Connectivity, growth and survival in a spatially structured fish population, which is currently managed as seven separate stock units

Invasion rate and population characteristics of the invasive round goby Neogobius melanostomus: effects of density and invasion history

Round goby Neogobius melanostomus is currently one of the most wide-ranging invasive fish species in Europe and North America. The present study demonstrates how the distribution of round goby has expanded from 2008 to 2013 at a rate of about 30 km yr⁻¹ along the Danish coastline in the western Baltic Sea. Further analyses showed that fish from an established high-density round goby population were slow-growing and displayed poorer condition (weight at age and hepatosomatic index) compared to fish sampled from recently invaded locations (i.e. at the forefront of the distribution range). The established population revealed a broad age distribution and a 1:1 gender ratio, while fish from a recently invaded site were primarily of intermediate ages with a male-biased gender ratio. Otolith analyses suggested that the oldest individuals from the recently invaded area experienced superior growth conditions only in the most recent years, suggesting immigration into the area as adults. Our results suggest that intraspecific competition for food may cause continued dispersal of the species and that population demographics likely relate to invasion history.
Korttidsprognoser for kortlivede industrifisk under MSY – forvaltning af tobis i Nordsøen

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Living Resources, Section for Marine Ecology and Oceanography
Authors: Deurs, M. V. (Intern), Christensen, A. (Intern), Bekkevold, D. (Intern), Lynam, C. (Ekstern), Nielsen, K. E. (Intern), Azour, F. (Intern), Lundgaard, L. S. (Intern), Hüssy, K. (Intern), Mosegaard, H. (Intern), Worsøe Clausen, L. (Intern)
Publication date: 2015

Publication information
Original language: Danish
Main Research Area: Technical/natural sciences

Bibliographical note
Forbedring af forvaltningsgrundlaget for bestande i det rekreative fiskeri (39370)

National Institute of Aquatic Resources
Section for Monitoring and Data
Section for Ecosystem based Marine Management
Section for Freshwater Fisheries Ecology

Institute Management
Period: 14/07/2016 → 14/07/2018
Number of participants: 16
Acronym: REKREA
Project participant:
Olesen, Hans Jakob (Intern)
Storr-Paulsen, Marie (Intern)
Statrup, Josianne Gatt (Intern)
Skov, Christian (Intern)
Christoffersen, Mads (Intern)
Reeh, Line (Intern)
Stubgaard, Karin (Intern)
Svendsen, Jon Christian (Intern)
Pedersen, Stig (Intern)
Pedersen, Michael Ingemann (Intern)
Jepsen, Niels (Intern)
Aarestrup, Kim (Intern)
Hansen, Frank Ivan (Intern)
Pinna, Line Giovanna Buhl (Intern)
Azour, Farivar (Intern)
Larsen, Peter Vingaard (Intern)

Short-term projections for short-lived species managed under MSY: Management of the sandeel stock in the North Sea (39148)

The industrial fishery for small short-lived species represents the economically most important fishery in Denmark, and traditionally the North Sea sandeel (*Ammodites marinus*) has played a key role in this fishery. Currently, quota advice for sandeel is based on the so-called B-escapement strategy, the purposes of which is to ensure that the spawning stock biomass remains large enough to maintain the survival of the population even after fish-eating fish, birds, and mammals have taken their share; and whatever is left is made available to the fishery. This type of management strategy relies on accurate predictions about the size of the incoming year class (the recruitment), if the criteria of MSY are to be fulfilled.

The aim of the project was therefore to ensure that the short-term prognosis reflects current knowledge about the biology of sandeels in the North Sea and applies all relevant data time-series.

A new recruitment index was introduced. Seasonal and spatial patterns in log-book based catch rates of age-1 fish were analysed and compared to recruitment indices from the year before. Spatial differences in local larval retention strength were found.

A genetic tool that allowed us to distinguish between different sandeel species in a quick and accurate way was developed. Lastly, development of a state based assessment model that can handle seasonal data (something which is necessary for sandeel) and estimate shifting selection patterns was initiated.

All of this work is currently contributing significantly to the preparation of the coming North Sea sandeel benchmark assessment in ICES to be held in the fall of 2016.

This project was coordinated by DTU Aqua.

The project was funded by the Danish Ministry of Food, Agriculture and Fisheries and the European Fisheries Fund (EFF).
National Institute of Aquatic Resources
Section for Marine Living Resources
Sir Alister Hardy Foundation for Ocean Science
Centre for Environment Fisheries and Aquaculture Science
Period: 22/07/2013 → 01/05/2015
Number of participants: 6
Research areas: Marine Living Resources & Population Genetics
Project participant:
Mosegaard, Henrik (Intern)
Azour, Farivar (Intern)
Christensen, Asbjørn (Intern)
Bekkevold, Dorte (Intern)
Project Manager, academic:
Worsøe Clausen, Lotte (Intern)
Project Coordinator:
vand Deurs, Mikael (Intern)
Project