Danish seine – Ecosystem effects of fishing

In 2014, the project “Danish seine – Ecosystem effects of fishing” got initiated in order to establish a better scientific understanding around Danish anchor seining and its effects on the environment. By comparing catch profiles of Danish seiners and demersal otter trawlers, we could show that the Danish seine is an efficient gear to catch flatfish, but is not as flexible as trawlers in terms of fishing areas because it is restricted to relatively flat areas. Furthermore, selectivity characteristics of the codend and other parts of the gear were investigated. We attached a large cover around the codend and a novel arrangement of 12 small mesh bags on different parts of the seine net to collect fish and invertebrates that would escape under commercial conditions. By doing so, we could estimate codend selectivity parameters for relevant species, which were relatively similar to estimates for trawls, and found that the majority of fish attempted to escape through the seine codend. For invertebrates, we observed high escapement rates from gear parts forward of the codend, indicating that there are effects that are ignored in conventional selectivity studies which primarily focus on codend catches. In another set of sea trials, we attached GPS loggers and various self-invented observation systems to the gear to monitor and describe the fishing process in detail. Animations showing the fishing operation with a Danish seine were created, including information about net opening, net spread, tensile forces between net and ropes and rope behavior. We documented that the majority of fish enters the seine net very late, that fishermen can conduct efficient seine fishing although they do not use any gear monitoring sensors, and that impacts of seine ropes on the sea floor were limited to slight smoothing effects. The PhD project increased the basic scientific understanding of Danish seining and developed methods and equipment than can be used to collect more detailed information in the future. The broad information established here provide data that is of high relevance for tomorrow’s discussions about the fisheries in European waters including the implementation of the new Common Fisheries Policy and its landing obligation.
Effects of environmental variables on survey catch rates and distribution by size of shallow- and deep-water Cape hakes, *Merluccius capensis* and *Merluccius paradoxus* off Namibia

In order to study the effects of temperature, oxygen, salinity and time of day on survey trawl catches, we modeled observed catches of juvenile, small, medium and large hakes per station as functions of zenith angle of the sun, geographical position, year, temperature, salinity, oxygen and depth. We used data from summer demersal surveys conducted during the period 2002–2015, together with a computation of the corresponding light level data from which the solar zenith angles were obtained, and fitted the generalized additive models to these data. Based on best model results, important covariates were oxygen, depth, geographical position and temperature. The best models explained 70%, 69%, 57% and 57% of the variability in catches of juvenile, small, medium and large *Merluccius capensis*, respectively, and 71%, 68%, 81% and 70% of juvenile, small, medium and large *Merluccius paradoxus*, respectively. The significant effects of temperature, oxygen, depth and geographical position on survey catches of hake of different size groups indicate that survey size structure may be affected by the behavior of both species towards environmental conditions. Greater care should therefore be taken when interpreting hake survey biomass estimates, based on swept area method, especially those that were collected during exceptional unfavourable environmental conditions. It would also be highly desirable if the oceanographic conditions are collected on each trawl station in order to improve understanding of the linkage between resources and environmental conditions.

**General information**

State: Published
Organisations: National Institute of Aquatic Resources, Section for Monitoring and Data, Ministry of Fisheries and Marine Resources
Authors: Kainge, P. I. (Intern), van der Plas, A. K. (Ekstern), Bartholomae, C. H. (Ekstern), Wieland, K. (Intern)
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Web of Science (2016): Indexed yes
Scopus rating (2015): CiteScore 2.4
Web of Science (2015): Indexed yes
Scopus rating (2014): CiteScore 2.61
Web of Science (2014): Indexed yes
Scopus rating (2013): CiteScore 2.61
ISI indexed (2013): ISI indexed no
Web of Science (2013): Indexed yes
Scopus rating (2012): CiteScore 2.21
ISI indexed (2012): ISI indexed no
Scopus rating (2011): CiteScore 2.42
ISI indexed (2011): ISI indexed no
Web of Science (2011): Indexed yes
Web of Science (2010): Indexed yes
Web of Science (2009): Indexed yes
Web of Science (2008): Indexed yes
Web of Science (2007): Indexed yes
Web of Science (2006): Indexed yes
Web of Science (2003): Indexed yes
Web of Science (2002): Indexed yes
Original language: English
DOIs: 10.1111/fog.12227
Environmental effects on the availability of shallow and deep-water hake to the demersal trawl survey in Namibian waters

Studies on several demersal fish species have shown that variability in environmental conditions (including oxygen, temperature, wind and time of day) during trawling may result in differences in the catching efficiency of the trawl gear, which may cause differences in abundance estimations of stocks. This is even more complicated in the case of the Cape hakes, Merluccius capensis and Merluccius paradoxus, which are known to perform diurnal vertical migrations possibly for spawning or in search of food. These abundance estimations, together with commercial catch-at-age and catch per unit effort (CPUE) indices, are key input data into the stock assessment model that guides scientific TAC (Total allowable catch) recommendations and other management measure advices, for the Namibian hake stocks. The overall aim of this PhD study was to investigate the effects of environmental conditions (close to the sea bed during trawls) on trawl survey abundance indices through an analysis of existing survey CPUE data, in order to gain a better understanding of the behavioral processes involved. This is crucial for improving the reliability of the hake stock assessment, and it is directly linked to the validation or modification of the current assessment practices. This PhD thesis is made up of a synthesis of four papers with varying objectives. Paper I attempted to study diel patterns in survey trawl catch rates for Namibian hakes using the solar zenith angle of the sun as a proxy for light level near the bottom. The main aim was to examine the effect of diel bias on catchability within and between years, and to explore the implications for survey abundance estimation and the consistency of the survey time-series. Results indicate that time of day has an effect on survey catch rates, mostly for M. capensis, where lower catch rates were obtained during the night, in shallower waters. The second objective (Paper II) was to study the effects of environmental variables and other covariates (temperature, oxygen, salinity as well as geographical position, time of day and year) on survey trawl catch rates at different size groups (juvenile, small, medium and large) of the two hake species. Most of the years, the environmental data were collected independent of the fishing operations usually on few selected transects with limited spatial overlap between the CTD and the trawl stations. The results, however, indicate that the most important covariates affecting catch rates were bottom oxygen, bottom depth, geographical position and bottom temperature. This is an indication that the difference in abundance of the two species as observed in the survey may have been affected by the behavioral reactions in response to the environmental conditions. These results were confirmed by those of Paper III, which used data collected by a trawl-mounted instrument package, which allows the data collection simultaneously to the trawl operations. There is an indication that the use of a trawl-mounted instrument package can provide reliable information on environmental variables for an improved understanding and interpretation of survey catch rates and subsequent use in stock assessment models for provision of scientific advice on resources. Paper IV was an investigation into diel feeding ecology through food composition based on recent stomach samples in order to gain insight into biological explanation of the observed dynamics of survey catchability. Both hake species fed more on semi-demersal and demersal components of the prey field, which predominantly consisted of horse mackerel, jacopever and Atlantic green eye for M. capensis, and grenadier and cephalopods (squid and cuttlefish) for M. paradoxus. Other prey items were pelagic like krill and myctophids. Hake-on-hake predation was observed, with both hake species occurring as prey in the stomachs of M. capensis while only M. paradoxus occurred in the stomachs of M. paradoxus. This study was unfortunately limited by an insufficient number of samples and inadequate geographical coverage. It can, however, be used as a basis to plan future studies that should then also encompass the use of a gastric evacuation model to estimate the time of the day for ingestion of individual prey items and to quantify hake cannibalism from stomach content data. Results of the different papers are synthesized in relation to diagnosing environmental effects on survey catchability and then suggestions for time series adjustments is provided.

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Monitoring and Data, Section for Oceans and Arctic, Ministry of Fisheries and Marine Resources
Authors: Kainge, P. I. (Intern), Wieland, K. (Intern), Andersen, N. G. (Intern), Hamukuaya, H. (Ekstern)
Number of pages: 119
Publication date: 2017

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Publisher: DTU Aqua. National Institute of Aquatic Resources
Original language: English
Main Research Area: Technical/natural sciences
Publication: Research - peer-review › Journal article – Annual report year: 2017

Estimating escapement of fish and invertebrates in a Danish anchor seine

The codend is generally presumed to be the place where the main selectivity of fish occurs in towed fishing gears, but other parts of the net have been found to contribute to the selectivity process of several invertebrate species. This means that conventional selectivity or survival studies may ignore the selectivity of net parts other than the codend for certain species. By attaching 12 small meshed collecting bags to different parts of a Danish anchor seine net and conducting normal commercial fishing activities, this study showed that there is a substantial escapement of fish and (especially)
invertebrates from the forward parts of the seine net. For seven species of demersal fish, most fish escaped through the lower panel close to the codend. All invertebrate species were found in higher numbers in the collecting bags than in the codend where many organisms escaped in the lower panel of the wings or the belly. Mean levels of visible damage ranged from 1.00 to 3.25 for collected invertebrates and were similar for all gear parts. Common starfish (Asterias rubens), however, showed highest damage in the extension part of the net.

**General information**
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Section for Management Systems, Section for Monitoring and Data, Aalborg University, Thünen Institute of Baltic Sea Fisheries
Authors: Noack, T. (Intern), Madsen, N. (Intern), Mieske, B. (Ekstern), Frandsen, R. (Intern), Wieland, K. (Intern), Krag, L. A. (Intern)
Pages: 2480-2488
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Main Research Area: Technical/natural sciences

**Publication information**
Journal: ICES Journal of Marine Science
Volume: 74
Issue number: 9
ISSN (Print): 1054-3139
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.63
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 2.18
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 2.62
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 2.46
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 2.35
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 2.32
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Web of Science (2008): Indexed yes
Web of Science (2007): Indexed yes
Web of Science (2006): Indexed yes
Web of Science (2005): Indexed yes
Web of Science (2004): Indexed yes
Fine-scale environmental effects on Cape hake survey catch rates in the Northern Benguela, using data from a trawl-mounted instrument package

We investigated fine-scale effects of environmental variables associated with habitat distribution for 4 size groups of Cape hakes, Merluccius capensis and M. paradoxus, using generalized additive models (GAMs) with a negative binominal error distribution. This study took place during the Namibian hake trawl survey of 2016, and was made possible for the first time in Namibia by collecting oceanographic information with a trawl-mounted instrument package concurrently with the catch data. Depth, geographical position, bottom oxygen and bottom temperature had the most pronounced effect on the catch rates of both hake species, whereas solar zenith angle representing diel effects and surface layer chlorophyll appeared to be less important. The explained deviance for the best models ranged from 71.4% for M. capensis to 92.7% for M. paradoxus between 43 and 57 cm in length. Differences in catch rates between species and size groups were most pronounced for bottom depth and bottom oxygen. The results show the potential value of trawl-mounted instrumental packages for the collection of reliable environmental data important in the study of environmental influence on abundance, catch rates and distribution, and in turn in the assessment and management of a resource

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State: Published
Organisations: National Institute of Aquatic Resources, Section for Monitoring and Data, Ministry of Fisheries and Marine Resources
Authors: Kainge, P. I. (Intern), Wieland, K. (Intern)
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Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Marine Ecology Progress Series
Volume: 584
ISSN (Print): 1616-1599
Ratings:
Web of Science (2018): Indexed yes
Web of Science (2017): Indexed yes
Scopus rating (2016): CiteScore 2.4
Web of Science (2016): Indexed yes
Scopus rating (2015): CiteScore 2.56
Web of Science (2015): Indexed yes
Scopus rating (2014): CiteScore 2.75
Web of Science (2014): Indexed yes
Scopus rating (2013): CiteScore 2.79
ISI indexed (2013): ISI indexed no
Web of Science (2013): Indexed yes
Scopus rating (2012): CiteScore 2.9
ISI indexed (2012): ISI indexed no
Web of Science (2012): Indexed yes
Scopus rating (2011): CiteScore 2.85
ISI indexed (2011): ISI indexed no
Web of Science (2011): Indexed yes
Web of Science (2010): Indexed yes
Web of Science (2009): Indexed yes
Fishing profiles of Danish seiners and bottom trawlers in relation to current EU management regulations

Danish seiners and bottom trawls operate differently and have different catching processes. Both gears belong to the same legislative category in European fisheries, but different management strategies in other countries and criticism by fishers on grouping Danish seiners and trawls together indicate disagreement on current gear classification. This study compared both gears in terms of their fishing characteristics and catches of commercial species based on 16 years of observer data. Danish seining is a specialised fishing method that targeted few species but with higher total catch rates than bottom trawlers. Bottom trawling is a more all-purpose fishing method that targets a larger number of species, and bottom trawlers use larger engines than Danish seiners. A generalised additive mixed model indicated that catch rates of flatfish are generally higher for Danish seiners, and catch rates of roundfish species are higher for trawlers. The results do not directly suggest a separation of the gears in terms of legislation as the quantities of fish below current minimum size were similar, but for example future survival studies may reach different conclusions. Additional factors were found to be important in determining catches of both gears.

General information
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Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Section for Monitoring and Data, Institute of Marine Research
Pages: 436-445
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Main Research Area: Technical/natural sciences

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Journal: Fisheries Management and Ecology
Volume: 24
Issue number: 6
ISSN (Print): 0969-997X
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.85 SJR 0.843 SNIP 0.88
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.988 SNIP 1.159 CiteScore 1.91
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.913 SNIP 0.995 CiteScore 1.85
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.737 SNIP 0.807 CiteScore 1.36
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
Danish seine – Ecosystem effects of fishing (gear performance trials)

**General information**
State: Published  
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Section for Monitoring and Data, Thünen Institute of Baltic Sea Fisheries  
Number of pages: 1  
Publication date: 2016  
Main Research Area: Technical/natural sciences  
Electronic versions:  
Danish_seine.pdf  
Source: FindIt  
Source-ID: 2350466414  
Publication: Research › Poster – Annual report year: 2017
Deciphering the structure of the West Greenland marine food web using stable isotopes (δ13C, δ15N)

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Ecology and Oceanography, Section for Monitoring and Data, Environment Canada, Aarhus University, Greenland Climate Research Centre, Kalundborg Municipality, Greenland Institute of Natural Resources
Authors: Linnebjerg, J. F. (Forskerdatabase), Hobson, K. A. (Ekstern), Fort, J. (Ekstern), Nielsen, T. G. (Intern), Møller, P. (Ekstern), Wieland, K. (Intern), Born, E. W. (Ekstern), Rigel, F. F. (Ekstern), Mosbech, A. (Forskerdatabase)
Publication date: 2016
Main Research Area: Technical/natural sciences

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Journal: Marine Biology
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Article number: 230
ISSN (Print): 0025-3162
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BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.41 SJR 1.198 SNIP 0.993
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.315 SNIP 0.932 CiteScore 2.21
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.204 SNIP 1.041 CiteScore 2.32
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.272 SNIP 1.064 CiteScore 2.4
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.306 SNIP 1.107 CiteScore 2.43
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.145 SNIP 1.073 CiteScore 2.22
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 1.235 SNIP 1.069
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 1.178 SNIP 1.052
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.236 SNIP 1.022
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.348 SNIP 1.21
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.195 SNIP 1.09
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 1.253 SNIP 1.198
Diel effects on bottom-trawl survey catch rates of shallow- and deep-water Cape hakes, Merluccius capensis and M. paradoxus, off Namibia, using solar zenith angle

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Monitoring and Data, Section for Ecosystem based Marine Management
Authors: Kainge, P. I. (Intern), Wieland, K. (Intern), Feekings, J. P. (Intern)
Pages: 583-592
Publication date: 2015
Main Research Area: Technical/natural sciences

Publication information
Journal: African Journal of Marine Science
Volume: 37
Issue number: 4
ISSN (Print): 1814-232X
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.36 SJR 0.661 SNIP 0.8
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.696 SNIP 0.732 CiteScore 1.19
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.568 SNIP 0.879 CiteScore 1.15
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.71 SNIP 0.749 CiteScore 1.25
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.529 SNIP 0.488 CiteScore 1.04
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.608 SNIP 0.611 CiteScore 1.15
ISI indexed (2011): ISI indexed yes
Oxygen-depleted bottom waters along the west coast of South Africa, 1950-2011

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Monitoring and Data, University of Cape Town, Department of Environmental Affairs Oceans & Coasts
Authors: Jarre, A. (Ekstern), Hutchings, L. (Ekstern), Chrichton, M. (Ekstern), Wieland, K. (Intern), Lamont, T. (Ekstern), Blamey, L. (Ekstern), Illert, C. (Ekstern), Hill, E. (Ekstern), van den Berg, M. (Ekstern)
Pages: 56-73
Publication date: 2015
Main Research Area: Technical/natural sciences

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BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 2.19
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 2.4
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 2.61
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 2.61
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Monitoring and Data, Department for Agriculture, Forestry and Fisheries
Authors: Wieland, K. (Intern), Durholtz, M. D. (Ekstern), Fairweather, T. P. (Ekstern), Glazer, J. (Ekstern), Leslie, R. W. (Ekstern)
Number of pages: 20
Publication date: 2015
Main Research Area: Technical/natural sciences
Links:
Source: PublicationPreSubmission
Source-ID: 119056179
Publication: Research › Paper – Annual report year: 2015

Recent decline of northern shrimp stocks in the Northwest Atlantic – Coincidence, multiple causes or response to synchronous changes in the environment?

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Monitoring and Data, Greenland Institute of Natural Resources, Instituto Español de Oceanografía, Fisheries and Oceans Canada
Authors: Wieland, K. (Intern), Siegstad, H. (Ekstern), Casas Sanchez, J. (Ekstern), Casas Sanchez, J. (Ekstern), Orr, D. (Ekstern)
Pages: 17-20
Publication date: 2014
Main Research Area: Technical/natural sciences
Publication information
Journal: IMBER Update
Issue number: 26
Original language: English
Links:
Consistency of 1st and 3rd quarter IBTS abundance indices for cod in relation to survey design, area coverage and gear performance

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Monitoring and Data
Authors: Wieland, K. (Intern)
Number of pages: 21
Publication date: 2013
Main Research Area: Technical/natural sciences
Publication: Research › Paper – Annual report year: 2013

Environmental effects on hake catchability in the South African West Coast Survey

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Monitoring and Data
Authors: Wieland, K. (Intern), Durholtz, D. (Ekstern), Fairweather, T. (Ekstern)
Publication date: 2013
Main Research Area: Technical/natural sciences
Publication: Research › Paper – Annual report year: 2013

Nephrops area definitions in the Skagerrak and Kattegat (FU 3-4)

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Monitoring and Data, Section for Ecosystem based Marine Management
Authors: Feekings, J. P. (Intern), Jonsson, P. (Ekstern), Wieland, K. (Intern), Ulmestrand, M. (Ekstern), Lövgren, J. (Ekstern)
Publication date: 2013
Main Research Area: Technical/natural sciences
Electronic versions:
Nephrops area definition in the Skagerrak and Kattegat
Publication: Research › Paper – Annual report year: 2013

Nephrops UWTV surveys in the Skagerrak and Kattegat (FU 3-4)

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Monitoring and Data, Section for Ecosystem based Marine Management
Authors: Wieland, K. (Intern), Ulmestrand, M. (Ekstern), Feekings, J. P. (Intern), Koppetsch , S. (Ekstern)
Publication date: 2013
Main Research Area: Technical/natural sciences
Electronic versions:
Nephrops UWTV surveys in the Skagerrak and Kattegat
Publication: Research › Paper – Annual report year: 2013

Stenrev: Gennemgang af den biologiske og økologiske viden, der findes om stenrev og deres funktion i tempererede områder
Environmental factors affecting recruitment of northern shrimp (Pandalus borealis) in West Greenland waters

Survey estimates of biomass of Northern shrimp (Pandalus borealis) in West Greenland waters increased from about 178000 tons in 1998 to about 598000 tons in 2003. The increase in stock size was preceded by several consecutive years in which recruitment was substantially above average. Recruitment has been poor since then despite record high levels of female stock biomass. Ricker type stock-recruitment functions did not indicate that the variability in recruitment was related to female biomass. Multiple regression analysis revealed that mean female length, ambient bottom temperature and biomass of Greenland halibut (Reinhardtius hippoglossoides) had the most important effect on the variations of the recruit per female biomass time series for the years 1993 to 2011. Variables which did not contribute significantly to the model included biomass of Atlantic cod (Gadus morhua). This can be explained by the low stock size of Atlantic cod throughout the major part of the study period. The final model explained 83% of the variation in the recruit per female biomass index. However, the observations for 5 out of the 19 years considered in the present study were outside the 95% confidence interval of the fitted model, possibly due to a mismatch between the timing of larval hatch and the timing of the phytoplankton bloom, which could not adequately be addressed due to data limitations.
Optimization of fisheries resource exploitation in the Skagerrak (Oskar)

General information
State: Published
Organisations: Section for Population Ecology and Genetics, National Institute of Aquatic Resources, Section for Monitoring, Section for Management Systems, Department of Informatics and Mathematical Modeling, DTU Data Analysis, Section for Ocean Ecology and Climate
Publication date: 2012

Publication information
Place of publication: Charlottenlund
Publisher: DTU Aqua, Institut for Akvatiske Ressourcer
ISBN (Print): 978-87-7481-138-1
Original language: English

Series: DTU Aqua Report
Number: 239-2011
ISSN: 1395-8216
Potential bias in estimates of abundance and distribution of North Sea cod (Gadus morhua) due to strong winds prevailing prior or during a survey

The impact of strong winds on catches of cod (Gadus morhua) was studied using different fishing methods during small-scale surveys with commercial fishing vessels in the north-eastern central North Sea. Catch per unit effort of a flyshooter and a trawler were considerably lower in the shallower coastal water than in the deeper parts of the study area after a three week period with strong winds and rough weather conditions during the survey. At the same time, catches taken with a gillnetter showed an opposite pattern with the highest catch rates occurring at depths shallower than 50 m relative close to the coast. In another situation in which the weather conditions prior and during the survey were more moderate, the flyshooter and the trawler recorded high catch rates in the shallow coastal waters as well. Generalized Linear Model analyses revealed that wind speed prior to and during the survey had significant effects on the catch rates in particular for the trawler. These results supports fishermen's opinion that strong winds may cause an underestimation of biomass of cod in shallow waters and a bias in the resulting spatial distribution derived from bottom trawl surveys.
Changes of cod abundance in the north-eastern central North Sea based on surveys with commercial fishing vessels in 2006 to 2009

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Monitoring and Data, Section for Population Ecology and Genetics
Authors: Wieland, K. (Intern), Pedersen, E. M. (Intern), Olesen, H. J. (Intern), Beyer, J. (Intern)
Publication date: 2010

Host publication information
Title of host publication: ICES WGNSSK
Main Research Area: Technical/natural sciences
Conference: ICES Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak, 01/01/2010
Source: orbit
Source-ID: 271007
Publication: Research › Article in proceedings – Annual report year: 2010

Cod and future climate change

General information
State: Published
Organisations: Section for Ocean Ecology and Climate, National Institute of Aquatic Resources, Section for Management Systems, Section for Monitoring
Number of pages: 88
Publication date: 2010

Publication information
Place of publication: Copenhagen, Denmark
Publisher: International Council for the Exploration of the Sea
ISBN (Print): 978-87-7482-084-0
Original language: English

Series: ICES Cooperative Research Report
Number: 305
ISSN: 1017-6195
Main Research Area: Technical/natural sciences
Links:
http://www.ices.dk/products/cooperative.asp
Source: orbit
Source-ID: 266874
Publication: Research › Report – Annual report year: 2010

Estimating a catchability coefficient for a commercial fishing vessel

General information
State: Published
Organisations: Section for Population Ecology and Genetics, National Institute of Aquatic Resources, Section for Monitoring
Authors: Olesen, H. J. (Intern), Wieland, K. (Intern), Thygesen, U. H. (Intern), Beyer, J. (Intern)
Publication date: 2010
Human impacts on marine ecosystems

General information
State: Published
Organisations: Section for Ocean Ecology and Climate, National Institute of Aquatic Resources, Section for Monitoring
Authors: Brander, K. (Intern), Botsford, L. (Ekstern), Cianelli, L. (Ekstern), Fogarty, M. (Ekstern), Heath, M. (Ekstern), Planque, B. (Ekstern), Shannon, L. (Ekstern), Wieland, K. (Intern)
Number of pages: 412
Pages: 41-71
Publication date: 2010

Host publication information
Title of host publication: Marine ecosystems and global change
Place of publication: Oxford
Publisher: Oxford University Press
Editors: Barange, M., Field, J., Harris, R., Hoffmann, E., Perry, I., Werner, C.
Main Research Area: Technical/natural sciences
Links:
http://en.scientificcommons.org/55768574
Source: orbit
Source-ID: 252468
Publication: Research - peer-review › Book chapter – Annual report year: 2010

Recruitment failure of Atlantic cod and Northern shrimp off West Greenland – What went wrong?

General information
State: Published
Organisations: Section for Monitoring, National Institute of Aquatic Resources
Authors: Wieland, K. (Intern)
Number of pages: 28
Publication date: 2010

Host publication information
Title of host publication: Report of the ICES/ESSAS Workshop on Ecosystem Studies of Sub-arctic Seas (ESSAS)
Series: ICES C.M. / SSGRSP
Number: 06
Main Research Area: Technical/natural sciences

Bibliographical note
Extended abstract
Source: orbit
Source-ID: 270933
Publication: Research › Conference abstract in proceedings – Annual report year: 2010

RESOURCE-projektet er i gang

General information
State: Published
Organisations: Section for Population Ecology and Genetics, National Institute of Aquatic Resources, Section for Monitoring
Authors: Pedersen, E. M. (Intern), Olesen, H. J. (Intern), Wieland, K. (Intern), Beyer, J. (Intern)
Pages: 8
Publication date: 2010

Publication information
Spatially-explicit management methods for North Sea cod – a Danish fishermen science collaboration (REX):
Fisker/forsker samarbejdet REX om Nordens torsk - REX III report FERV, June 2010

General information
State: Published
Organisations: Section for Monitoring, National Institute of Aquatic Resources, Section for Population Ecology and Genetics
Authors: Wieland, K. (Intern), Pedersen, E. M. (Intern), Olesen, H. J. (Intern), Karlsen, J. (Intern), Andersen, N. G. (Intern), Beyer, J. (Intern)
Number of pages: 137
Publication date: 2010

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 267917
Publication: Communication › Newspaper article – Annual report year: 2010

The OSkar project: a collaborative fishermen-scientist project on "Optimizing sustainable use of fish resources in the Skagerrak"

General information
State: Published
Organisations: Section for Monitoring, National Institute of Aquatic Resources, Section for Population Ecology and Genetics
Authors: Wieland, K. (Intern), Pedersen, E. M. (Intern), Olesen, H. J. (Intern), Lund, H. S. (Ekstern), Andersen, N. G. (Intern), Poulsen, J. (Ekstern), Nielsen, J. (Ekstern), Jakobsen, J. (Ekstern), Pedersen, C. H. (Ekstern), Hansen, J. (Ekstern), Beyer, J. (Intern)
Publication date: 2010
Event: Poster session presented at 70th International Fishing Fair, Ancona, Italy.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 268693
Publication: Research › Report – Annual report year: 2010

The REX project: a collaborative fishers-scientists project on the geographical distribution of Atlantic cod in the northeastern part of the central North Sea

General information
State: Published
Organisations: Section for Population Ecology and Genetics, National Institute of Aquatic Resources, Section for Monitoring
Publication date: 2010
Event: Poster session presented at 70th International Fishing Fair, Ancona, Italy.
Main Research Area: Technical/natural sciences
Source: orbit
Basin-scale coherence in phenology of shrimps and phytoplankton in the North Atlantic Ocean

General information
State: Published
Organisations: Section for Monitoring, National Institute of Aquatic Resources
Pages: 791-793
Publication date: 2009
Main Research Area: Technical/natural sciences

Publication information
Journal: Science
Volume: 324
Issue number: 5928
ISSN (Print): 0036-8075
Ratings:
BFI (2018): BFI-level 3
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 12.012 SNIP 8.269 CiteScore 12.68
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 12.305 SNIP 7.87 CiteScore 12.43
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 13.159 SNIP 8.124 CiteScore 12.39
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 14.049 SNIP 8.309 CiteScore 11.97
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 13.216 SNIP 7.791
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 11.644 SNIP 7.033
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 10.996 SNIP 6.09
Web of Science (2008): Indexed yes
Cod versus shrimp dominance in West Greenland waters: Can climate change reverse the regime shift from a cod to a shrimp dominated ecosystem off West Greenland?

General information
State: Published
Organisations: Section for Monitoring, National Institute of Aquatic Resources, Section for Fisheries Advice
Authors: Wieland, K. (Intern), Hovgård, H. (Intern)
Pages: 1-24
Publication date: 2009

Host publication information
Title of host publication: ICES C.M.
Volume: C:03
Place of publication: Copenhagen
Publisher: International Council for the Exploration of the Sea
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 252465
Publication: Research › Article in proceedings – Annual report year: 2009

Effect of bottom type on catch rates of North Sea cod (Gadus morhua) in surveys with commercial fishing vessels
Seven surveys with commercial fishing vessels were conducted during a collaborative fishermen-scientist project on the distribution of cod in the north-eastern North Sea between June 2006 and June 2008. A flyshooter, a trawler and a gillnetter participated in this study. In general, catch rates were substantially higher on gravel or stone bottom and at ship wrecks than on sand bottom. The difference in the catch rates between the two bottom categories at paired stations within a short distance was highly significant for all the three fishing methods. Similarly, average CPUE for most surveys was several times higher on rough than on smooth bottom. These differences were highly significant for early autumn surveys conducted with the flyshooter and trawler and all gillnet surveys, the summer surveys for the flyshooter and the gillnetter, but not for the winter surveys with the trawler and the flyshooter. The latter suggest that bottom type preference may change with season, e.g. with respect to spawning migrations in winter and in relation with changes in the availability of food during spring and summer.

General information
State: Published
Organisations: Section for Monitoring, National Institute of Aquatic Resources, Section for Population- and Ecosystem Dynamics
Authors: Wieland, K. (Intern), Pedersen, E. M. (Intern), Olesen, H. J. (Intern), Beyer, J. (Intern)
Estimating abundance and biomass of North Sea cod based on surveys with commercial fishing vessels

General information
State: Published
Organisations: Section for Monitoring, National Institute of Aquatic Resources, Section for Population- and Ecosystem Dynamics
Authors: Wieland, K. (Intern), Pedersen, E. M. (Intern), Olesen, H. J. (Intern), Berg, C. (Ekstern), Beyer, J. (Intern)
Pages: 1-28
Publication date: 2009

Host publication information
Title of host publication: ICES C.M.
Volume: L:03
Place of publication: Copenhagen
Publisher: International Council for the Exploration of the Sea
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 252466
Publication: Research › Article in proceedings – Annual report year: 2009

Estimating a catchability coefficient for a commercial fishing vessel

General information
State: Published
Organisations: Section for Population- and Ecosystem Dynamics, National Institute of Aquatic Resources, Section for Monitoring
Authors: Olesen, H. J. (Intern), Wieland, K. (Intern), Thygesen, U. H. (Intern), Beyer, J. (Intern)
Publication date: 2009
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 252455
Publication: Research › Poster – Annual report year: 2009

REX - sommertogtet fangede flere små torsk end sidste år

General information
State: Published
Organisations: Section for Monitoring, National Institute of Aquatic Resources, Section for Population- and Ecosystem Dynamics
Authors: Wieland, K. (Intern), Olesen, H. J. (Intern)
Pages: 8
Publication date: 2009

Publication information
 Pages (from-to): 8
Newspaper: Fiskeritidende
The REX project: a collaborative fishermen-scientist project on the geographical distribution of Atlantic cod in the northeastern part of the central North Sea

General information
State: Published
Organisations: Section for Population- and Ecosystem Dynamics, National Institute of Aquatic Resources, Section for Monitoring
Publication date: 2009
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 252557
Publication: Research › Poster – Annual report year: 2009

Vintertogt i REX-projektet

General information
State: Published
Organisations: Section for Population- and Ecosystem Dynamics, National Institute of Aquatic Resources, Section for Monitoring
Authors: Olesen, H. J. (Intern), Wieland, K. (Intern)
Pages: 10
Publication date: 2009

Publication information
Calibration of bottom trawls for northern shrimp

General information
State: Published
Organisations: Section for Monitoring, National Institute of Aquatic Resources
Authors: Kingsley, M. (Ekstern), Wieland, K. (Intern), Bergström, B. (Ekstern), Rosing, M. (Ekstern)
Pages: 873-881
Publication date: 2008
Main Research Area: Technical/natural sciences

Publication information
Journal: ICES Journal of Marine Science
Volume: 65
Issue number: 6
ISSN (Print): 1054-3139
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.63
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 2.18
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 2.62
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 2.46
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 2.35
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 2.32
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Decline and recovery of Atlantic cod (Gadus morhua) stocks throughout the Atlantic

General information
State: Published
Organisations: Section for Monitoring, National Institute of Aquatic Resources, Section for Population- and Ecosystem Dynamics
Authors: Lilly, G. (Ekstern), Wieland, K. (Intern), Rothschild, B. (Ekstern), Sundby, S. (Ekstern), Drinkwater, K. (Ekstern), Brander, K. (Intern), Ottersen, G. (Ekstern)
Pages: 39-67
Publication date: 2008

Host publication information
Title of host publication: Resiliency of gadid stocks to fishing and climate change
Publisher: University of Alaska. Sea Grant
Editors: Kruse, G., Drinkwater, K., Ianelli, J., Link, J., Stram, D., Wespestad, V., Woodby, D.
Main Research Area: Technical/natural sciences

Bibliographical note
AK-SG-08-01
Source: orbit
Source-ID: 226459
Publication: Research - peer-review › Book chapter – Annual report year: 2008

Er torskebestanden i Skagerrak på vej op?

General information
State: Published
Organisations: Section for Monitoring, National Institute of Aquatic Resources, Section for Population- and Ecosystem Dynamics
Authors: Wieland, K. (Intern), Pedersen, E. M. (Intern), Beyer, J. (Intern)
Pages: 10
Publication date: 2008

Publication information
Pages (from-to): 10
Newspaper: Fiskeri Tidende
Volume: 15
No.: 28-32
Ratings:
ISI indexed (2013): ISI indexed no
ISI indexed (2012): ISI indexed no
ISI indexed (2011): ISI indexed no
Main Research Area: Technical/natural sciences
Fangstrater af torsk påvirkes af kuling

General information
State: Published
Organisations: Section for Monitoring, National Institute of Aquatic Resources, Section for Population- and Ecosystem Dynamics
Authors: Wieland, K. (Intern), Pedersen, E. M. (Intern), Beyer, J. (Intern)
Pages: 8
Publication date: 2008

Publication information
Pages (from-to): 8
Newspaper: Fiskeri Tidende
Volume: 15
No.: 28-32
Ratings:
ISI indexed (2013): ISI indexed no
ISI indexed (2012): ISI indexed no
ISI indexed (2011): ISI indexed no
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 249816
Publication: Communication › Newspaper article – Annual report year: 2008

Fishery and environmental aspects relevant for the emergence and decline of Atlantic cod (Gadus morhua) in West Greenland waters

General information
State: Published
Organisations: Section for Fisheries Advice, National Institute of Aquatic Resources, Section for Monitoring
Authors: Hovgård, H. (Intern), Wieland, K. (Intern)
Pages: 89-110
Publication date: 2008

Host publication information
Title of host publication: Resiliency of gadid stocks to fishing and climate change
Publisher: University of Alaska. Sea Grant
Editors: Kruse, G., Drinkwater, K., Ianelli, J., Link, J., Stram, D., Wespestad, V., Woodby, D.
Main Research Area: Technical/natural sciences

Bibliographical note
AK-SG-08-01
Source: orbit
Source-ID: 225802
Publication: Research - peer-review › Book chapter – Annual report year: 2008

Første Skagerraktogt afsluttet med succes

General information
State: Published
Organisations: Section for Monitoring, National Institute of Aquatic Resources
Authors: Wieland, K. (Intern), Lund, H. (Intern)
Pages: 11
Publication date: 2008

Publication information
Pages (from-to): 11
Newspaper: Fiskeri Tidende
Volume: 15
No.: 33
Response in stock size and recruitment of northern shrimp (*Pandalus borealis*) to changes in predator biomass and distribution in west Greenland waters

**General information**

State: Published
Organisations: Section for Monitoring, National Institute of Aquatic Resources
Authors: Wieland, K. (Intern), Storr-Paulsen, M. (Intern), Sünksen, K. (Ekstern)
Pages: 21-33
Publication date: 2008
Main Research Area: Technical/natural sciences

**Publication information**

Journal: *Journal of Northwest Atlantic Fishery Science*
Volume: 39
ISSN (Print): 0250-6408
Ratings:

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- (2012): no
- (2011): no
Scopus rating (2004): SJR 0.345 SNIP 0.314
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 0.519 SNIP 0.337
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 0.602 SNIP 0.206
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 0.384 SNIP 0.376
Scopus rating (2000): SJR 0.498 SNIP 0.576
Scopus rating (1999): SJR 0.598 SNIP 0.356
Original language: English
Links:
Source: orbit
Source-ID: 283151
Publication: Research - peer-review › Journal article – Annual report year: 2008

REX II - Fase 2: Fisker-forsker samarbejde om forsøgsfiskeri efter torsk i Nordsøen

General information
State: Published
Organisations: Section for Population- and Ecosystem Dynamics, National Institute of Aquatic Resources, Section for Fisheries- and Monitoring Technology, Section for Monitoring
Publication date: 2008

Publication information
Publisher: Institut for Akvatiske Ressourcer, Danmarks Tekniske Universitet
Original language: Danish
Main Research Area: Technical/natural sciences
Electronic versions:
REX II fase 2 - Bilag beskåret printvenlig.pdf
REX II fase 2 - Slutrapport1.pdf

Bibliographical note
Projektet er støttet af Fødevareministeriet og EU gennem fiskerisektorprogrammet FIUF
Source: orbit
Source-ID: 231410
Publication: Research › Report – Annual report year: 2008

REX II vintertogt 2008

General information
State: Published
Organisations: Section for Population- and Ecosystem Dynamics, National Institute of Aquatic Resources, Section for Monitoring
Authors: Pedersen, M. F. (Ekstern), Wieland, K. (Intern)
Pages: 6
Publication date: 2008

Publication information
Pages (from-to): 6
Newspaper: Fiskeri Tidende
Volume: 15
No.: 11-12
Ratings:
ISI indexed (2013): ISI indexed no
ISI indexed (2012): ISI indexed no
ISI indexed (2011): ISI indexed no
Main Research Area: Technical/natural sciences
Source: orbit
Sådan finder fiskere og forskere frem til torskens tilstand

General information
State: Published
Organisations: Section for Population- and Ecosystem Dynamics, National Institute of Aquatic Resources, Section for Monitoring
Authors: Beyer, J. (Intern), Wieland, K. (Intern)
Pages: 10
Publication date: 2008

Publication information
Pages (from-to): 10
Newspaper: Fiskeri Tidende
Volume: 15
No.: 28-32
Ratings:
ISI indexed (2013): ISI indexed no
ISI indexed (2012): ISI indexed no
ISI indexed (2011): ISI indexed no
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 249824
Publication: Communication › Newspaper article – Annual report year: 2008

Er Nordsøtorsken truet?

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Monitoring, Section for Population Ecology and Genetics
Authors: Wieland, K. (Intern), Beyer, J. (Intern)
Pages: 9
Publication date: 2007

Publication information
Pages (from-to): 9
Newspaper: Fiskeritidende
No.: 37
Ratings:
ISI indexed (2013): ISI indexed no
ISI indexed (2012): ISI indexed no
ISI indexed (2011): ISI indexed no
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 227784
Publication: Communication › Newspaper article – Annual report year: 2007

Fangstraten er størst på hård bund

General information
State: Published
Organisations: Section for Population- and Ecosystem Dynamics, National Institute of Aquatic Resources, Section for Monitoring
Authors: Beyer, J. (Intern), Wieland, K. (Intern)
Pages: 11
Publication date: 2007

Publication information
Pages (from-to): 11
Newspaper: Fiskeri Tidende
**Hvor mange torsk er der pr. kvadratsømil?**

**General information**
State: Published
Organisations: Section for Population- and Ecosystem Dynamics, National Institute of Aquatic Resources, Section for Monitoring
Authors: Beyer, J. (Intern), Thygesen, U. H. (Intern), Wieland, K. (Intern)
Pages: 12
Publication date: 2007

**Publication information**
Pages (from-to): 12
Newspaper: Fiskeri Tidende
Volume: 14
No.: 43
Ratings:
ISI indexed (2013): ISI indexed no
ISI indexed (2012): ISI indexed no
ISI indexed (2011): ISI indexed no
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 250142
Publication: Communication › Newspaper article – Annual report year: 2007

**Pilotprojekt i Skagerrak**

**General information**
State: Published
Organisations: National Institute of Aquatic Resources, Section for Monitoring, Section for Population Ecology and Genetics
Authors: Wieland, K. (Intern), Beyer, J. (Intern)
Pages: 7
Publication date: 2007

**Publication information**
Pages (from-to): 7
Newspaper: Fiskeritidende
No.: 40
Ratings:
ISI indexed (2013): ISI indexed no
ISI indexed (2012): ISI indexed no
ISI indexed (2011): ISI indexed no
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 227789
Publication: Communication › Newspaper article – Annual report year: 2007

**Spatial and temporal heterogeneity of the cod spawning environment in the Bornholm Basin, Baltic Sea**

**General information**
State: Published
A preliminary estimate of Atlantic cod (Gadus morhua) biomass in West Greenland offshore waters (NAFO Subarea 1) for 2006 and recent changes in the spatial overlap with northern shrimp (Pandalus borealis)

A comparative study of Atlantic cod catches at West Greenland from the German ground fish survey and the Greenland survey for shrimp and fish was carried out. The analysis was restricted to years with sufficient area coverage and regions included in both surveys. A close correlation between the two surveys estimates of cod biomass was found ($r^2 = 0.91$, $P < 0.001$). Linear regression analysis using data from 14 years revealed that the biomass index of Atlantic cod biomass estimated from the Greenland survey for 2006 would correspond to 22 667 tons in the German survey. This indicates that the biomass of Atlantic cod is still low compared to the 1980s, despite its moderate increase in the most recent years. Furthermore, the geographical distribution of Atlantic cod have become a pronounced southern one, and the impact of Atlantic cod on Northern shrimp through predation appears currently to be small considering the low spatial overlap between the two species.

Changes in stock biomass, recruitment and size of Northern shrimp (Pandalus borealis) in West Greenland waters – environmental or fishery effects?: From: Shrimp and its environment in the Northwest Atlantic – implications for forecasting abundance and population dynamics

Decline and recovery of North Atlantic cod stocks
Effect of tow duration on catch rate and size composition of Northern shrimp (Pandalus borealis) and Greenland halibut (Reinhardtius hippoglossoides) in the West Greenland Bottom Trawl Survey

The standard towing time in the annual West Greenland Bottom Trawl Survey for shrimp and fish has initially been 60min. Shorter tow durations have been gradually introduced over time and a mixture of 30 and 15min tows have been used in the recent years. From the surveys conducted since 1999, 15 and 30min tows have been analysed to examine whether a reduction of tow duration to 15min influences the catch per swept area (CPUE), its precision and the size composition of Northern shrimp and Greenland halibut. For both species, neither total biomass density nor numerical densities of different size groups differed significantly.
Results of the Greenland bottom trawl survey for northern shrimp (Pandalus borealis) off West Greenland (NAFO Subarea 1 and Division 0A), 1988-2006

General information
State: Published
Organisations: Unknown
Authors: Wieland, K. (Intern), Bergström, B. (Ekstern)
Pages: 35
Publication date: 2006
Conference: Scientific Council Research Meeting NAFO, 01/01/2006
Main Research Area: Technical/natural sciences

Publication information
Journal: Scientific Council Research Documents NAFO
Volume: 06/58
ISSN (Print): 0256-6915
Ratings:
ISI indexed (2013): ISI indexed no
ISI indexed (2012): ISI indexed no
ISI indexed (2011): ISI indexed no
Original language: English
Source: orbit
Source-ID: 286922
Publication: Research › Conference article – Annual report year: 2006

The importance of Atlantic cod (Gadus morhua) predation on northern shrimp (Pandalus borealis) in Greenland waters 2005

General information
State: Published
Organisations: Unknown
Authors: Storr-Paulsen, M. (Ekstern), Carl, J. (Ekstern), Wieland, K. (Intern)
Pages: 16
Publication date: 2006
Conference: Scientific Council Research Meeting NAFO, 01/01/2006
Main Research Area: Technical/natural sciences

Publication information
Journal: Scientific Council Research Documents NAFO
Volume: 06/68
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ISI indexed (2013): ISI indexed no
ISI indexed (2012): ISI indexed no
ISI indexed (2011): ISI indexed no
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Publication: Research › Conference article – Annual report year: 2006

Baltic cod recruitment - the impact of climate variability on key processes

General information
State: Published
Organisations: Institute Management, National Institute of Aquatic Resources, Section for Fisheries- and Monitoring Technology, Section for Population- and Ecosystem Dynamics, Section for Population Ecology and Genetics
Pages: 1408-1425
Publication date: 2005
Main Research Area: Technical/natural sciences

Publication information
Changes in recruitment, growth, and stock size of northern shrimp (Pandalus borealis) at West Greenland: temperature and density-dependent effects at released predation pressure

Stock size of northern shrimp (Pandalus borealis) in West Greenland waters has been fairly stable from the late 1980s to the mid-1990s. Thereafter, survey estimates of biomass increased substantially, and the exploitation rate declined slightly in the most recent years. The present analysis was carried out on a spatially disaggregated basis in order to account for the latitudinal differences in bottom temperature and shrimp density. Changes in recruitment and, with a lag of 2 years, in
stock biomass were most pronounced in the northern part of its distributional range, while bottom temperature increased in all survey regions since the mid-1990s. Length-at-age was positively correlated with temperature in general, but a trend towards slower growth was observed in areas with the highest stock densities in the most recent years. It is concluded that the moderate increase in temperature above a lower threshold of the optimal range in the northern regions has extended the distributional area that is most favourable for northern shrimp. This, together with a decreasing rate of exploitation and a continuous low predation pressure, resulted in an increase of the stock to a level at which density-dependent effects have become prominent in parts of study area. (c) 2005 International Council for the Exploration of the Sea. Published by Elsevier Ltd. All rights reserved.
East and West Greenland cod: From: ICES 2005 Spawning and life history information for North Atlantic cod stocks

General information
State: Published
Organisations: Unknown
Authors: Wieland, K. (Intern), Storr-Paulsen, M. (Intern), Brander, K. (ed.) (Intern)
Publication date: 2005

Publication information
Place of publication: Copenhagen
Publisher: ICES
Original language: English
Series: ICES Cooperative Research Report
Number: 274
ISSN: 1017-6195
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 279314
Publication: Research › Report – Annual report year: 2005

Is cod recovering at West Greenland?

General information
State: Published
Organisations: Unknown
Authors: Wieland, K. (Intern), Storr-Paulsen, M. (Intern)
Pages: 5-7
Publication date: 2005

Publication information
Journal: ICES/GLOBEC Newsletter
Volume: 12
Original language: English
Source: orbit
Source-ID: 279304
Publication: Research › Journal article – Annual report year: 2005

Baltic cod recruitment - the role of physical forcing and species interactions

General information
State: Published
Organisations: Institute Management, National Institute of Aquatic Resources, Section for Population- and Ecosystem Dynamics, Section for Fisheries- and Monitoring Technology, Section for Population Ecology and Genetics
Pages: 1-41
Publication date: 2004
Main Research Area: Technical/natural sciences

Publication information
Cephalopods in Greenland waters

General information
State: Published
Organisations: Greenland Institute of Natural Resources
Authors: Frandsen, R. (Intern), Wieland, K. (Intern)
Number of pages: 19
Publication date: 2004

Publication information
Publisher: Greenland Institute of Natural Resources
Original language: English

Series: Tekniske rapporter
Number: 57
Main Research Area: Technical/natural sciences
Links:
Source: orbit
Source-ID: 279317
Publication: Research › Report – Annual report year: 2004

Length at sex transition in northern shrimp (Pandalus borealis) off West Greenland in relation to changes in temperature and stock size

Length at sex transition of northern shrimp (Pandalus borealis) off West Greenland decreased in the years 1991–2002. A pronounced increase in bottom temperature occurred in the middle of this period, and stock size increased substantially during the past years. Length at sex transition differed within the area and the possible effects of changing temperature and abundance were studied for five different regions on the West Greenland shelf. On average, length at sex transition declined by 1.7 mm carapace length (CL) and mean bottom temperature increased by 1.9°C. The change in length at sex transition was significantly correlated with bottom temperature in three out of the five regions and for all regions combined. No clear density-dependence was detected despite a substantial increase in northern shrimp density in parts of the area and no evidence was found that northern shrimp decrease size at sex change during periods of low female abundance to compensate for a decreased reproductive potential. The observed change in length at sex transition was apparently independent from the fishery. Earlier maturation due to higher temperature was identified as the principal cause for the decrease in the length at sex transition. Because maximum female length is regarded to be proportional to length at sex transition and female fecundity increases with size, total egg production of a given year class over its lifespan would be lower when sex transition occurs at a smaller size if not compensated otherwise, e.g. through an increase of the proportion of females that spawn in each instead of every second year.

General information
State: Published
Organisations: Greenland Institute of Natural Resources
Authors: Wieland, K. (Intern)
Pages: 49-56
Publication date: 2004
Main Research Area: Technical/natural sciences

Publication information
Journal: Fisheries Research
Volume: 69
Issue number: 1
ISSN (Print): 0165-7836
Revision of depth contours and stratification of the West Greenland Bottom Trawl Survey for Northern shrimp

General information
State: Published
Organisations: Unknown
Authors: Wieland, K. (Intern), Kanneworff, P. (Ekstern)
Number of pages: 30
Publication date: 2004

Publication information
Publisher: Greenland Institute of Natural Resources
Original language: English
Series: Tekniske rapporter
Number: 56
Main Research Area: Technical/natural sciences
Links:

Stock structure of Atlantic cod (Gadus morhua) in West Greenland waters: implications of transport and migration

General information
State: Published
Organisations: Section for Fisheries Advice, National Institute of Aquatic Resources, Section for Fisheries- and Monitoring Technology
Authors: Storr-Paulsen, M. (Intern), Wieland, K. (Intern), Hovgård, H. (Intern), Rätz, H. (Ekstern)
Pages: 972-982
Publication date: 2004
Main Research Area: Technical/natural sciences

Publication information
Journal: ICES Journal of Marine Science
Volume: 61
Issue number: 6
ISSN (Print): 1054-3139
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.63
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 2.18
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 2.62
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 2.46
ISI indexed (2013): ISI indexed yes
The stock structure of Atlantic cod (Gadus morhua) in West Greenland waters: Implications of transport and migration

General information
State: Published
Organisations: Section for Fisheries Advice, National Institute of Aquatic Resources, Section for Fisheries- and Monitoring Technology
Authors: Storr-Paulsen, M. (Intern), Wieland, K. (Intern), Hovgård, H. (Intern), Rätz, H. (Ekstern)
Pages: 1-20
Publication date: 2003
Main Research Area: Technical/natural sciences

Publication information
Journal: ICES C.M. 2003/
Volume: O:06
Original language: English
Source: orbit
Source-ID: 227533
Publication: Research - peer-review › Journal article – Annual report year: 2004

Distribution and drift of Atlantic cod (Gadus morhua) eggs and larvae in Greenland offshore waters
Catches of Atlantic cod (Gadus morhua) eggs and larvae from 45 national and international ichthyoplankton surveys conducted in Greenland offshore waters during the period 1950 to 1984 have been compiled and re-analysed. Southeast and Southwest Greenland were identified as important spawning areas from which eggs and early larvae drift towards the southern Davis Strait. Only a part of the larval population remained in the vicinity of favourable settling areas off West Greenland while a considerable part was obviously transported westward across the Davis Strait and thus did not contribute to the recruitment of the West Greenland cod stock. It is also shown that cod eggs and larvae occasionally drift from Southwest Iceland across the Denmark Strait to the East Greenland shelf from where a subsequent transport and immigration of juveniles to West Greenland waters can occur. Larval transport across the Denmark Strait appeared to be most crucial for short-term replenishment of the offshore stock of cod at East and West Greenland. In general, these
results confirm the existing knowledge on the transport of cod fry in Greenland waters but they indicate a higher importance of Southeast and East Greenland waters as potential spawning and settling areas for the recruitment of West Greenland cod than reported in previous studies.
Possible effect of temperature on the biomass of northern shrimp off West Greenland: From: Workshop 'Ecosystem West Greenland', Greenland Institute of Natural Resources, Nuuk 29 November – 03 December 2001

A geostatistical analysis of IBTS data for age 2 North Sea haddock (Melanogrammus aeglefinus) considering daylight effects

A geostatistical analysis of age 2 North Sea haddock catches from the 1st quarter IBTS (International Bottom Trawl Survey) 1983-1997 is presented. IBTS standard abundance indices are routinely calculated in a way that does not account explicitly for the spatial distribution and night hauls are included in the estimation without any correction for possible daylight effects. In the present study, ordinary kriging was used to correct for sampling irregularities and external drift kriging with a day/night indicator or a cosine function of time of day was applied to account additionally for diurnal differences in the catch rates. Only minor differences between the standard indices and the abundance estimates obtained by ordinary kriging were found. In contrast, the external drift kriging, particularly with time of day, yielded higher estimates of mean abundance for all years with the differences to ordinary kriging being most pronounced for years characterized by a high portion of night hauls and a low mean catch rate at night. This demonstrates that external drift kriging with a day/night indicator but preferably with time of day is capable of compensating successfully for daylight effects and provides a valuable tool for the calculation of survey-based abundance indices.
Correcting for the effect of daylight in abundance estimation of juvenile haddock (Melanogrammus aeglefinus) in the North Sea: an application of kriging with external drift

Kriging with external drift allows for the estimation of a spatial variable when this is driven by an external parameter, through a response function only known up to constants. This is advantageous when the effect of the parameter exists or is postulated but is not known precisely. A postulated day/night effect on catch rates in trawl survey data can be accounted for even when the day and night levels are poorly known. Similarly, the effect of time of day on catch rates can be accounted for supposing, for instance, that it varies as a cosine but with unknown coefficients. The methods are illustrated on catches of age 1 to 3 haddock in the North Sea from the first quarter International Bottom Trawl Survey (IBTS) 1983–1997, where daylight effects exist without being precisely known. A cross-validation on data values is used to measure the improvement of the methods over Ordinary Kriging. It reveals excessive variations in the parameters of individual annual variograms. Using a generic variogram appears an improvement, though not changing the global abundance. The results of kriging with external drift are compared to Ordinary Kriging, IBTS standard indices and the assessment made by the International Council for the Exploration of the Seas (ICES), in terms of global abundance and mortality coefficients. The level of agreement with the ICES assessment was similar for the abundance indices obtained by the different methods. This indicates that the IBTS standard indices are remarkably robust against sampling irregularities. Nonetheless, External Drift Kriging resulted in higher indices than the IBTS standard ones, notably for the 1-group. External Drift Kriging is capable of compensating successfully for daylight effects and provides a valuable tool for the calculation of survey-based abundance indices.
Model-supported estimation of mortality rates in Baltic cod (Gadus morhua callarias L.) larvae: the varying impact of 'critical periods'

Changes in the survival-rate during the larval phase may strongly influence the recruitment level in marine fish species. During the larval phase different 'critical periods' are discussed, e.g. the hatching period and the first-feeding period. No such information was available for the Baltic cod stock, a commercially important stock showing reproduction failure during the last years. We calculated field-based mortality rates for larval Baltic cod during these phases using basin-wide abundance estimates from two consecutive surveys. Survey information was corrected by three dimensional hydrodynamic model runs.

Results

The corrections applied for transport were of variable impact, depending on the prevailing circulation patterns. Especially at high wind forcing scenarios, abundance estimates have the potential to be biased without accounting for transport processes. In May 1988 mortality between hatch and first feeding amounted to approximately 20% per day. Mortality rates during the onset of feeding were considerably lower with only 7% per day. In August 1991 the situation was vice versa:
Extremely low mortality rates of 0.08% per day were calculated between hatch and first feeding, while the period between the onset of feeding to the state of an established feeder was more critical with mortality rates of 22% per day.

Conclusions

Mortality rates during the different proposed 'critical periods' were found to be highly variable. Survival rates of Baltic cod are not only influenced by a single 'critical period', but can be limited at different points during the larval phase, depending on several biotic and abiotic factors.
Changes in the timing of spawning of Baltic cod: possible causes and implications for recruitment

Interannual variations in spawning time, defined as the peak in egg abundance, of cod (Gadus morhua) in the Bornholm Basin, Baltic Sea, were analysed. Effects of water temperature, size and age structure of the spawning stock, abundance of food, and timing of spawning in preceding years were studied as possible determinants of annual spawning time. During the 1970s and late 1980s, peak spawning took place between the end of April and mid-June. A remarkable shift in the timing of spawning to the end of July was observed in the 1990s. The key factors governing the timing of spawning are water temperature during the period of gonadal maturation, density-dependent processes related to the size of the spawning stock, and food availability. The age structure of the spawning stock is suggested to have an additional effect. A high proportion of first-time spawners and decreasing water temperature have caused progressively delayed spawning since the early 1990s. Late spawning involves several processes that are detrimental to the survival of the early life stages. Recruitment in the mid-1990s was below what could be expected from spawning stock biomass and favourable hydrographic conditions. It is therefore suggested that the rebuilding of the Baltic cod stock could be improved by reduced fishing pressure in spring on early spawners. (C) 2000 International Council for the Exploration of the Sea.
Correcting daylight effect in the estimation of fish abundance using kriging with external drift, with an application to juvenile gadoids in the North Sea

General information
State: Published
Organisations: Ecole des Mines de Paris, Greenland Institute of Natural Resources
Authors: Rivoirard, J. (Ekstern), Wieland, K. (Intern)
Publication date: 2000
Main Research Area: Technical/natural sciences

Quantifying environmental heterogeneity: habitat size necessary for successful development of cod Gadus morhua eggs in the Baltic Sea

Spatial and temporal variability in environmental factors can exert major influences on survival and growth of living organisms. However, in many key areas of fisheries science (e.g., growth, survival and recruitment determination), environmental heterogeneity is usually ignored because of insufficient environmental or fisheries data or lack of evidence that such heterogeneity impacts response variables. For the eastern Baltic Sea (ICES Subdivisions 25 to 32), we evaluated spatial and temporal differences in conditions affecting the survival of cod Gadus morhua L. eggs at survival on four distinct spawning sites within the assessment area. We intercalibrated ways of quantifying the volume of water ('reproductive volume') at each site where salinity, oxygen and temperature conditions permitted successful egg development. We have developed and compared a time series (1952 to 1996) of reproductive volumes among the areas to identify spatial differences. The results of 2 independent volume-estimation methods are comparable, indicating that highly significant differences exist among the sites, and that the westernmost spawning ground, Bornholm Basin, has on average the highest reproductive volume and the lowest variability among the 4 sites. These findings may be useful in evaluating how spatial and temporal variability in environmental conditions affect egg hatching success and possibly recruitment in the Baltic stock.

General information
State: Published
Organisations: Section for Population- and Ecosystem Dynamics, National Institute of Aquatic Resources, Section for Fisheries- and Monitoring Technology
Authors: MacKenzie, B. (Intern), Hinrichsen, H. (Ekstern), Plikshs, M. (Ekstern), Wieland, K. (Intern), Zezera, A. (Ekstern)
Publication date: 2000
Main Research Area: Technical/natural sciences

Quantifying environmental heterogeneity: habitat size necessary for successful development of cod Gadus morhua eggs in the Baltic Sea

Spatial and temporal variability in environmental factors can exert major influences on survival and growth of living organisms. However, in many key areas of fisheries science (e.g., growth, survival and recruitment determination), environmental heterogeneity is usually ignored because of insufficient environmental or fisheries data or lack of evidence that such heterogeneity impacts response variables. For the eastern Baltic Sea (ICES Subdivisions 25 to 32), we evaluated spatial and temporal differences in conditions affecting the survival of cod Gadus morhua L. eggs at survival on four distinct spawning sites within the assessment area. We intercalibrated ways of quantifying the volume of water ('reproductive volume') at each site where salinity, oxygen and temperature conditions permitted successful egg development. We have developed and compared a time series (1952 to 1996) of reproductive volumes among the areas to identify spatial differences. The results of 2 independent volume-estimation methods are comparable, indicating that highly significant differences exist among the sites, and that the westernmost spawning ground, Bornholm Basin, has on average the highest reproductive volume and the lowest variability among the 4 sites. These findings may be useful in evaluating how spatial and temporal variability in environmental conditions affect egg hatching success and possibly recruitment in the Baltic stock.
Stage-specific mortality of Baltic cod (Gadus morhua L.) eggs

A study on cod egg mortality was carried out in the Bornholm Basin (southern central Baltic Sea) toward the end of July 1996. An initial egg aggregation marked by a satellite-tracked drifter buoy was sampled repeatedly over an 11-day period;
profiles of temperature, salinity and dissolved oxygen were concurrently recorded. Three replicate estimates of mortality were obtained for each pair of subsequent developmental stages from newly spawned eggs to early larvae. A consistent pattern of stage-specific mortality coincided well with previous experimental observations. Average daily mortality rates were 7.2% (eggs I/A/IB), 38.7% (eggs I/B/II), 25.6% (eggs II/III), 40.0% (eggs III/IV), and 42.3% (eggs IV/early larvae). The cumulative mortality until hatch amounted to 99.9%. Results from hydrodynamic modelling, however, indicated that the drifter's trajectory was influenced by wind stress. Hence, the mortality rates might be biased despite the short sampling intervals; a modification of the sampling design is recommended for future studies.

General information
State: Published
Organisations: Section for Fisheries- and Monitoring Technology, National Institute of Aquatic Resources
Authors: Wieland, K. (Intern), Hinrichsen, H. (Ekstern), Grønkjær, P. (Ekstern)
Pages: 266-272
Publication date: 2000
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Applied Ichthyology
Volume: 16
Issue number: 6
ISSN (Print): 0175-8659
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 0.94
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 0.84
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 1.06
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 0.99
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 0.99
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 1.04
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
BFI (2008): BFI-level 1
Web of Science (2008): Indexed yes
Web of Science (2001): Indexed yes
Web of Science (2000): Indexed yes
Original language: English
DOI:
10.1111/j.1439-0426.2000.00241.x
Source: orbit
Source-ID: 227794
Publication: Research - peer-review › Journal article – Annual report year: 2000
Stock recruitment relationships for cod (Gadus morhua L.) in the central Baltic Sea incorporating environmental variability

Recruitment of central/eastern Baltic cod critically depends on favourable oceanographic conditions in the deeper basins of the Baltic Sea creating a suitable habitat for the development of early life stages. The decline in the size of the spawning stock since the mid-1980s initiated a series of investigations on recruitment, which were continued through a partial recovery of the stock in the mid-1990s. The principal factors influencing recruitment and recognized at present are: (i) the volume of water with temperature, oxygen and salinity conditions which meet the minimum requirements for successful egg development (‘reproductive volume’); (ii) the age-structure of the spawning stock; (iii) the timing of spawning; and (iv) predation mortality on eggs due to sprat (Sprattus sprattus) and herring (Clupea harengus), as well as cod cannibalism. We relate recruitment at age 2 to parent stock size using updated time series of these variables, comprising the period 1966 to 1994. Spawning stock biomass and egg production are compared as measures of parent stock size. The influence of wind energy and zooplankton abundance on cod recruitment are discussed. A modified Ricker model is outlined explicitly accounting for environmentally-induced oscillations around the two observed levels of cod stock size.

General information
State: Published
Organisations: Section for Management Systems, National Institute of Aquatic Resources, Section for Fisheries- and Monitoring Technology, Section for Population- and Ecosystem Dynamics
Authors: Jarre, A. (Intern), Wieland, K. (Intern), MacKenzie, B. (Intern), Hinrichsen, H. (Ekstern), Plikshs, M. (Ekstern), Aro, E. (Ekstern)
Pages: 97-123
Publication date: 2000
Main Research Area: Technical/natural sciences

Publication information
Journal: Archive of Fishery and Marine Research
Volume: 48
Issue number: 2
ISSN (Print): 0944-1921
Ratings:
BFI (2008): BFI-level 1
Scopus rating (2006): SJR 0.289 SNIP 0.495
Scopus rating (2005): SJR 0.389 SNIP 0.933
Scopus rating (2004): SJR 0.302 SNIP 0.84
Scopus rating (2003): SJR 0.417 SNIP 0.797
Scopus rating (2002): SJR 0.546 SNIP 0.412
Scopus rating (2001): SJR 0.492 SNIP 0.538
Scopus rating (2000): SJR 0.361 SNIP 0.449
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 0.473 SNIP 0.895
Original language: English
Source: orbit
Source-ID: 225958
Publication: Research - peer-review › Journal article – Annual report year: 2000

Implications of mechanical deformation and formaldehyde preservation for the identification of stage-specific characteristics of Baltic cod eggs

The identification of developmental stages in fish eggs from plankton samples is often complicated by deformation of the embryos due to mechanical stress during the sampling procedure and by dehydration during formaldehyde fixation. The effects of formaldehyde fixation and mechanical stress on Baltic cod eggs (Gadus morhua callarias L.) were examined separately by visually comparing the morphological features of treated vs. live eggs of identical ontogenetic age. Microphotographs were made concurrently for documentation. In stage IA eggs, mechanical treatment resulted in scattered blastodiscs surrounded by single cells, while in further advanced stages the yolk membrane collapsed entirely, the yolk coagulated and the embryo extending over the yolk shrank. Formaldehyde fixation caused the yolk and the blastodisc or embryo to darkend, and in some cases crystalline enclosures occurred. Eggs mechanically deformed during handling were clearly distinguishable from those that died prior to catching; however, staging was generally less accurate for formaldehyde- preserved eggs when compared with living specimens.

General information
State: Published
Organisations: Section for Fisheries- and Monitoring Technology, National Institute of Aquatic Resources
Spatial distribution and variability of abundance estimates of juvenile (age 1 and 2) whiting and cod in the North Sea

General information
State: Published
Organisations: Section for Fisheries- and Monitoring Technology, National Institute of Aquatic Resources, Section for Management Systems
Authors: Wieland, K. (Intern), Foldager, L. (Ekstern), Holst, R. (Intern), Jarre, A. (Intern)
Pages: 1-31
Publication date: 1998
Main Research Area: Technical/natural sciences
Spatial distribution pattern generating processes in the International Bottom Trawl Survey in the North Sea

General information
State: Published
Organisations: Section for Fisheries- and Monitoring Technology, National Institute of Aquatic Resources
Authors: Wieland, K. (Intern)
Number of pages: 80
Publication date: 1998

Publication information
Place of publication: Hirtshals
Publisher: Danmarks Fiskeriundersøgelser
ISBN (Print): 87-88047-90-3
Original language: English

Series: DFU-rapport
Number: 60-98
Main Research Area: Technical/natural sciences

Electronic versions:
60_98_spatial_distribution_pattern_generating_in_the_international_bottom_trawl_survey_in_the_north_sea.pdf
Source: orbit
Source-ID: 227793
Publication: Research › Report – Annual report year: 1998

Comparison of the efficiency of Bongo and IKS-80 nets for sampling Baltic cod eggs

General information
State: Published
Organisations: Unknown
Authors: Wieland, K. (Intern), Makarchouk, A. (Ekstern)
Publication date: 1997
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 279327
Publication: Research › Poster – Annual report year: 1997

Estimates of zooplankton abundance and size distribution with the Optical Plankton Counter (OPC)
The capability of the Optical Plankton Counter (OPC) to examine the abundance and size distribution of zooplankton was tested in Storfjorden, Norway, in June 1993. Selected material obtained from net sampling was measured with a laboratory version of the OPC and compared with microscope analysis in order to identify main species in the in situ size frequency distributions obtained by the submersible version of the OPC. Differences in the particle concentration between shallow and deep water layers were clearly resolved by the submersible OPC, but the high diversity of the zooplankton community and widely overlapping size ranges prevented a detailed analysis of the fine scale vertical distribution and the horizontal variability of abundance for distinct species. These results are used to discuss the limitations of the OPC for rapid and continuous surveying of spatial distribution and abundance of zooplankton.
Mortality of Baltic cod eggs and larvae at different environmental conditions

General information
State: Published
Organisations: Universität zu Kiel
Authors: Wieland, K. (Intern), Voss, R. (Ekstern)
Publication date: 1997
Event: Poster session presented at ICES Symposium on Recruitment Dynamics of Exploited Marine Populations, Baltimore, USA, .
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 279325
Publication: Research › Poster – Annual report year: 1997

Mortality of Baltic cod (Gadus morhua L.) eggs in the Bornholm Basin, Baltic Sea, during a drift study in July 1996

General information
State: Published
Organisations: Universität zu Kiel
Authors: Wieland, K. (Intern), Grønkjær, P. (Ekstern)
Publication date: 1997
Event: Poster session presented at FSBI Symposium on Ichthyoplankton Ecology, Galway, Ireland, .
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 279324
Publication: Research › Poster – Annual report year: 1997

Ontogenetic and environmental effects on vertical distribution of cod larvae in the Bornholm basin, Baltic sea
Cod eggs in the Baltic Sea are neutrally buoyant at depths exceeding 55 m. When these eggs hatch the larvae must enter the upper photic portion of the water column to locate and capture sufficient prey to feed and grow. In this study we investigated the time during ontogenetic development at which this vertical migration occurs. The vertical distribution of cod larvae, microzooplankton, light intensity and the physical characteristics of the water column in the Bornholm Basin were investigated during 3 cruises in May, June and July 1994. Larvae designated as pre-feeding were usually located at
the depths where they had hatched. After larvae had begun to feed, their distributions moved closer to the water’s surface. Since larvae are negatively buoyant relative to the density of water in the upper layers of the Baltic, this migration requires active swimming. Hence the hydrographic structure of the water column in the Baltic Likely imposes a modest metabolic cost on larvae. We also investigated factors determining the vertical distribution of feeding larvae. The distribution of these larvae was poorly correlated with prey abundance (i.e. concentration of copepod stages). However, distributions were correlated with prey availability as estimated by combining measures of Light-dependent larval feeding incidence with the measured prey concentrations. Our observations suggest that a vertical migration among Baltic cod larvae is necessary for 2 reasons. This migration enables larvae to obtain suitable feeding conditions, and to avoid mortality that could be induced by exposure to the low oxygen conditions typical for the sub-halocline layer.

General information
State: Published
Organisations: Aarhus University, Universität zu Kiel
Authors: Grønkjaer, P. (Ekstern), Wieland, K. (Intern)
Pages: 91-105
Publication date: 1997
Main Research Area: Technical/natural sciences

Publication information
Journal: MARINE ECOLOGY-PROGRESS SERIES
Volume: 154
ISSN (Print): 0171-8630
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BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 2.4
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 2.56
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 2.75
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 2.79
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): CiteScore 2.9
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): CiteScore 2.85
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Web of Science (2008): Indexed yes
Web of Science (2007): Indexed yes
Web of Science (2006): Indexed yes
Web of Science (2005): Indexed yes
Web of Science (2004): Indexed yes
Prediction of vertical distribution and ambient development temperature of Baltic cod, Gadus morhua L., eggs

An artificial neural network (ANN) model was established to predict the vertical distribution of Baltic cod eggs. Data from vertical distribution sampling in the Bornholm Basin over the period 1986-1995 were used to train and test the network, while data sets from sampling in 1996 were used for validation. The model explained 82% of the variance between observed and predicted relative frequencies of occurrence of the eggs in relation to salinity, temperature and oxygen concentration; The ANN fitted all observations satisfactorily except for one sampling date, where an exceptional hydrographic situation was observed. Mean ambient temperatures, calculated from the predicted vertical distributions of the eggs and used for the computation of egg developmental times, were overestimated by 0.05 degrees C on average. This corresponds to an error in prediction of egg developmental time of less than 1%

General information
State: Published
Organisations: Section for Fisheries- and Monitoring Technology, National Institute of Aquatic Resources, Section for Management Systems
Authors: Wieland, K. (Intern), Jarre, A. (Intern)
Pages: 172-187
Publication date: 1997
Main Research Area: Technical/natural sciences

Publication information
Journal: Fisheries Oceanography
Volume: 6
Issue number: 3
ISSN (Print): 1365-2419
Ratings:
Web of Science (2018): Indexed yes
Web of Science (2017): Indexed Yes
Scopus rating (2016): CiteScore 2.19
Web of Science (2016): Indexed yes
Scopus rating (2015): CiteScore 2.4
Web of Science (2015): Indexed yes
Scopus rating (2014): CiteScore 2.61
Web of Science (2014): Indexed yes
Scopus rating (2013): CiteScore 2.61
ISI indexed (2013): ISI indexed no
Web of Science (2013): Indexed yes
Scopus rating (2012): CiteScore 2.21
ISI indexed (2012): ISI indexed no
Scopus rating (2011): CiteScore 2.42
ISI indexed (2011): ISI indexed no
Web of Science (2011): Indexed yes
Web of Science (2010): Indexed yes
Web of Science (2009): Indexed yes
Web of Science (2008): Indexed yes
Web of Science (2007): Indexed yes
Web of Science (2006): Indexed yes
Web of Science (2005): Indexed yes
Web of Science (2004): Indexed yes
Web of Science (2003): Indexed yes
Web of Science (2002): Indexed yes
Original language: English
Source: orbit
Soweit die Flossen tragen – Die mysteriöse Wanderung der Süßwasseraale quer über den Ozean

General information
State: Published
Organisations: Unknown
Authors: Hiegel, C. (Ekstern), Wieland, K. (Intern)
Pages: 78-82
Publication date: 1997
Main Research Area: Technical/natural sciences

Publication information
Journal: Mare
Volume: 1
ISSN (Print): 1432-928X
Original language: German
Source: orbit
Source-ID: 279305
Publication: Research › Journal article – Annual report year: 1997

Baltic cod recruitment project (CORE)

General information
State: Published
Organisations: Institute Management, National Institute of Aquatic Resources, Section for Monitoring, Section for Population Ecology and Genetics, Section for Population- and Ecosystem Dynamics
Pages: 1-21
Publication date: 1996
Main Research Area: Technical/natural sciences

Publication information
Journal: ICES Council Meeting
ISSN (Print): 1015-4744
Ratings:
- ISI indexed (2013): ISI indexed no
- ISI indexed (2012): ISI indexed no
- ISI indexed (2011): ISI indexed no
- Web of Science (2003): Indexed yes
Original language: English

Bibliographical note
Source: orbit
Source-ID: 227338
Publication: Research › Conference article – Annual report year: 1996

Eastern Baltic cod : Perspectives from existing data on processes affecting growth and survival of eggs and larvae
We review eastern Baltic cod literature to identify areas for future research involving egg and larval stages. Egg and larval abundances have been estimated for several decades in all of the major spawning areas. Using a subset of the available data we show that the timing of peak egg abundance in one of these areas (Bornholm Basin) varies seasonally by at least 2 mo. Trends in egg and larval abundance over time are not obvious due to differences in gear type, sampling intensity, and survey timing relative to spawning dates. Interannual differences in larval transport away from spawning areas may also contribute to variability in abundance estimates. The results of broad- scale zooplankton surveys suggest that the abundance and types of potential prey in the Baltic Sea are similar to those in other regions and perhaps suitable for moderate-to-fast larval growth. However, few systematic surveys have described food concentrations at appropriate scales for cod larvae, and the species composition of larval diets is unknown. Growth rates for Baltic cod larvae have not been measured and cannot be compared with rates in other areas or to variations in biotic and abiotic factors. Large gaps exist in our knowledge of processes affecting egg and larval growth and survival, but some promising areas of research are indicated. In particular the seasonality of spawning, deep water oxygen concentrations, predation on eggs, and larval
food production require further investigation.

**General information**

State: Published

Organisations: Section for Population- and Ecosystem Dynamics, National Institute of Aquatic Resources, Section for Population Ecology and Genetics, Section for Fisheries- and Monitoring Technology

Authors: MacKenzie, B. (Intern), St. John, M. (Intern), Wieland, K. (Intern)

Pages: 265-281

Publication date: 1996

Main Research Area: Technical/natural sciences

**Publication Information**

Journal: Marine Ecology - Progress Series

Volume: 134

ISSN (Print): 0171-8630

Ratings:

BFI (2018): BFI-level 2

Web of Science (2018): Indexed yes

BFI (2017): BFI-level 2

Web of Science (2017): Indexed yes

BFI (2016): BFI-level 2

Scopus rating (2016): CiteScore 2.4

Web of Science (2016): Indexed yes

BFI (2015): BFI-level 2

Scopus rating (2015): CiteScore 2.56

Web of Science (2015): Indexed yes

BFI (2014): BFI-level 2

Scopus rating (2014): CiteScore 2.75

Web of Science (2014): Indexed yes

BFI (2013): BFI-level 2

Scopus rating (2013): CiteScore 2.79

ISI indexed (2013): ISI indexed yes

Web of Science (2013): Indexed yes

BFI (2012): BFI-level 2

Scopus rating (2012): CiteScore 2.9

ISI indexed (2012): ISI indexed yes

Web of Science (2012): Indexed yes

BFI (2011): BFI-level 2

Scopus rating (2011): CiteScore 2.85

ISI indexed (2011): ISI indexed yes

Web of Science (2011): Indexed yes

BFI (2010): BFI-level 2

Web of Science (2010): Indexed yes

BFI (2009): BFI-level 2

Web of Science (2009): Indexed yes

BFI (2008): BFI-level 2

Web of Science (2008): Indexed yes

Web of Science (2007): Indexed yes

Web of Science (2006): Indexed yes

Web of Science (2005): Indexed yes

Web of Science (2004): Indexed yes

Web of Science (2003): Indexed yes

Web of Science (2002): Indexed yes

Web of Science (2001): Indexed yes

Web of Science (2000): Indexed yes

Original language: English

Electronic versions:
Oceanographic processes influencing seasonal and interannual variability in cod spawning habitat in the eastern Baltic Sea

General information
State: Published
Organisations: Section for Population- and Ecosystem Dynamics, National Institute of Aquatic Resources, Section for Population Ecology and Genetics, Section for Monitoring
Authors: MacKenzie, B. (Intern), St. John, M. (Intern), Plikshs, M. (Ekstern), Hinrichsen, H. (Ekstern), Wieland, K. (Intern)
Pages: C+J:4
Publication date: 1996
Main Research Area: Technical/natural sciences

Recent changes in peak spawning time and location of spawning of cod in the Bornholm Basin, Baltic Sea

General information
State: Published
Organisations: Unknown
Authors: Wieland, K. (Intern), Horbowa, K. (Ekstern)
Publication date: 1996
Main Research Area: Technical/natural sciences

Size and visibility of Baltic cod eggs with reference to size-selective and stage-dependent predation mortality

Size of Baltic cod eggs from incubation experiments and from field samples was determined by microscopic analysis. Results from plankton samples were compared with corresponding size distributions of cod eggs found in herring stomachs. The influence of fixation on size of different developmental stages was studied. Live eggs from incubation experiments were also sized repeatedly throughout the developmental period with an optical plankton counter (OPC) based on light attenuation measurements as this was assumed to be more closely related to the visibility of the eggs for potential predators than egg diameter as obtained by microscopic analysis. Preservation in formaldehyde solution caused a small reduction in egg diameter (2.2%) whereby no differences between the developmental stages were detected. Egg
size decreased slightly during incubation (6.9%) while the OPC measurements revealed a substantial increase in light attenuation during egg development (42.2%). In the field, a general decrease in egg size with increasing depth was observed while no change between the developmental stages was detectable. The mean size of eggs ingested by herring was slightly lower than in the water column which was most pronounced for the late stages containing a well-developed embryo. The frequency of eggs in an advanced stage of development was considerably higher in the stomachs than in corresponding plankton samples. Therefore, it is suggested that the selection of further developed egg stages by predatory fish in the central Baltic Sea, i.e. herring and sprat, is due to an increase of visibility during egg development in relation to growth and pigmentation of the embryo. Thus it is likely that egg mortality due to predation is stage-dependent rather than strictly size-selective.

**General information**

State: Published  
Organisations: GEOMAR - Helmholtz Centre for Ocean Research Kiel  
Authors: Wieland, K. (Intern), Köster, F. (Intern)  
Pages: 83-89  
Publication date: 1996  
Main Research Area: Technical/natural sciences

**Publication information**

Journal: Journal of Applied Ichthyology  
Volume: 12  
Issue number: 2  
ISSN (Print): 0175-8659  
Ratings:
- BFI (2018): BFI-level 1  
- Web of Science (2018): Indexed yes  
- BFI (2017): BFI-level 1  
- Web of Science (2017): Indexed Yes  
- BFI (2016): BFI-level 1  
- Scopus rating (2016): CiteScore 0.94  
- Web of Science (2016): Indexed yes  
- BFI (2015): BFI-level 1  
- Scopus rating (2015): CiteScore 0.84  
- Web of Science (2015): Indexed yes  
- BFI (2014): BFI-level 1  
- Scopus rating (2014): CiteScore 1.06  
- Web of Science (2014): Indexed yes  
- BFI (2013): BFI-level 1  
- Scopus rating (2013): CiteScore 0.99  
- ISI indexed (2013): ISI indexed yes  
- Web of Science (2013): Indexed yes  
- BFI (2012): BFI-level 1  
- Scopus rating (2012): CiteScore 0.99  
- ISI indexed (2012): ISI indexed yes  
- Web of Science (2012): Indexed yes  
- BFI (2011): BFI-level 1  
- Scopus rating (2011): CiteScore 1.04  
- ISI indexed (2011): ISI indexed yes  
- BFI (2010): BFI-level 1  
- Web of Science (2010): Indexed yes  
- BFI (2009): BFI-level 1  
- BFI (2008): BFI-level 1  
- Web of Science (2008): Indexed yes  
- Web of Science (2001): Indexed yes  
- Web of Science (2000): Indexed yes

Original language: English  
Source: orbit  
Source-ID: 279287

Publication: Research - peer-review › Journal article – Annual report year: 1996
Baltic cod recruitment project

General information
State: Published
Organisations: Institute Management, National Institute of Aquatic Resources, Section for Monitoring, Section for Population Ecology and Genetics, Section for Population- and Ecosystem Dynamics
Authors: Schnack, D. (Ekstern), Köster, F. (Intern), Wieland, K. (Intern), St. John, M. (Intern), MacKenzie, B. (Intern), Tomkiewicz, J. (Intern), Nissling, A. (Ekstern)
Pages: J:23
Publication date: 1995
Main Research Area: Technical/natural sciences

Publication information
Journal: ICES Council Meeting
ISSN (Print): 1015-4744
Ratings:
ISI indexed (2013): ISI indexed no
ISI indexed (2012): ISI indexed no
ISI indexed (2011): ISI indexed no
Web of Science (2003): Indexed yes
Original language: English
Source: orbit
Source-ID: 227337
Publication: Research › Conference article – Annual report year: 1995

Einfluß der Hydrographie auf die Vertikalverteilung und Sterblichkeit der Eier des Ostseedorsches (Gadus morhua callarias) im Bornholmbecken, südliche zentrale Ostsee

General information
State: Published
Organisations: Unknown
Authors: Wieland, K. (Intern)
Publication date: 1995

Publication information
Place of publication: Kiel
Publisher: University of Kiel
Original language: German
Series: Berichte aus dem Institut für Meereskunde Kiel
Number: 266
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 279318
Publication: Research › Doctoral thesis – Annual report year: 1995

Processes affecting growth and survival of cod eggs and larvae in the eastern Baltic

General information
State: Published
Organisations: Section for Population- and Ecosystem Dynamics, National Institute of Aquatic Resources, Section for Monitoring
Authors: MacKenzie, B. (Intern), St John, M. (Ekstern), Wieland, K. (Intern)
Publication date: 1995
Main Research Area: Technical/natural sciences

Publication information
Journal: ICES CM 1995/
Volume: J:26
Original language: English
The Ichthyoplankton Recorder: A video recording system for in situ studies of small-scale plankton distribution patterns

The Ichthyoplankton Recorder is a high-speed underwater video system integrated into a modified unencased Gulf III sampler and designed for recording small-scale distribution of fish larvae and their prey organisms. The instrument is described and test results from a cruise to the English Channel in January 1994 are reported including a comparison with two other sampling gear, a “Nackthai” and a “Messhai”, employed for fish larvae surveys.

General information
State: Published
Organisations: Universität zu Kiel
Authors: Lenz, J. (Ekstern), Schnack, D. (Ekstern), Petersen, D. (Ekstern), Kreikemeier, J. (Ekstern), Hermann, B. (Ekstern), Mees, S. (Ekstern), Wieland, K. (Intern)
Pages: 409-417
Publication date: 1995
Main Research Area: Technical/natural sciences

Publication information
Journal: ICES Journal of Marine Science
Volume: 52
Issue number: 3-4
ISSN (Print): 1054-3139
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.63
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 2.18
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 2.62
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 2.46
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 2.35
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 2.32
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Web of Science (2008): Indexed yes
Web of Science (2007): Indexed yes
Development of Baltic cod eggs at different levels of temperature and oxygen content

The influence of ambient temperature (2-7 degree C) and oxygen content (1.0-8.3 ml O2 l-1) on the development of Baltic cod eggs was investigated in laboratory experiments. The incubation period, i.e. the time from fertilization to 50% hatching, decreased from 27.5 days at 2 degree C to 13.0 days at 7 degree C. Reduced oxygen levels did not significantly affect the time of hatching. Throughout the incubation period highest mortality rates were found during gastrulation and immediately prior to hatching at all tested oxygen levels. Egg survival decreased from around 30% at an oxygen level of 8 ml O2 l-1 to less than 10% at 2 ml O2 l-1 oxygen content. At oxygen concentrations below 2 ml O2 l-1 the development ceased at a very early stage. Field observations revealed that in the past years Baltic cod eggs were most abundant below the halocline, depth with unfavourable oxygen condition. Besides the effect on egg survival, low environmental oxygen may also affect the initial viability of larvae and consequently their ability to approach the feeding areas close to the sea surface. Thus, the effective reproduction volume of water for cod in the central Baltic may have been smaller than expected and it is suggested that oxygen depletion was the limiting factor determining the reproductive success of cod in this area during the last decade.

General information
State: Published
Organisations: Universität Kiel
Authors: Wieland, K. (Intern), Waller, U. (Ekstern), Schnack, D. (Ekstern)
Pages: 163-177
Publication date: 1994
Main Research Area: Technical/natural sciences

Publication information
Journal: Dana
Volume: 10
ISSN (Print): 0106-553X
Web of Science (2000): Indexed yes
Original language: English
Source: orbit
Source-ID: 279289
Publication: Research - peer-review › Journal article – Annual report year: 1994

Fahrtbericht zur Aal-Expedition mit FS Poseidon (Reise 200/1) in die Sargasso See im Frühjahr 1993

General information
State: Published
Organisations: University of Kiel
Authors: Schnack, D. (Ekstern), Piatkowski, U. (Ekstern), Wieland, K. (Intern)
Number of pages: 33
Publication date: 1994

Publication information
Place of publication: Kiel
Original language: German
Series: Berichte aus dem Institut für Meereskunde Kiel
Number: 248
Main Research Area: Technical/natural sciences
The Boreoatlantic gonate squid Gonatus fabricii: Distribution and size off west Greenland in summer 1989 and in summer and autumn 1990

The Boreoatlantic gonate squid Gonatus fabricii is the most abundant squid in the offshore arctic and subarctic waters of the northern Atlantic. Adults are common in midwater while juveniles occur in surface waters close to the continents. As part of a research project focussing on the interactions among fish stocks off West Greenland we examined squid collections sampled with small pelagic nets in summer 1989 and in summer and autumn 1990 off Southwest Greenland. G. fabricii was by far the most abundant cephalopod species caught. We recorded a total of 698 juvenile specimens. During the summer cruise in 1989 the mantle lengths varied from 6 to 35 mm (n = 84); in summer 1990 they ranged from 10 to 48 mm (n = 542) with significantly larger body sizes in the southern part of the region. In autumn 1990 the mantle lengths ranged from 19 to 64 mm (n = 72) with largest animals again at the southern sampling sites. The data suggest growth rates for juvenile G. fabricii off West Greenland (Arctic Ocean) of 4 to 5.5 mm per month between July and November 1990.

General information
State: Published
Organisations: Universität zu Kiel
Authors: Piatkowski, U. (Ekstern), Wieland, K. (Intern)
Pages: 109-114
Publication date: 1993
Main Research Area: Technical/natural sciences

Publication information
Journal: Aquatic Living Resources
Volume: 6
Issue number: 2
ISSN (Print): 0990-7440
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.41 SJR 0.59 SNIP 0.743
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.747 SNIP 0.848 CiteScore 1.39
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.641 SNIP 0.905 CiteScore 1.25
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.547 SNIP 0.68 CiteScore 1.15
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.554 SNIP 0.618 CiteScore 1.19
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.628 SNIP 0.697 CiteScore 1.17
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.589 SNIP 0.545
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.493 SNIP 0.56
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.737 SNIP 0.663
Scopus rating (2007): SJR 0.662 SNIP 0.82
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.661 SNIP 0.992
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 0.545 SNIP 0.741
Scopus rating (2004): SJR 0.599 SNIP 0.754
Scopus rating (2003): SJR 0.688 SNIP 0.855
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 0.57 SNIP 0.719
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 0.65 SNIP 0.908
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 0.635 SNIP 0.9
Scopus rating (1999): SJR 0.681 SNIP 0.903
Original language: English
Source: orbit
Source-ID: 279291
Publication: Research - peer-review › Journal article – Annual report year: 1993

Wissenschaftliche Grundlagen für ökosystem-orientiertes Fischereimanagement in den Gewässern vor Grönland

General information
State: Published
Organisations: GEOMAR - Helmholtz Centre for Ocean Research Kiel
Authors: Schnack, D. (Ekstern), Köster, F. (Intern), Rätz, H. (Ekstern), Wieland, K. (Intern), Fürderer, H. (Ekstern), Grunwald, E. (Ekstern), Zarkeschwari, N. (Ekstern)
Number of pages: 130
Publication date: 1993

Publication information
Place of publication: Kiel
Original language: German

Series: Berichte aus dem Institut für Meereskunde Kiel
Number: 234
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 279321
Publication: Research › Report – Annual report year: 1993

Distribution and mortality of cod eggs in the Bornholm Basin Baltic Sea in May and June 1986

General information
State: Published
Organisations: Universität Hamburg
Authors: Wieland, K. (Intern)
Pages: 331-340
Publication date: 1988
Main Research Area: Technical/natural sciences

Publication information
Journal: Kieler Meeresforschungen Sonderheft
Issue number: 6
ISSN (Print): 0172-7893
Original language: English
Source: orbit
Source-ID: 279292
Publication: Research - peer-review › Journal article – Annual report year: 1988
Projects:

Danish seine - Ecosystem effects of fishing
National Institute of Aquatic Resources
Period: 15/12/2013 → 05/04/2017
Number of participants: 6
Phd Student:
Noack, Thomas (Intern)
Supervisor:
Wieland, Kai (Intern)
Main Supervisor:
Krag, Ludvig Ahm (Intern)
Examiner:
Eigaard, Ole Ritzau (Intern)
Hammer, Cornelius (Ekstern)
Ingólfsson, Ólafur Arnar (Ekstern)
Financing sources
Source: Internal funding (public)
Name of research programme: Offentlig finansiering
Project: PhD

Environmental effects on the availability of shallow and deep water hake to the demersal trawl survey in the Namibian waters
National Institute of Aquatic Resources
Period: 01/08/2013 → 05/12/2017
Number of participants: 7
Phd Student:
Kainge, Paulus Inekela (Intern)
Supervisor:
Andersen, Niels Gerner (Intern)
Hamukuaya, Hashali (Ekstern)
Main Supervisor:
Wieland, Kai (Intern)
Examiner:
Nielsen, J. Rasmus (Intern)
Grønkjær, Peter (Ekstern)
Ndjaula, Hilkka Opollili Ndahafa (Ekstern)
Financing sources
Source: Internal funding (public)
Name of research programme: Ansat eksternt
Project: PhD

Stone reefs: Review of the biological and ecological knowledge on stone reefs and their function in temperate areas (Stenrev) (39038)
Boulder reefs have been the subject of extensive mining where a number of reefs have been wholly or partially removed from the marine areas, especially the shallow coastal waters less than 10 m depth. A review on the importance of cold temperate reefs was requested. The review summary highlighted the following. Reefs are known for their high species richness and are biologically very productive. They are home to many fish using reefs for refuge. In particular cavernous reefs with high complexity and many small niches (between and around stones) are characterized by high species diversity, high productivity and have an important function as a feeding area for many species of fish and marine mammals. There are no quantitative estimates of the impact and effects of reefs for fish stocks in Danish waters. However, the relationship between refuge options and survival was shown for goby, as well as for juvenile cod. Larger cod are attracted to reefs during autumn before they start their spawning migration. Results of the first reef restoration project in Danish waters showed a clear development of both macro-algae and benthic fauna and in fish abundance for fish normally associated with reefs. The many fish had probably attracted porpoises, which are now observed more frequently and for longer periods in the area. The European lobster occurs in salty water (> 25 parts per thousand) at 2-40 m depth around vegetated reefs or rocky ground, and therefore, this habitat is an important habitat for lobster. Of the sessile invertebrates highlighted, mussels were found in several different types of habitats, including reefs and is one of the
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 Ecosystem based Marine Management

Period: 01/01/2013 → 15/02/2013
Number of participants: 5
Research area: Coastal Ecology

Project participant:
Stenberg, Claus (Intern)
Christensen, Helle Torp (Intern)
Wieland, Kai (Intern)

Project Coordinator:
Støttrup, Josianne Gatt (Intern)

Development of ecological sustainable fisheries practices in the Benguela Current Large Marine Ecosystem (EcoFish) (38847)

EcoFish promotes the ecosystem approach to fisheries (EAF) and is conducted in the Benguela Current Large Marine Ecosystem (BCLME), encompassing fish stocks from Angola, Namibia and South Africa.

The objectives are:
1. Adaptation of state-of-art assessments methods and Marine Protected Areas (MPA) planning tools
2. Validation or modification of current assessment practices based on spatially explicit analyses
3. Incorporation of stakeholders’ knowledge in data collection and analysis
4. Strengthening of regional capacity to apply the developed assessment tools on a regular basis.

The project represents a paradigm shift compared to DTU Aqua 20 years of FAO/Danida courses in the 80’s and 90’s, where fish stock assessment was taught in 85 countries by using comparative simple techniques. In contrast EcoFish applies advance stock assessment methodology based on open access, web-based state space (SAM) and geostatistical (GeoPop) tools. Thus the capacity building involved also includes a focus on DTU Aqua because of similar ongoing challenges in the Nordic seas, and two DTU Aqua PhD projects are integrated in EcoFish.

Focus in Ecofish is on hake, horse mackerel and sardinella, coordination to important donor projects in the area such as the Norwegian climate project NansClim and EAF-Nansen is ensured through the leadership of Benguela Current Commission. There are potential synergies to several EU projects (FP6 IMAGE, FP7 MEECE and FP7 FACTS) as well as national projects such as Sunfish (Description of the life cycle and recruitment of cod) and REX/RESOURCE (fishermen-science collaboration on cod in the North Sea). The potential database for BCLME is unique and EcoFish offers the possibility for developing a master example to be used as a generic tool in African Large Marine Ecosystems as well as the large lakes.

The project is coordinated by Benguela Current Commission, Namibia.

The project is funded by EuropeAid.

National Institute of Aquatic Resources
Section for Marine Living Resources
Benguela Current Commission
Institute National Investigacao Pescas
National Marine Information and Research Centre
Marine and Coastal Management
University of Cape Town
University of Stellenbosch
Period: 01/01/2011 → 31/12/2015
Number of participants: 4
Research areas: Marine Living Resources & Marine Population and Ecosystem Dynamics
Project participant:
Wieland, Kai (Intern)
Jansen, Teunis (Intern)
Köster, Fritz (Intern)
Project Manager, organisational:
Beyer, Jan (Intern)
Project Manager, academic:

Optimal sustainable exploitation of Nephrops norvegicus in Kattegat and Skagerrak (38909)

The scientific advice on management of fisheries is primarily aiming at avoiding overfishing of the fish and shellfish stocks and only to a very limited extend addresses how the utilisation of the resources can be optimised within a sustainable ecosystem framework. An example is the regulation of the demersal trawl fisheries in the Skagerrak and the Kattegat which to protect the cod stock is sub-optimal in relation to the utilisation of the Norway lobster (Nephrops) stocks. The project takes a new approach to the management and aims at optimising the utilisation of Nephrops stocks without compromising the protection of cod.

The Nephrops fishery is one of the economically most important fisheries in Denmark. In the Kattegat and Skagerrak, Nephrops catches accounted in 2010 for 53 % and 25 % of the total value of fish and shellfish, respectively, landed by Danish fishermen. Cod is taken as by-catch in the Nephrops fishery and it has been necessary to introduce measures to limit the by-catches of cod, which is currently below agreed reference points for stock size. These measures have had a negative impact on Nephrops catches.

The project addressed four objectives: (i) development of advice on the fishing mortality for the Nephrops stocks, which is consistent with maximum sustainable yield; (ii) mapping of the distribution of Nephrops in Skagerrak and Kattegat; (iii) development of a new trawl concept optimising the catchability on Nephrops while limiting the by-catches of cod and impact on the sea bed; and (iv) evaluating alternative fishing methods for Nephrops including fishing with pots.

The project was coordinated by DTU Aqua.

The project was funded by the Danish Ministry of Food, Agriculture and Fisheries through the Green Development and Demonstration Program (GUDP).

National Institute of Aquatic Resources
Section for Ecosystem based Marine Management
Danish Fishermen's Association
Period: 01/01/2011 → 31/12/2014
Number of participants: 10
Research areas: Fisheries Management & Fisheries Technology & Marine Living Resources
Project participant:
Nielsen, Anders (Intern)
Madsen, Niels (Intern)
Krag, Ludvig Ahm (Intern)
Eigaard, Ole Ritzau (Intern)
Stage, Bjarne (Intern)
Project Manager, academic:
Kirkegaard, Eskild (Intern)
Christensen, Asbjørn (Intern)
Wieland, Kai (Intern)
Frandsen, Rikke (Intern)
Project Coordinator:
Rindorf, Anna (Intern)
Project

Geographical distribution of fish resources and optimizing of fishery practice in the north-eastern North Sea (RESOURCE) (38878)
RESOURSE is a collaborative fishermen-scientist project in direct continuation of the REX projects in the north-eastern North Sea conducting small-scale scientific surveys, but only with one commercial trawler, encompassing also
geographical distributional aspects as in OSKAR.

The REX project showed that changes in the biomass densities of cod differ between bottom types (and may depend on stock size) and the proportion of the cod population found on smooth bottoms is not constant. However, due to scaling problems and too short a time series the achieved results have so far had no impact on the assessment procedure or any (measurable) effect on the TAC’s (but the RAC discussions may have affected decisions by the European Commission). Continuation of the field work with the trawler in 2010-12 in the RESOURCE project should produce a sufficient time series for supplementing the abundance indices for the older ages in the assessment, which at present are based only on the catch rates in the international scientific surveys (IBTS). This total REX-RESOURCE time series will be used in the state space assessment of North Sea cod (SAM) and various other approaches applied to document how commercial CPUE may be used in the tuning procedure. Particular attention will be given to evaluate the size of the spawning stock of cod.

Mechanistic knowledge on vital rates together with REX, RESOURCE, OSKAR and IBTS (and possibly also UK) survey data will be used as input to the geostatistical tool GeoPop to estimate the temporal and spatial dynamics of the size distribution of the cod stock. This part of the project will represent a direct continuation of OSKAR principles including considerations to how to design an operational fishery-forecast system for North Sea cod.

The project is coordinated by DTU Aqua.

National Institute of Aquatic Resources

Section for Marine Ecology and Oceanography

Danish Fishermen's Association
Period: 01/01/2010 → 30/09/2012
Number of participants: 13
Research area: Marine Populations and Ecosystem Dynamics
Project participant:
Andersen, Niels Gerner (Intern)
Pedersen, Eva Maria (Intern)
Andersen, Bo Sølgaard (Intern)
Hüsy, Karin (Intern)
Kristensen, Kasper (Intern)
Nielsen, Anders (Intern)
Stage, Bjaime (Intern)
Mosegaard, Henrik (Intern)
Christensen, Asbjørn (Intern)
Mariani, Patrizio (Intern)
Madsen, Niels (Intern)
Project Manager, academic:
Beyer, Jan (Intern)
Wieland, Kai (Intern)

Discard and identification of possible mitigation tools

National Institute of Aquatic Resources
Period: 01/08/2009 → 17/10/2012
Number of participants: 4
Phd Student:
Seekings, Jordan P. (Intern)
Main Supervisor:
Madsen, Niels (Intern)
Examiner:
Wieland, Kai (Intern)
Kennelly, Steven James (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: Institut stipendie (DTU) Samf.
Project: PhD
**Optimizing the exploitation of fishery resources in Skagerrak (OSKAR) (38720)**

The purpose of this project was formulated in 2008 to establish knowledge on the geographical distribution of target species in Skagerrak, which enables the fishermen to plan and execute sustainable fisheries on these species with a minimum of discard and unwanted by-catch of cod, and without drastically reductions or unjustified closure of areas.

OSKAR was a collaborative fishermen-scientist project building on the experience from the REX-project conducting small-scale scientific surveys with commercial ships.

To separate control issues of the mixed fishery of Skagerrak from the issues of using fishermen’s and scientists’ combined knowledge and experience to produce more selective fisheries, some of the key questions addressed were:
- Is it feasible to predict the size distribution of cod on a small spatial scale (single trawl haul) from surveys?
- How important are the seasonal changes for the spatial distribution of cod in Skagerrak?
- Can fishermen’s anecdotic knowledge on the distribution of cod be used?
- Which role does mechanistic process knowledge play in determining critical spatial dynamics of cod?
- Taking also gear technology into account then how can we best produce e.g. a useful cod avoidance tool?

A new advanced geostatistical tool GeoPop was introduced in order to use all available survey data in the maximum likelihood estimation of temporal and spatial dynamics of the size distribution of the stock. Real time closures, future disallowance of discards etc. put the perspective of OSKAR into focus.

The development of GeoPop in this fishermen-scientist project has proven valuable (see Jansen et al 2016, Fish. Res. 179: 156-167 and refs herein). The method was published in 2013 (Kristensen et al 2013, Can. J. Fish. Aquat. Sci. 99: 1-19). Particular attention in GeoPop is paid to correlation between size classes within each trawl haul due to clustering of individuals with similar size. Extracting this nugget effect produces clearer population signals and allows e.g. following cohorts in space and time and determining stock structures. Although GeoPop today is fully TMB operated it is the present computer capacity which sets the limits to exploring e.g. the impacts of spatial heterogeneity on fishery stock assessment.

The 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
Danish Fishermen's Association
Period: 01/01/2008 → 31/12/2011
Number of participants: 4
Research areas: Marine Living Resources & Marine Populations and Ecosystem Dynamics & Fisheries Technology & Fisheries Management
Project participant:
Andersen, Niels Gerner (Intern)
Pedersen, Eva Maria (Intern)
Project Manager, organisational:
Wieland, Kai (Intern)
Project Manager, academic:
Beyer, Jan (Intern)

**Spatially-explicit management methods for North Sea cod – a Danish fishermen-science collaboration (REX, REX II, REX III) (38430, 38431, 38541)**

The REX project started in 2006 as a protest from the Danish Fishermen Association because fishers had a less pessimistic perception of the status of the cod stock in the North Sea than ICES, and they considered the agreed TAC levels far too low. In particular the fishermen considered the scientific surveys as inappropriate due to extremely low catches of large cod because of wrong gear and fishing on smooth bottom only. This seemed to call for more spatially-explicit oriented approaches and REX was born with an aim of getting closer to a common understanding of the true number of adult cod in the North Sea by focusing on communication and collaboration in developing and implementing a scientifically sound and robust survey strategy with commercial ships in a north-eastern area selected by the Danish Fishermen Association using three vessels presenting different fishing methods (flyshooter, trawler and gillnetter).

The development of the fishermen-scientists collaboration with mutual respect has increased the understanding on both sides. In particular the emphasis on defining common goals, facing and solving conflicts immediately and extending thorough collaboration from survey planning, conducting of field work to interpretation of results during workshops have contributed to bridging the communication gab.
A better understanding of cod biology has also been a focal point in these projects through the new field studies incorporating fishermen’s knowledge. This includes distribution and migration, feeding behavior and importance of Hot-Spots (e.g. ship wrecks). Electronic tags were applied to learn about migration also in the Baltic. Together with the aim of continuing to obtain better assessments of the stocks such more mechanistically oriented studies are needed to answer two apparently simple questions “Where are the cod and why?”

The REX projects have strengthened the scientific collaboration with fishermen and produced several results and types of knowledge that will influence future work on developing spatial explicit management tools. REX also represents capacity building for DTU Aqua’s interdisciplinary field research and monitoring towards the spatial dynamics of cod.

The project is coordinated by DTU Aqua.

National Institute of Aquatic Resources
Section for Marine Living Resources
Danish Fishermen's Association
Period: 01/01/2006 → 31/01/2010
Number of participants: 17
Research area: Marine Living Resources
Project participant:
Pedersen, Eva Maria (Intern)
Olesen, Hans Jakob (Intern)
Andersen, Ken Haste (Intern)
Thygesen, Uffe Høgsbro (Intern)
Kristensen, Kasper (Intern)
Berg, Casper Willestofte (Intern)
Storr-Paulsen, Marie (Intern)
Vinther, Morten (Intern)
Christensen, Per (Intern)
Jensen, Rasmus Frydenlund (Intern)
Pedersen, Jan (Intern)
Grønby, Søren Larsen (Intern)
Thaarup, Flemming (Intern)
Project Manager, organisational:
Neuenfeldt, Stefan (Intern)
Project Manager, academic:
Beyer, Jan (Intern)
Andersen, Niels Gerner (Intern)
Wieland, Kai (Intern)

Cooperative agreement between Greenland Institute of Natural Resources and DTU Aqua (38085)
DTU Aqua supports the Greenland Institute of Natural Resources (GINR) within general fisheries biology, assessment, survey planning and evaluation and education and support of young scientists.

The scientists are also engaged in formulation of advice to the Greenland Government in several ICES Expert Groups such as North Western Working Group (NWWG) and Working Group for Widely Distributed Stocks (WGWIDE), North East Atlantic Fisheries Commission (NEAFC) and North West Atlantic Fisheries Organization (NAFO). ICES and NAFO are further the platforms where important assessment issues such as stock ID, assessment methods and survey techniques are discussed and applied in the advisory service.

Further scientists acts as appointed experts at the Self-Governments bilateral fisheries meetings and costal state meetings.

During the years DTU has recruited eight scientists from GINR while one scientist has been recruited from DTU Aqua to GINR.

The project is coordinated by DTU Aqua.

The project is funded by the Greenland Institute of Natural Resources.
Section for Oceans and Arctic

Greenland Institute of Natural Resources
Period: 01/01/2001 → …
Number of participants: 3
Research areas: Fisheries Management & Marine Living Resources
Project participant:
Boje, Jesper (Intern)
Wieland, Kai (Intern)
Project Manager, academic:
Jørgensen, Ole A. (Intern)
Project

Activities:

ICES - International Bottom Trawl Survey Working Group - IBTSWG (External organisation)
Period: 2015
Kai Wieland (Participant)
National Institute of Aquatic Resources
Section for Monitoring and Data
Degree of recognition: International

Related external organisation

ICES - International Bottom Trawl Survey Working Group - IBTSWG
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

ICES - Working Group on Improving use of Survey Data for Assessment and Advice - WGISDAA (External organisation)
Period: 2015
Kai Wieland (Participant)
National Institute of Aquatic Resources
Section for Monitoring and Data
Degree of recognition: International

Related external organisation

ICES - Working Group on Improving use of Survey Data for Assessment and Advice - WGISDAA
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

ICES - Working Group on Integrating Surveys for the Ecosystem Approach - WGISUR (External organisation)
Period: 2015
Kai Wieland (Participant)
National Institute of Aquatic Resources
Section for Monitoring and Data
Degree of recognition: International

Related external organisation

ICES - Working Group on Integrating Surveys for the Ecosystem Approach - WGISUR
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

ICES - International Bottom Trawl Survey Working Group - IBTSWG (External organisation)
Period: 2014
Kai Wieland (Participant)
National Institute of Aquatic Resources
Section for Monitoring and Data
Degree of recognition: International

Related external organisation
ICES - International Bottom Trawl Survey Working Group - IBTSWG
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

ICES - Working Group on Improving use of Survey Data for Assessment and Advice - WGISDAA (External organisation)
Period: 2014
Kai Wieland (Participant)
National Institute of Aquatic Resources
Section for Monitoring and Data
Degree of recognition: International

Related external organisation
ICES - Working Group on Improving use of Survey Data for Assessment and Advice - WGISDAA
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

ICES - Working Group on Integrating Surveys for the Ecosystem Approach - WGISUR (External organisation)
Period: 2014
Kai Wieland (Participant)
National Institute of Aquatic Resources
Section for Monitoring and Data
Degree of recognition: International

Related external organisation
ICES - Working Group on Integrating Surveys for the Ecosystem Approach - WGISUR
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

ICES - International Bottom Trawl Survey Working Group - IBTSWG (External organisation)
Period: 2013 → …
Kai Wieland (Participant)
National Institute of Aquatic Resources
Section for Monitoring and Data
Degree of recognition: International

Related external organisation
ICES - International Bottom Trawl Survey Working Group - IBTSWG
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

ICES - Working Group on Improving use of Survey Data for Assessment and Advice - WGISDAA (External organisation)
Period: 2013 → …
Kai Wieland (Participant)
National Institute of Aquatic Resources
Section for Monitoring and Data
Degree of recognition: International

Related external organisation
ICES - Working Group on Improving use of Survey Data for Assessment and Advice - WGISDAA
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar
ICES - Working Group on Nephrops Surveys - WGNEPS (External organisation)
Period: 2013 → …
Kai Wieland (Participant)
National Institute of Aquatic Resources
Section for Monitoring and Data
Degree of recognition: International

Related external organisation
ICES - Working Group on Nephrops Surveys - WGNEPS
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

ICES - Baltic International Fish Survey Working Group - WGBIFS (External organisation)
Period: 2012 → …
Kai Wieland (Participant)
National Institute of Aquatic Resources
Section for Monitoring
Degree of recognition: International

Related external organisation
ICES - Baltic International Fish Survey Working Group - WGBIFS
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

ICES - International Bottom Trawl Survey Working Group - IBTSWG (External organisation)
Period: 2012 → …
Kai Wieland (Participant)
National Institute of Aquatic Resources
Section for Monitoring
Degree of recognition: International

Related external organisation
ICES - International Bottom Trawl Survey Working Group - IBTSWG
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

ICES - Study Group on Nephrops Surveys - SGNEPS (External organisation)
Period: 2012 → …
Kai Wieland (Participant)
National Institute of Aquatic Resources
Section for Monitoring
Degree of recognition: International

Related external organisation
ICES - Study Group on Nephrops Surveys - SGNEPS
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

ICES - Working Group on Improving use of Survey Data for Assessment and Advice - WGISDAA (External organisation)
Period: 2012 → …
Kai Wieland (Participant)
National Institute of Aquatic Resources
Section for Monitoring
Degree of recognition: International

**Related external organisation**

**ICES - Working Group on Improving use of Survey Data for Assessment and Advice - WGISDAA**
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

**ICES - Working Group on Integrating Surveys for the Ecosystem Approach - WGISUR (External organisation)**
Period: 2012 → …
Kai Wieland (Participant)
National Institute of Aquatic Resources
Section for Monitoring
Degree of recognition: International

**Related external organisation**

**ICES - Working Group on Integrating Surveys for the Ecosystem Approach - WGISUR**
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar