Effectiveness of fully documented fisheries to estimate discards in a participatory research scheme

A key challenge for fisheries science and management is the access to reliable and verifiable catch data. In science, the challenge is to collect reliable, precise and traceable data to provide sound advice. In management, the challenge is that catch documentation is necessary to enforce regulations. Currently, catch inspection at sea, self-reporting through e-log and on-board observers are the primary methods to document catches at sea. However, at-sea control and on-board observers are costly and have limited coverage, while self-reporting is susceptible to fraud and provides limited coverage. New cost-effective methods are currently emerging involving Remote Electronic Monitoring (REM) and on-board cameras. Previous studies have tested REM with promising results. However, evaluation of the potential biases of REM is needed before full benefits can be obtained. We deployed REM with on-board cameras on 14 fishing vessels and were able to inspect 56% of 1523 hauls made in the 6 month trial period, using an estimated 582 man-hours of video audit. The results showed an overall good agreement between the fishers self-reported discards and the video inspectors discard estimates. However, there was large variation in precision between individual vessels and species. Additionally, trial setup and process errors were shown to have a large effect on the precision of the video inspectors discard estimates. Nevertheless, despite challenges, REM was evaluated to have the potential to streamline monitoring and scientific documentation in a medium-size fishing fleet.
Discarding of cod in the Danish Fully Documented Fisheries trials

Denmark was the first nation in Europe to promote the use of Fully Documented Fisheries (FDF) through Remote Electronic Monitoring (REM) and CCTV camera systems, with pilot schemes in place since 2008. In theory, such a scheme could supplement and even potentially replace expensive control and monitoring programmes; and when associated with a catch quota management (CQM) system, incentivize positive changes in fishing patterns in a results-based management approach. New data flows are, however, required to ensure the practical implementation of such a scheme. This paper reviews the quality of the FDF data collected during 2008–2014 and their potential in strengthening information on cod discards. The analyses demonstrate the improved reporting of discards in logbooks and overall discard reductions, but they also show that some uncertainties around the absolute estimates of discard quantities have remained. Regular validation of weight estimation methods and close collaboration between scientific monitoring and control are important to support the use of reported discards as a reliable source of information. We discuss the potential of electronic monitoring in the context of the EU landing obligation.
Kan frit redskabsvalg hjælpe når discardforbudet kommer?

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Section for Monitoring and Data, Public Sector Consultancy
Publication date: 2015
Event: Poster session presented at Internationale fiskerimesse, Aalborg, Denmark.
Main Research Area: Technical/natural sciences

MINIDISC - Minimering af discards i danske fiskerier

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Section for Monitoring and Data, Public Sector Consultancy
Number of pages: 89
Publication date: 2015

Situationsbeskrivelse af den danske fiskeri-, akvakultur- og fiskeindustrisektor

General information
State: Published
Organisations: National Institute of Aquatic Resources, Public Sector Consultancy, University of Copenhagen
Authors: Nielsen, R. (Ekstern), Thøgersen, T. T. (Intern), Andersen, J. L. (Ekstern), Dalskov, J. (Intern), Kusier, R. (Ekstern)
Number of pages: 129
Publication date: 2015

DTU Aqua søger fiskere til discardprojekt

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Section for Monitoring and Data, Public Sector Consultancy
DTU og fiskere samarbejder om optimering af fangstmuligheder

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Section for Monitoring and Data, Public Sector Consultancy
Authors: Ulrich, C. (Intern), Olesen, H. J. (Intern), Dalskov, J. (Intern)
Pages: 16
Publication date: 2014

Miljøskånsomhed og økologisk bæredygtighed i dansk fiskeri

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Public Sector Consultancy, Section for Monitoring and Data, Section for Freshwater Fisheries Ecology
Number of pages: 83
Publication date: 2014
Behind the shine: An appraisal of five years of Danish CCTV trials

Denmark has been the first nation in Europe to promote the use of Fully Documented Fisheries (FDF) through Remote Electronic Monitoring (REM) and CCTV camera systems, and some pilot schemes for monitoring cod catches have been in place since 2008. In theory, such a scheme could supplement and even potentially replace expensive control and monitoring programs; and, when associated to a Catch Quota management system, incentivize positive changes in fishing patterns in a results-based management approach. However, in practice, the technical and institutional challenges remain important hurdles to overcome for the system to be beneficial and reliable. In this paper we investigate the added value on catch information gained over the last five years, and discuss the future of REM as a monitoring program in the context of the future discards ban.

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Public Sector Consultancy, Section for Monitoring and Data
Authors: Ulrich, C. (Intern), Dalskov, J. (Intern), Egekvist, J. (Intern), Håkansson, K. B. (Intern), Olesen, H. J. (Intern), Storr-Paulsen, M. (Intern)
Number of pages: 2
Publication date: 2013
Event:
Main Research Area: Technical/natural sciences
Electronic versions:
Publishers version
Links:

Dansk fiskeris udnyttelse af discardforbuddet: En udredning

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Public Sector Consultancy, Section for Marine Living Resources, Institute Management, AquaMind
Authors: Larsen, E. (Intern), Dalskov, J. (Intern), Eg Nielsen, E. (Intern), Kirkegaard, E. (Intern), Nielsen, J. W. (Ekstern), Tørring, P. (Ekstern), Schou, M. (Ekstern)
Number of pages: 106
Publication date: 2013
Published in: DTU Aqua-rapport

Rapport om konsekvenser for fiskeriet ved udpegning af lukkede områder i Kattegat til beskyttelse af den bløde bund

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Section for Monitoring and Data, Public Sector Consultancy
Authors: Vinther, M. (Intern), Frandsen, R. (Intern), Sørensen, T. K. (Intern), Eero, M. (Intern), Storr-Paulsen, M. (Intern), Dalskov, J. (Intern)
Catch-Quota Management - an example of result based fisheries management

The European Commission tabled in July 2011 a proposal for a revision of the Common Fisheries Policy (CFP). A central element of the revision is the introduction of a quota management system where all fish caught count against the quotas. The principle of full accountability of the catch is a complete change from present management where only the fish landed count against the quotas. The principle of full accountability opens for the introduction of a result based fisheries management strategy, where a fishery is regulated by clearly stated results and the fisher enjoys a maximum of freedom to plan and conduct the fishing operation to meet these results. Experiences from Danish trials with Catch Quota Management (CQM) conducted in 2008 to 2012 is presented and the possibilities of simplifying the current EU fisheries management and control regulations under a CQM system are evaluated.

General information
State: Published
Organisations: National Institute of Aquatic Resources, Institute Management, Section for Public Sector Consultancy, Ministry of Food, Agriculture and Fisheries
Authors: Kirkegaard, E. (Intern), Schou, M. (Ekstern), Dalskov, J. (Intern)
Publication date: 2012
Event: Abstract from World Fisheries Congress, Edinburgh, United Kingdom.
Main Research Area: Technical/natural sciences
Links:
Publication: Research › Conference abstract for conference – Annual report year: 2012
Danish sampling of commercial fishery: Overview with special attention to discards 2010 data

Utilization of our common marine reassures has in later years had an increasing focus among the EU member states, with societal demands to reduce discarding. Discards have for many years been an unavoidable component of most commercial fisheries due to management regulation and profit optimizing. However, the first step into reducing the discard problem is to investigate where discard is occurring in larger amounts, to highlight the pattern in different fleet components and to document the monitoring of the sampling program. In 2010 the total discard observed in Danish waters were 21500 t corresponding to 26% of the total catch from these fleets. In Denmark sampling onboard commercial vessels has been ongoing since 1995. In this report the aim has been to describe the Danish commercial at sea sampling strategy and results from 2010

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Monitoring, Section for Public Sector Consultancy
Authors: Storr-Paulsen, M. (Intern), Håkansson, K. B. (Intern), Egekvist, J. (Intern), Degel, H. (Intern), Dalskov, J. (Intern)
Number of pages: 84
Publication date: 2012

Fully Documented Fishery onboard gillnet vessels >15 m

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Coastal Ecology, Section for Population Ecology and Genetics, Section for Public Sector Consultancy
Authors: Kindt-Larsen, L. (Intern), Larsen, F. (Intern), Stage, B. (Intern), Dalskov, J. (Intern)
Number of pages: 27
Observing incidental harbour porpoise Phocoena phocoena bycatch by remote electronic monitoring
Quantification of marine mammal bycatch is important in relation to conservation and management of protected species.
Hitherto, using onboard observers has been the most reliable and accurate method but observer programs can be prohibitively expensive. To investigate the potential of CCTV cameras to document bycatch of marine mammals, 6 Danish commercial gillnetters (10 to15 m in length) operating under the Danish catch quota management system were equipped with Remote Electronic Monitoring (REM) systems. The REM systems provided video footage, time and position of all net hauls and bycatches of marine mammals. Comparisons between REM results and fishers logbooks showed that the REM system gave more reliable results, since fishers in many cases did not observe the bycatch while working on the deck because the bycatch dropped out of the net before coming on board. Furthermore, very high coverage percentages at low cost, compared to onboard observers, could be obtained with REM. Alternative means of conducting the video analysis were tested; they were however, found not to be very efficient.

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Coastal Ecology, Section for Public Sector Consultancy, Section for Population Ecology and Genetics
Authors: Kindt-Larsen, L. (Intern), Dalskov, J. (Intern), Stage, B. (Intern), Larsen, F. (Intern)
Pages: 75-83
Publication date: 2012
Main Research Area: Technical/natural sciences

Publication information
Journal: Endangered Species Research
Volume: 19
ISSN (Print): 1863-5407
Ratings:
Web of Science (2017): Indexed Yes
Scopus rating (2016): CiteScore 1.95 SJR 0.78 SNIP 0.771
Web of Science (2016): Indexed yes
Scopus rating (2015): SJR 0.873 SNIP 0.829 CiteScore 1.83
Web of Science (2015): Indexed yes
Scopus rating (2014): SJR 1.157 SNIP 1.307 CiteScore 2.24
Scopus rating (2013): SJR 1.339 SNIP 1.169 CiteScore 2.49
ISI indexed (2013): ISI indexed no
Web of Science (2013): Indexed yes
Scopus rating (2012): SJR 1.143 SNIP 1.108 CiteScore 2.26
ISI indexed (2012): ISI indexed no
Web of Science (2012): Indexed yes
Scopus rating (2011): SJR 1.526 SNIP 1.282 CiteScore 2.46
ISI indexed (2011): ISI indexed no
Scopus rating (2010): SJR 1.134 SNIP 0.987
Scopus rating (2009): SJR 0.844 SNIP 0.926
Original language: English
Electronic versions: n019p075.pdf
DOIs: 10.3354/esr00455
Elektronisk monitering giver fiskerne incitament til et miljømæssigt bæredygtigt fiskeri

General information
State: Published
Organisations: Section for Monitoring, National Institute of Aquatic Resources, Section for Public Sector Consultancy
Authors: Olesen, H. J. (Intern), Dalskov, J. (Intern)
Publication date: 2011
Event: Poster session presented at Danfish International, .
Main Research Area: Technical/natural sciences
Electronic versions:
danfish_teknik-JD-kst_hjo.pdf
Source: orbit
Source-ID: 314660
Publication: Research › Poster – Annual report year: 2011

Final Report on the Danish Catch Quota Management Project 2010

General information
State: Published
Organisations: Section for Public Sector Consultancy, National Institute of Aquatic Resources, Section for Monitoring
Authors: Dalskov, J. (Intern), Håkansson, K. B. (Intern), Olesen, H. J. (Intern)
Number of pages: 27
Publication date: 2011

Publication information
Place of publication: Charlottenlund
Publisher: DTU Aqua. Institut for Akvatiske Ressourcer
ISBN (Print): 978-87-7481-133-6
Original language: English
Series: DTU Aqua Report
Number: 235-2011
ISSN: 1395-8216
Main Research Area: Technical/natural sciences
Electronic versions:
Links:
Source: orbit
Source-ID: 277501
Publication: Research › Report – Annual report year: 2011

Fuldt dokumenteret fiskeri: Elektronisk monitering af fiskeriet

General information
State: Published
Organisations: Section for Monitoring, National Institute of Aquatic Resources, Section for Public Sector Consultancy
Authors: Olesen, H. J. (Intern), Dalskov, J. (Intern)
Publication date: 2011
Event: Poster session presented at Danfish International, .
Main Research Area: Technical/natural sciences
Electronic versions:
danfish_teknik-JD-kst_hjo.pdf
Source: orbit
Source-ID: 314660
Publication: Research › Poster – Annual report year: 2011
Gonadal maturation of herring (Clupea harengus L.) assessed by histological and macroscopic characteristics

General information
State: Published
Organisations: Section for Population Ecology and Genetics, National Institute of Aquatic Resources, Section for Public Sector Consultancy
Authors: Bucholtz, R. H. (Intern), Tomkiewicz, J. (Intern), Dalskov, J. (Intern)
Publication date: 2011
Event: Poster session presented at PICES/ICES/NAFO Symposium on Reproductive and Recruitment Processes of Exploited Marine Fish Stocks, Lisbon, Portugal.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 279058
Publication: Research › Poster – Annual report year: 2011

Catch Quota Management (CQM) and the use of Fully Documented Fishery as an example in an incentive structure for improved selectivity and reduction of discard

General information
State: Published
Organisations: Section for Public Sector Consultancy, National Institute of Aquatic Resources
Authors: Dalskov, J. (Intern)
Publication date: 2010

Host publication information
Title of host publication: Proceedings of the Improved Fisheries and Science Partnerships as Policy Drivers
Main Research Area: Technical/natural sciences
Conference: Improved Fisheries and Science Partnerships as Policy Drivers, Oostende, Belgium, 01/01/2010
Source: orbit
Source-ID: 269336
Publication: Research › Conference abstract in proceedings – Annual report year: 2010

DTU Aqua søger deltagere til nyt projekt med kameraer

General information
State: Published
Organisations: Section for Public Sector Consultancy, National Institute of Aquatic Resources
Authors: Dalskov, J. (Intern)
Pages: 4
Publication date: 2010

Publication information
Pages (from-to): 4
Newspaper: Fiskeritidende
Volume: 17
No.: 7
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: 258464
Publication: Communication › Newspaper article – Annual report year: 2010
Pilot study of marine mammal bycatch by use of an Electronic Monitoring System

General information
State: Published
Organisations: Section for Management Systems, National Institute of Aquatic Resources, Section for Public Sector Consultancy
Authors: Kindt-Larsen, L. (Intern), Dalskov, J. (Intern)
Number of pages: 6
Publication date: 2010

Publication information
Place of publication: Copenhagen
Publisher: Ministry of Food, Agriculture and Fisheries
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions:
Bycatch_of_marine_mammals_FINAL[1].pdf
Source: orbit
Source-ID: 279209
Publication: Research › Report – Annual report year: 2011

Report: Workshop on fully documented fishery

General information
State: Published
Organisations: Section for Public Sector Consultancy, National Institute of Aquatic Resources
Authors: Dalskov, J. (ed.) (Intern), EFSA Publication
Number of pages: 38
Publication date: 2010

Publication information
Place of publication: Charlottenlund
Publisher: DTU Aqua. Institut for Akvatiske Ressourcer
Original language: English
Main Research Area: Technical/natural sciences

Bibliographical note
Denmark and The EU invest in sustainable fishing. The Project is supported by the Ministry of Food, Agriculture and Fisheries and The EU
Source: orbit
Source-ID: 277435
Publication: Research › Report – Annual report year: 2011

The Danish Trial

General information
State: Published
Organisations: Section for Public Sector Consultancy, National Institute of Aquatic Resources
Authors: Dalskov, J. (Intern)
Publication date: 2010
Event: Abstract from Workshop on Fully Documented Fishery, Copenhagen, Denmark
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 269335
Publication: Research › Conference abstract for conference – Annual report year: 2010

Development of a manual to determine gonadal maturity of herring (Clupea harengus L.)

General information
State: Published
Organisations: Section for Population- and Ecosystem Dynamics, National Institute of Aquatic Resources, Section for Public Sector Consultancy
Authors: Bucholtz, R. H. (Intern), Tomkiewicz, J. (Intern), Dalskov, J. (Intern)
Publication date: 2009
**Final report of Fully Documented Fishery**

**General information**
- State: Published
- Organisations: Section for Public Sector Consultancy, National Institute of Aquatic Resources, Section for Management Systems
- Authors: Dalskov, J. (Intern), Kindt-Larsen, L. (Intern)
- Number of pages: 49
- Publication date: 2009

**Publication information**
- Place of publication: Charlottenlund
- Publisher: National Institute of Aquatic Resources, Technical University of Denmark
- ISBN (Print): 978-87-7481-095-7
- Original language: English
- Series: DTU Aqua-rapport
- Number: 204-09
- ISSN: 1395-8216
- Main Research Area: Technical/natural sciences
- Electronic versions: 23102009$204_09_samlet.pdf
- Source: orbit
- Source-ID: 251872
- Publication: Research › Report – Annual report year: 2009

**Fully documented fishery - using electronic monitoring to improve industry self reported data**

**General information**
- State: Published
- Organisations: Section for Public Sector Consultancy, National Institute of Aquatic Resources, Section for Management Systems, Institute Management
- Authors: Dalskov, J. (Intern), Kindt-Larsen, L. (Intern), Kirkegaard, E. (Intern)
- Pages: 1-10
- Publication date: 2009

**Host publication information**
- Title of host publication: ICES C.M. ASC
- Volume: N:18
- Place of publication: Copenhagen
- Publisher: International Council for the Exploration of the Sea
- Main Research Area: Technical/natural sciences
- Source: orbit
- Source-ID: 252483
- Publication: Research › Article in proceedings – Annual report year: 2009

**Use of electronic monitoring to improve and quality assure industry reported fisheries data**

**General information**
- State: Published
- Organisations: Section for Management Systems, National Institute of Aquatic Resources, Section for Public Sector Consultancy
- Authors: Kindt-Larsen, L. (Intern), Dalskov, J. (Intern)
- Publication date: 2009
Bifangst af hvaler i det danske pelagiske trawlfiskeri 2006-2008

General information
State: Published
Organisations: Section for Management Systems, National Institute of Aquatic Resources, Section for Public Sector Consultancy
Authors: Kindt-Larsen, L. (Intern), Larsen, F. (Intern), Dalskov, J. (Intern)
Number of pages: 12
Publication date: 2008

Publication information
Publisher: Ministeriet for Fødevarer, Landbrug og Fiskeri
Original language: Danish
Main Research Area: Technical/natural sciences
Electronic versions: 3704-3-06-0146_bifangstafhvaler.pdf

Bibliographical note
Projektet er finansieret af Ministeriet for Fødevarer, Landbrug og Fiskeri (EU-fiskeriudviklingsprogrammet FIUF)
Source: orbit
Source-ID: 252486
Publication: Research › Report – Annual report year: 2008

FishFrame 5.0: A web based datawarehouse application for management, access and integration of fisheries and stock assessment data

General information
State: Published
Organisations: Section for Population- and Ecosystem Dynamics, National Institute of Aquatic Resources, Section for Monitoring, Institute Management
Authors: Jansen, T. (Intern), Degel, H. (Intern), Håkansson, K. B. (Intern), Egekvist, J. (Intern), Dalskov, J. (Intern), Köster, F. (Intern)
Pages: 1-137
Publication date: 2008
Main Research Area: Technical/natural sciences

Publication information
Journal: ICES Council Meeting
Volume: R:26
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: 229073
Publication: Research › Conference article – Annual report year: 2008

Forundersøgelsesrapport om "Fuldt dokumenteret fiskeri"

General information
State: Published
Organisations: National Institute of Aquatic Resources, Public Sector Consultancy
Fartøjer søges til deltagelse i dataindsamling

General information
State: Published
Organisations: National Institute of Aquatic Resources
Authors: Dalskov, J. (Intern)
Pages: 6
Publication date: 2006

Publication information
Pages (from-to): 6
Newspaper: Fiskeri Tidende
Volume: 13
No.: 38
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: 250150
Publication: Communication › Newspaper article – Annual report year: 2006

Report of discard in the Danish fishery

General information
State: Published
Organisations: Section for Public Sector Consultancy, National Institute of Aquatic Resources, Section for Management Systems
Authors: Dalskov, J. (Intern), Fischer, K. (Ekstern), Løkkegaard, J. (Ekstern), Madsen, A. (Ekstern), Madsen, N. (Ekstern), Nielsen, J. R. (Intern), Pallisgaard, B. (Ekstern)
Publication date: 2006

Publication information
Place of publication: Copenhagen, Denmark
Publisher: Danish Ministry of Agriculture, Fisheries and Food
Original language: English
Series: Ministerial working report
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 260297
Publication: Research › Report – Annual report year: 2006

General information
State: Published
Organisations: Section for Population- and Ecosystem Dynamics, National Institute of Aquatic Resources, Section for Monitoring
Authors: Wright, P. (Ekstern), Jensen, H. (Intern), Mosegaard, H. (Intern), Dalskov, J. (Intern)
Number of pages: 16
Publication date: 2002

Publication information
Publisher: [s.n.]
Original language: English
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 227814
Publication: Research › Report – Annual report year: 2002

Indsamling af detaljerede oplysninger om tobisfiskeriet i Nordsøen

General information
State: Published
Organisations: Section for Population- and Ecosystem Dynamics, National Institute of Aquatic Resources, Section for Monitoring
Authors: Jensen, H. (Intern), Mosegaard, H. (Intern), Rindorf, A. (Intern), Dalskov, J. (Intern), Brogaard, P. (Intern)
Number of pages: 44
Publication date: 2002

Publication information
Place of publication: Charlottenlund
Publisher: Danmarks Fiskeriundersøgelser
ISBN (Print): 87-90968-15-8
Original language: Danish
Series: DFU-rapport
Number: 97-02
Main Research Area: Technical/natural sciences
Electronic versions:
97-02_indsamling_af_oplysninger_om_tobisfiskeri_i_nordsoen.pdf
Links:
Source: orbit
Source-ID: 225976
Publication: Research › Report – Annual report year: 2002

Report of the study group on Ilia herring (SG3AH)

General information
State: Published
Organisations: Section for Monitoring, National Institute of Aquatic Resources, Section for Population- and Ecosystem Dynamics
Authors: Gröhsler, T. (Ekstern), Dalskov, J. (Intern), Groeger, J. (Ekstern), Mosegaard, H. (Intern), Modin, J. (Ekstern)
Pages: 1-38
Publication date: 1999
Main Research Area: Technical/natural sciences

Publication information
Journal: ICES CM 1999/
Volume: ACFM:10
Original language: English
Source: orbit
Source-ID: 225578
Publication: Research › Conference article – Annual report year: 1999
Projects:

Minimising discards in Danish fisheries (MINIDISC) (39020)
The landings obligation, currently being implemented in the new CFP, puts major constraints on fishers, by making the landing of unwanted catch mandatory. Less restrictive technical rules (TR) in a results-based management frame under Catch Quota Management (CQM) have been suggested as a mechanism to release some of these constraints. To investigate the effects of the existing TR, some fishers were relaxed from TR during the trial and could freely choose and develop alternative gears, aiming to optimize annual catch value, while reducing discards. The study included 14 demersal fishing vessels, operating in the North Sea, Skagerrak and the Baltic Sea.

Fishers used test and control gears interchangeably or in pairs during up to 6 months and were required to sort and weigh all discard of seven common target species on a haul by haul basis. All vessels were equipped for Fully Documented Fisheries (FDF), including cameras. Collected data were analyzed to investigate differences in landings, discards, discard ratio, CPUE, VPUE and DPUE, between conventional (control) and new gears (test). The results showed a varying degree of success, depending both on area and on choices made by the individual fisher. The best results were observed in the Baltic Sea, where relaxing technical rules led to major improvements in fishing patterns. But gear changes did not contribute much in fisheries where initial discards rates were already low. Interviews realized with the skippers around the end of the trial were performed and analyzed to investigate (i) their experiences with “free” choice of gear, (ii) the processes that they followed for developing their gears and (iii) their tools for evaluating the efficiency and selectivity of their trial.

In addition to the trial, a number of other activities were performed under the MINIDISC project, including (i) the publishing of a catalogue (in Danish) of the selectivity devices experimented in Danish fisheries, (ii) a scientific selectivity trial on Danish seines fisheries in Skagerrak and (iii) a review of international experiences in the uptake of selective devices.

The project has been disseminated through several meetings and conferences. A number of scientific publications are in review or close to submission.
This project was coordinated by DTU Aqua.

The project was funded by the Danish Ministry of Food, Agriculture and the Fisheries and the European Fisheries Fund (EFF).

National Institute of Aquatic Resources
Section for Ecosystem based Marine Management

Danish Fishermen’s Producers’ Organization
Period: 01/01/2014 → 15/07/2015
Number of participants: 8
Research areas: Fisheries Management & Fisheries Technology & Marine Living Resources
Project participant:
Mortensen, Lars O. (Intern)
Olesen, Hans Jakob (Intern)
Krag, Ludvig Ahm (Intern)
Feekings, Jordan P. (Intern)
Dalskov, Jørgen (Intern)
Storr-Paulsen, Marie (Intern)
Qvist Eliasen, Søren (Intern)
Project Coordinator:
Ulrich, Clara (Intern)

Catch Quota Management and choke species 2014 (39079)
The aim of the project is further development and test of Catch Quota Management (CQM) systems in Danish demersal fisheries by the use of electronic monitoring systems. Furthermore, to test whether electronic monitoring – video and sensor recordings – can provide the necessary documentation to support a CQM system. In addition the project will illustrate whether full documentation of catches can support implementation and certification and traceability solutions which requires linkage to project dealing with these issues.

This project is coordinated by DTU Aqua.

National Institute of Aquatic Resources
Section for Monitoring and Data

Ministry of Food, Agriculture and Fisheries
Period: 22/07/2013 → 15/07/2015
Number of participants: 4
Research area: Fisheries Management
Project participant:
Dalskov, Jørgen (Intern)
Håkansson, Kirsten Birch (Intern)
Degel, Henrik (Intern)
Project Manager, academic:
Olesen, Hans Jakob (Intern)

Catch quota project 2011 (38823)
The aim of the project is further development and test of Catch Quota Management (CQM) systems in Danish fisheries by the use of electronic monitoring systems. Furthermore, to test whether electronic monitoring – video and sensor recordings – can provide the necessary documentation to support a CQM system. In addition the project will illustrate whether full documentation of catches can support implementation and certification and traceability solutions which requires linkage to project dealing with these issues.

As the Danish Government has worked intensively for the implementation of CQM in the new Common Fisheries Policy (to be implemented from 2013 and onwards) the project should also facilitate international cooperation on European level to set up common standards for CQM data collection, data processing, data exchange and base development.

The project is coordinated by DTU Aqua.

National Institute of Aquatic Resources
Public Sector Consultancy
Ministry of Food, Agriculture and Fisheries
Archipelago Marine Research Ltd
Gemba Seafood Consulting
Period: 01/01/2011 → 30/09/2012
Number of participants: 5
Research area: Fisheries Management
Project participant:
Olesen, Hans Jakob (Intern)
Jensen, Reinhardt (Intern)
Kirkegaard, Eskild (Intern)
Håkansson, Kirsten Birch (Intern)

Project Manager, academic:
Dalskov, Jørgen (Intern)

**Catch quota project 2010 (38787)**
The aim of the project is further development and test of Catch Quota Management (CQM) systems in Danish fisheries by the use of electronic monitoring systems. Furthermore, to test whether electronic monitoring – video and sensor recordings – can provide the necessary documentation to support a CQM system.

In addition the project will illustrate whether full documentation of catches can support implementation and certification and traceability solutions which requires linkage to project dealing with these issues.

From January 2010 the European Council has adopted possibilities for EU Members States to conduct trials on catch quota management on cod in the North Sea, the Skagerrak and the Kattegat.

As the Danish Government has worked intensively for the implementation of CQM in the new Common Fisheries Policy (to be implemented from 2013 and onwards) the project should also facilitate international cooperation on European level to set up common standards for CQM data collection, data processing, data exchange and data base development.

The project is coordinated by DTU Aqua.

National Institute of Aquatic Resources
Public Sector Consultancy
Danish Directorate for Fisheries
Archipelago Marine Research Ltd
Period: 01/01/2010 → 31/12/2011
Number of participants: 5
Research area: Fisheries Management
Project participant:
Olesen, Hans Jakob (Intern)
Jensen, Reinhardt (Intern)
Kirkegaard, Eskild (Intern)
Håkansson, Kirsten Birch (Intern)

Project Manager, academic:
Dalskov, Jørgen (Intern)

**Electronic monitoring on smaller fishing vessels fishing with gillnets (38773)**
The aim of the project is to examine whether electronic monitoring by the use of CCTV and sensor recordings can ensure full documentation of the fisheries carried out by smaller gillnetters, and whether the use of “pingers” (acoustic deterrent devises) can be more operational.

Furthermore, the project has the aim to proof that:
- A total recording of all catches of quota managed species and a reduction of “high-grading”
- Involvement of the fishing industry in collection of detailed data and thereby ensure industry involvement for joint responsibility for the collection of data to be used as the basis for the scientific advice
- An adequately documentation that can ensure that the fishery could be carried out sustainably in sensitive marine areas
such as NATURA 2000 sites
- An improved economy for vessels that participate in fully documented fishery
- A documentation that can provide the basis for the marked to be able to evaluate sustainability of the fisheries.

The project is coordinated by DTU Aqua.

National Institute of Aquatic Resources
Section for Ecosystem based Marine Management

Archipelago Marine Research Ltd
Period: 01/01/2010 → 31/12/2011
Number of participants: 5
Research areas: Fisheries Management & Observation Technology
Project participant:
Kindt-Larsen, Lotte (Intern)
Larsen, Finn (Intern)
Olesen, Hans Jakob (Intern)
Jensen, Reinhardt (Intern)

Project Manager, academic:
Dalskov, Jørgen (Intern)

Management plans and Danish fishery (2245)
The objectives of the project were with reference to the EU Commissions proposals on multi-annual management plans, to deliver high quality advice on management of the fishing effort in Danish fisheries in the Baltic Sea, the North Sea, the Skagerrak and the Kattegat.

To be able to deliver the advice the project addressed the need for detailed and accurate data on catches, effort and economical performance in the main demersal Danish fisheries in the concerned areas and the need for accurate stock assessment of the economically most important fish and shellfish stocks. The project also developed a systematic method to give a qualified prediction of the selectivity of a trawl based on information on the trawl design.

The project included seven work packages: (i) Description of development in catches, fishing effort and economical performance of the main demersal Danish fisheries including creation of a single database; (ii) Develop a reference fleet system to collect detailed information on catches and fishing effort; (iii) Development of a software to be used to simulate trawl selectivity; (iv) Establish a fisheries independent monitoring survey on Norway lobster in the Skagerrak and the Kattegat; (v) Provide advice on a fishing effort management system for the demersal fisheries in Kattegat including proposal for enhancement of the cod selectivity in trawl fisheries; (vi) Provide advice on fishing effort in form of days at sea by métier; and (vii) Evaluate the impact of the effort management system in the Baltic Sea on the Danish fishery and the stocks.

The project was coordinated by DTU Aqua.

National Institute of Aquatic Resources
Section for Ecosystem based Marine Management
University of Copenhagen
Period: 01/01/2006 → 31/12/2008
Number of participants: 13
Research areas: Fisheries Management & Fisheries Technology
Project participant:
Munch-Petersen, Sten (Intern)
Madsen, Niels (Intern)
Bastardie, Francois (Intern)
Pedersen, Eva Maria (Intern)
Christensen, Steen (Ekstern)

Project Manager, academic:
Kirkegaard, Eskild (Intern)
Andersen, Bo Salgaard (Intern)
Jørgensen, Ole A. (Intern)
Herrmann, Bent (Intern)
Storr-Paulsen, Marie (Intern)
Improved advice for the mixed herring stocks in the Skagerrak and Kattegat (ICES area IIIa) (2011)

The ICES working group on Herring Assessment for the Area South of 62ºN (HAWG) has not been able to provide an advice applicable for the stock components in area IIIa due to limited resources to explore on the matter intersessionally. In previous years, the TAC for the fleets fishing herring in area IIIa have been decided by managers according to recommendations for the North Sea Autumn Spawners (NSAS), raised according to the historical fraction of NSAS in the catches by these fleets. The recommendation for the NSAS was guided by the need to rebuild that stock. By now, the NSAS stock has recovered and the main concern is for the Western Baltic Spring Spawners (WBSS) stock. The HAWG used a simple procedure in 2004 to find the highest total catch by fleet in area IIIa that would be compatible with a precautionary exploitation of WBSS. This procedure used two kinds of information about the fishery, the fraction of WBSS that is caught in area IIIa, and the fraction of the catches by the area IIIa fleets that consist of WBSS based on recent historic data. This very crude procedure can be refined with more detailed information on how the stocks on one hand and the fisheries on the other hand are distributed geographically and seasonally. Furthermore, the differences in both distribution and fishing pattern both in terms of season and stock components suggest a scope for a fishery management that is more fishery and stock oriented, allowing for more directed stock-wise exploitation. The primary goal of the project is to improve the assessment and advice of the mixed stock in area IIIa by elaborating fleet- and stock-based disaggregation on the existing projection method. The advice would so take into account both stocks and all fleet components in area IIIa. Temporal and spatial distribution of the different stock components and fleet exploitation patterns will form the basis for the elaboration.

The project was coordinated by DTU Aqua.

National Institute of Aquatic Resources
Section for Marine Living Resources

Institute of Marine Research
Period: 01/01/2005 → 31/12/2007
Number of participants: 6
Research area: Marine Living Resources
Project participant:
Ulrich, Clara (Intern)
Mosegaard, Henrik (Intern)
Dalskov, Jørgen (Intern)
Andersen, Bo Sølggaard (Intern)
Tarp, Bjarne Gloerfelt (Ekstern)
Project Manager, academic:
Worsøe Clausen, Lotte (Intern)

Activities:

ICES - Annual Meeting of Advisory Working Group Chairs - WGCHAIRS (External organisation)
Period: 2015
Jørgen Dalskov (Participant)
National Institute of Aquatic Resources
Public Sector Consultancy

Related external organisation

ICES - Annual Meeting of Advisory Working Group Chairs - WGCHAIRS
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

ICES - Planning Group on Commercial Catches, Discards and Biological Sampling - PGCCDBS (External organisation)
Period: 2014
Jørgen Dalskov (Participant)
National Institute of Aquatic Resources
Public Sector Consultancy
Degree of recognition: International

Related external organisation

ICES - Planning Group on Commercial Catches, Discards and Biological Sampling - PGCCDBS
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

ICES - The Steering Committee for the Regional Database FishFrame - SC-RDB (External organisation)
Period: 2014
Jørgen Dalskov (Participant)
National Institute of Aquatic Resources
Public Sector Consultancy
Degree of recognition: International

Related external organisation

ICES - The Steering Committee for the Regional Database FishFrame - SC-RDB
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

ICES - Planning Group on Commercial Catches, Discards and Biological Sampling - PGCCDBS
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

ICES - Annual Meeting of Advisory Working Group Chairs - WGCHAIRS (External organisation)
Period: 2012 → …
Jørgen Dalskov (Participant)
National Institute of Aquatic Resources
Section for Public Sector Consultancy
Degree of recognition: International

Related external organisation

ICES - Annual Meeting of Advisory Working Group Chairs - WGCHAIRS
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

ICES - Planning Group on Commercial Catches, Discards and Biological Sampling - PGCCDBS
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

ICES - Planning Group on Commercial Catches, Discards and Biological Sampling - PGCCDBS
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar