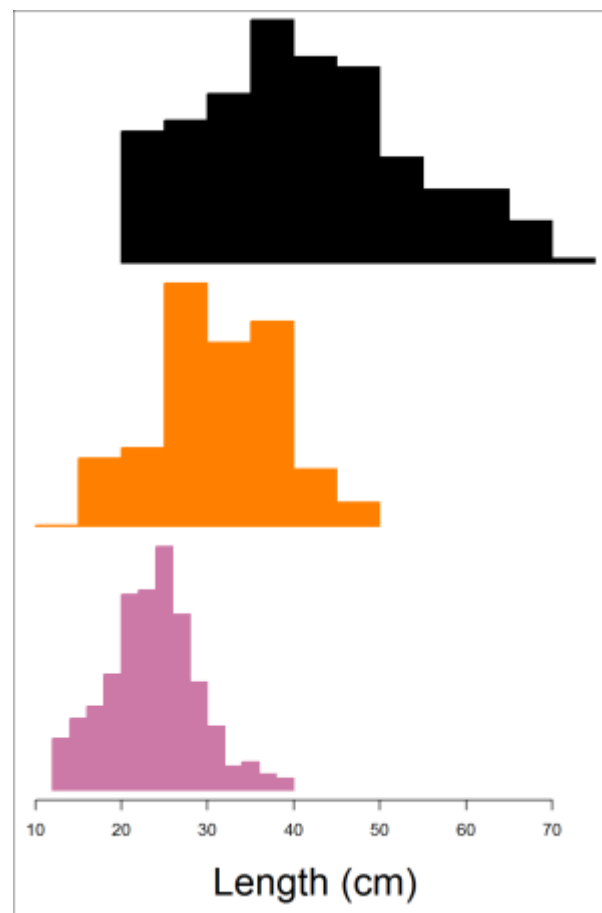
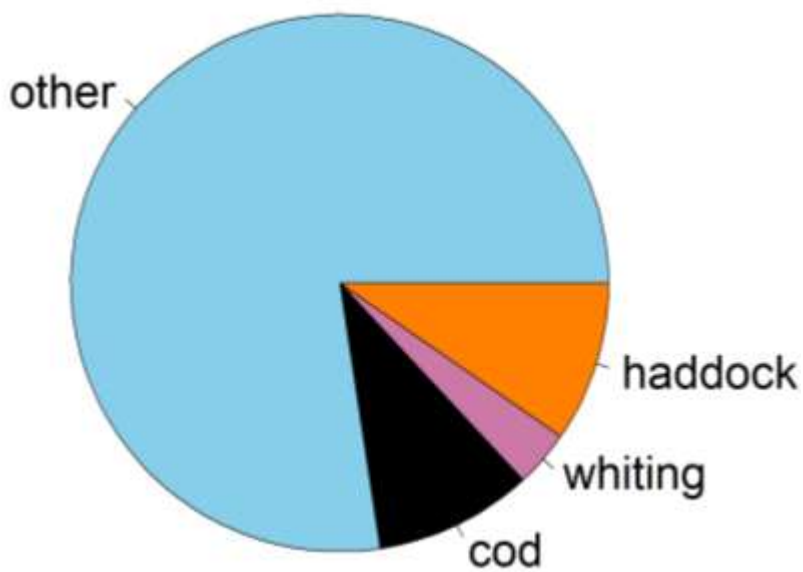


Single-species Models





Multispecies Model





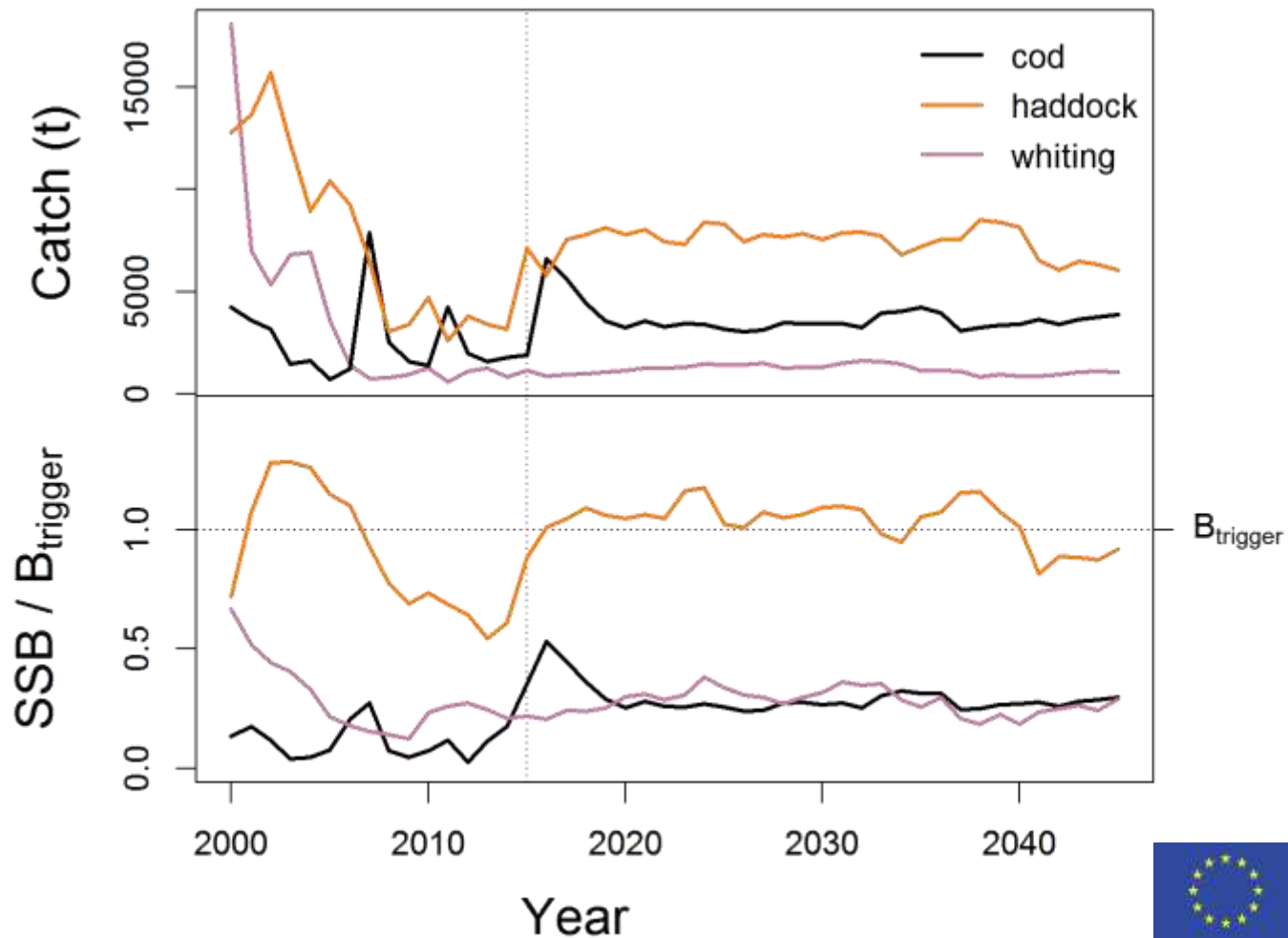
Simulation Scenarios

- F_{SQ}
- F_{MSY}
- F_{SQ} with seal reduction
- F_{MSY} with seal reduction



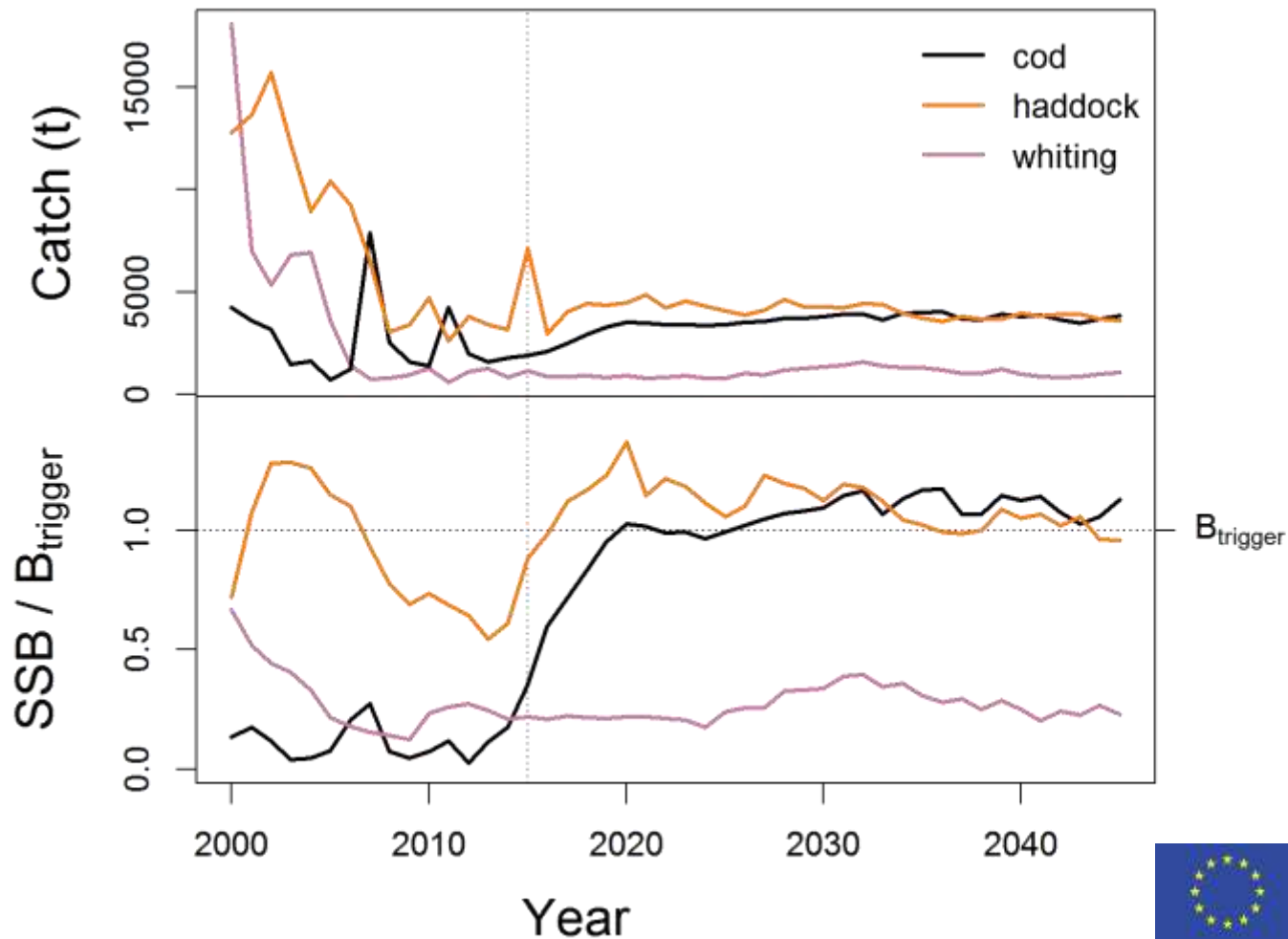


Results (F_{SQ})



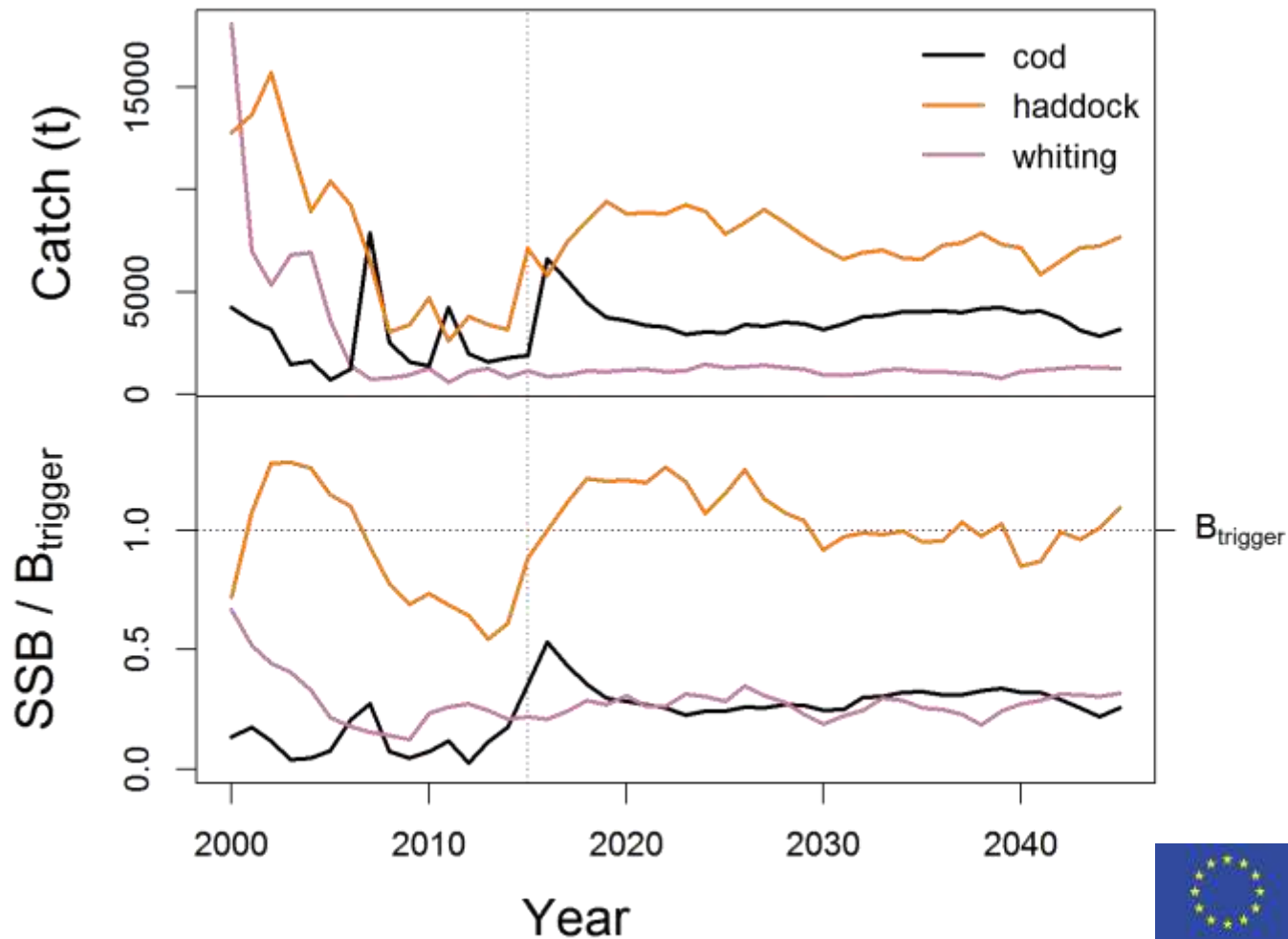


Results (F_{MSY})



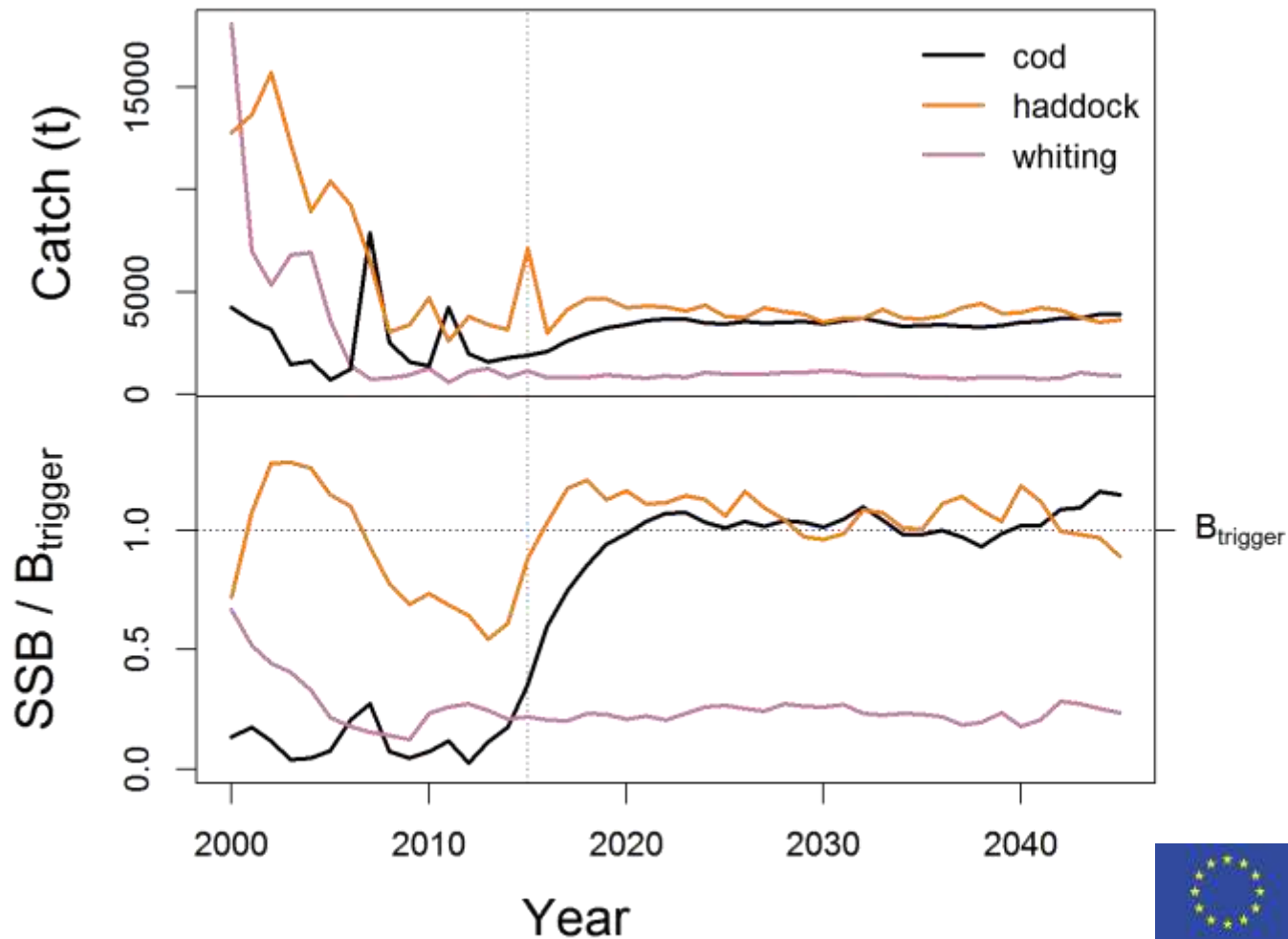


Results (F_{SQ} ; Seals ↓)



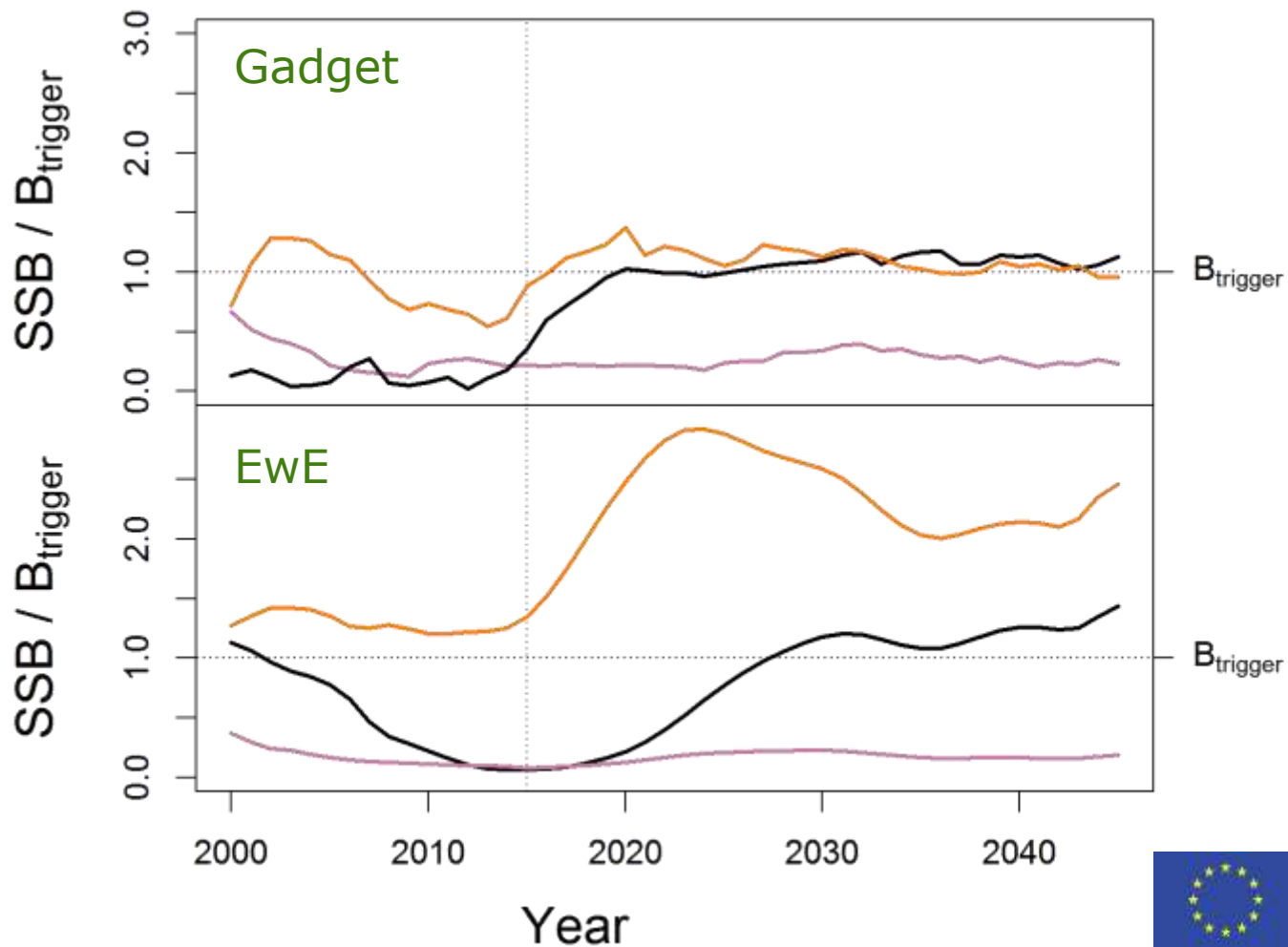


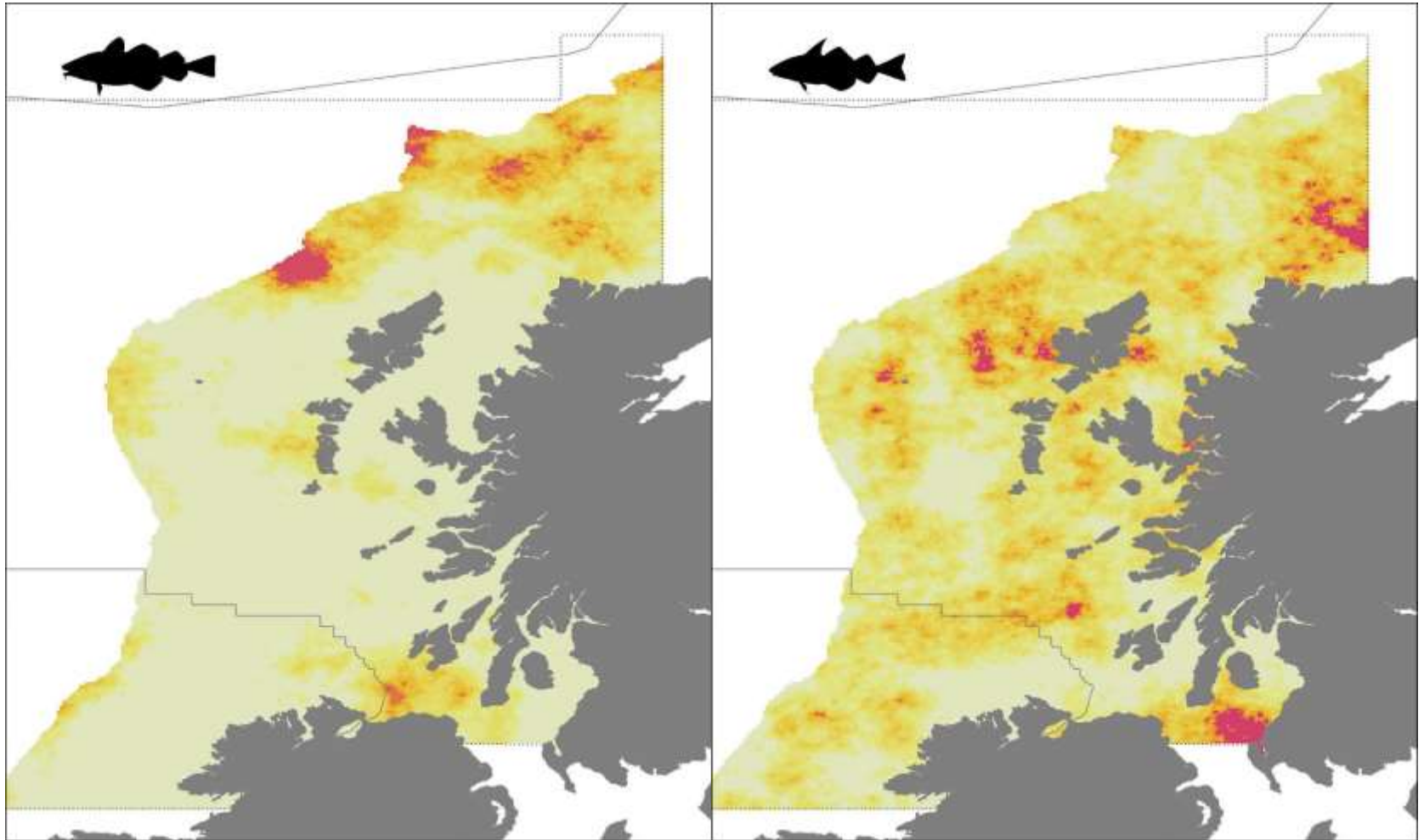
Results (F_{MSY} ; Seals \downarrow)





Gadget vs. EwE





Further Work

- **Bootstrap estimates of uncertainty**
- **Additional scenarios**
 - **GES Indicators**
 - **Model-specific F_{MSY}**
 - **F_{MMSY} ? $PGMSY$?**



Acknowledgments

- **FEAST group, University of Aberdeen**
- **Gadget users/developers: Bjarki, Valerio, Paul, Nataliia, Margarita *et al.***
- **Prof. Philip Hammond and SMRU, University of St Andrews**
- **Dr Robin Cook & Vanessa Trijoulet, University of Strathclyde**





Single-species Models

