Fiskeri efter søstjerner i Limfjorden. Fagligt grundlag for en forvaltningsplan

General information
State: Published
Organisations: National Institute of Aquatic Resources, Danish Shellfish Centre, Section for Ecosystem based Marine Management, Section for Monitoring and Data
Authors: Petersen, J. K. (Intern), Gislason, H. (Intern), Fitridge, I. (Intern), Saurel, C. (Intern), Degel, H. (Intern), Nielsen, C. F. (Intern)
Number of pages: 35
Publication date: 2016

Publication information
Publisher: Institut for Akvatiske Ressourcer, Danmarks Tekniske Universitet
ISBN (Print): 978-87-7481-219-7
Original language: Danish
Series: DTU Aqua-rapport
Number: 308-2016
Main Research Area: Technical/natural sciences
Electronic versions:
Publishers version
Publication: Research › Report – Annual report year: 2016

Migration, distribution and population (stock) structure of shallow-water hake (Merluccius capensis) in the Benguela Current Large Marine Ecosystem inferred using a geostatistical population model

Shallow-water hake (Merluccius capensis) is of considerable ecological and economic importance in the Benguela Current Large Marine Ecosystem in South Africa and Namibia. Optimal management of the resource is currently constrained by the limited understanding of migration patterns and population (stock) structure. We combined data from multiple demersal trawl surveys from the entire distribution area to estimate growth rate, mortality and spatial and temporal patterns of M. capensis. Analyses were conducted using the geostatistical model GeoPop. The complexity of the model and the amount of data required a new level of soft- and hardware performance. This was achieved by utilizing Template Model Builder and high-end computational hardware (Amazon Elastic Compute Cloud, EC2). The data and the model enabled us to follow the distribution and infer movements of M. capensis from the recruitment/nursery areas, through the juvenile phase and the adults' migration to the spawning areas outside/upstream of the nursery areas. This revealed some previously unknown migration patterns and indicated natal homing and the existence of three primary population components in the region, namely the Walvis (central and northern Namibia), the Orange (Southern Namibia-Northern SA) and the Agulhas (Southern part of SA) components. Our results also indicated substantial regional differences in mortality. We recommend that fisheries assessment, advice and management take consideration of these aspects of the distribution and population (stock) structure of M. capensis in the Benguela Current Large Marine Ecosystem.

General information
State: Published
Organisations: Section for Marine Living Resources, National Institute of Aquatic Resources, Section for Monitoring and Data, Section for Marine Ecology and Oceanography, Benguela Current Commission, Ministry of Fisheries and Marine Resources, Institute of Marine Research, Department for Agriculture, Forestry and Fisheries, Rhodes University
Frivillig fangstregistrering til overvågning af kystnære fiskeforekomster

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Section for Monitoring and Data
Authors: Støttrup, J. (Intern), Kristensen, L. D. (Intern), Degel, H. (Intern), Andersen, S. K. (Intern)
Publication date: 2015
Event: Abstract from 18. Danske Havforskermøde, Copenhagen, Denmark.
Main Research Area: Technical/natural sciences
Publication: Research › Conference abstract for conference – Annual report year: 2015

MSC certification of plaice fisheries in area IIIa: Basic investigations and development of a management plan

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Living Resources, Section for Ecosystem based Marine Management, Section for Monitoring and Data, Section for Marine Ecology and Oceanography
Authors: Hansen, J. H. (Intern), Ulrich, C. (Intern), Boje, J. (Intern), Christensen, A. (Intern), Degel, H. (Intern), Hüssy, K. (Intern), Worsøe Clausen, L. (Intern)
Number of pages: 52
Publication date: 2015

Publication information
Place of publication: Charlottenlund
Publisher: DTU aqua. National Institute of Aquatic Resources
ISBN (Electronic): 978-87-7481-216-6
Original language: English
Series: DTU Aqua Report
Number: 302-2015
ISSN: 1395-8216
Main Research Area: Technical/natural sciences
Electronic versions:
Publishers_version
Publication: Research › Report – Annual report year: 2015

Registrering af fangster i de danske kystområder med standardredskaber: Nøglefiskerrapport 2011-2013

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Coastal Ecology, Section for Ecosystem based Marine Management, Section for Monitoring and Data
Authors: Kristensen, L. (Intern), Støttrup, J. (Intern), Andersen, S. K. (Intern), Degel, H. (Intern)
Number of pages: 100
Publication date: 2014

Publication information
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

Publication information
Place of publication: Charlottenlund
Publisher: National Institute of Aquatic Resources, Technical University of Denmark
ISBN (Electronic): 978-87-7481-150-3
Original language: English
Applicant: Ministeriet for Fødevarer, Landbrug og Fiskeri

Series: DTU Aqua Report
Number: 250-2012
ISSN: 1395-8216
Main Research Area: Technical/natural sciences
Electronic versions:
250_2012_danish_sampling_of_commercial_fishery.pdf
Links:
Publication: Commissioned › Report – Annual report year: 2012

Stock assessment in the BCC region

General information
State: Published
Organisations: National Institute of Aquatic Resources, Institute Management, Section for Monitoring and Data, Section for Marine Ecology and Oceanography
Authors: Köster, F. (Intern), Degel, H. (Intern), Rademeyer, R. (Ekstern), Kainge, P. I. (Intern), Kirchner, C. (Ekstern), Beyer, J. (Intern)
Publication date: 2012
Main Research Area: Technical/natural sciences
Publication: Research › Conference abstract for conference – Annual report year: 2013
VMStools: Open-source software for the processing, analysis and visualization of fisheries logbook and VMS data

VMStools is a package of open-source software, built using the freeware environment R, specifically developed for the processing, analysis and visualisation of landings (logbooks) and vessel location data (VMS) from commercial fisheries. Analyses start with standardized data formats for logbook (EFLALO) and VMS (TACSAT), enabling users to conduct a variety of analyses using generic algorithms. Embedded functionality handles erroneous data point detection and removal, métier identification through the use of clustering techniques, linking logbook and VMS data together in order to distinguish fishing from other activities, provide high-resolution maps of both fishing effort and landings, interpolate vessel tracks, calculate indicators of fishing impact as listed under the Data Collection Framework at different spatio-temporal scales. Finally, data can be transformed into other existing formats, for example to populate regional databases like FishFrame. This paper describes workflow examples of these features while online material allows a head start to perform these analyses. This software incorporates state-of-the-art VMS and logbook analysing methods standardizing the process towards obtaining pan-European, or even worldwide indicators of fishing distribution and impact as required for spatial planning.

General information
State: Published
Organisations: Section for Management Systems, National Institute of Aquatic Resources, Section for Public Sector Consultancy
Authors: Hintzen, N. T. (Ekstern), Bastardie, F. (Intern), Beare, D. (Ekstern), Piet, G. J. (Ekstern), Ulrich, C. (Intern), Deporte, N. (Ekstern), Eggekvist, J. (Intern), Ddegel, H. (Intern)
Pages: 31-43
Publication date: 2012
Main Research Area: Technical/natural sciences

Publication information
Journal: Fisheries Research
Volume: 115-116
ISSN (Print): 0165-7836
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 2.21 SJR 1.12 SNIP 1.136
  Web of Science (2016): Indexed yes
  BFI (2015): BFI-level 1
  Scopus rating (2015): SJR 1.067 SNIP 1.133 CiteScore 2.01
  Web of Science (2015): Indexed yes
  BFI (2014): BFI-level 1
  Scopus rating (2014): SJR 1.105 SNIP 1.312 CiteScore 2.17
  Web of Science (2014): Indexed yes
  BFI (2013): BFI-level 1
  Scopus rating (2013): SJR 1.037 SNIP 1.173 CiteScore 1.85
  ISI indexed (2013): ISI indexed yes
  Web of Science (2013): Indexed yes
  BFI (2012): BFI-level 1
  Scopus rating (2012): SJR 0.93 SNIP 1.177 CiteScore 1.78
  ISI indexed (2012): ISI indexed yes
  Web of Science (2012): Indexed yes
  BFI (2011): BFI-level 1
  Scopus rating (2011): SJR 1.154 SNIP 1.135 CiteScore 1.7
  ISI indexed (2011): ISI indexed yes
  Web of Science (2011): Indexed yes
  BFI (2010): BFI-level 1
  Scopus rating (2010): SJR 1.041 SNIP 1.1
  Web of Science (2010): Indexed yes
Fugle som bifangst i garnfiskeriet. Estimat af utilsigtet bifangst af havfugle i garnfiskeriet i området omkring Ærø

General information
State: Published
Organisations: Section for Public Sector Consultancy, National Institute of Aquatic Resources
Authors: Degel, H. (Intern), Petersen, I. K. (Ekstern), Holm, T. E. (Ekstern), Kahlert, J. (Ekstern)
Number of pages: 56
Publication date: 2010

Publication information
Place of publication: Charlottenlund
Publisher: DTU Aqua. Institut for Akvatiske Ressourcer
ISBN (Print): 978-87-7481-124-4
Original language: Danish
Series: DTU Aqua-rapport
Number: 227-2010
ISSN: 1395-8216
Main Research Area: Technical/natural sciences
Electronic versions:
227-2010_Fugle-som-bifangst-i-garnfiskeriet.pdf
Links:
http://www.aqua.dtu.dk/Publikationer/Forskningsrapporter/Forskningsrapporter_siden_2008
Source: orbit
Source-ID: 268651
Publication: Research › Report – Annual report year: 2010

Definition of standard data exchange format for samplings, landings and effort data from commercial fisheries

General information
State: Published
Organisations: Section for Population- and Ecosystem Dynamics, National Institute of Aquatic Resources, Section for Public Sector Consultancy
Authors: Jansen, T. (Intern), Degel, H. (Intern), Vigneau, J. (Ekstern), Jardim, E. (Ekstern)
Number of pages: 44
Publication date: 2009

Publication information
Publisher: International Council for the Exploration of the Sea
Original language: English
Series: ICES Cooperative Research Report
Number: 296
Main Research Area: Technical/natural sciences
Links:
http://www.ices.dk/pubs/crr/crr296/CRR%20296.pdf
Source: orbit
Source-ID: 238537
Publication: Research › Report – Annual report year: 2009

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

General information
FishFrame: Fisheries and stock assessment data framework

Many research and advisory tasks need quality assured data on a disaggregated level to make the re-stratification needed to answer a specific question. It is slow process to gather international datasets for these analyses, because the raw data are spread between labs. Even when gathering data for fixed reoccurring tasks like assessment working groups, data are often late and the quality can be unsatisfactory. The current situation of this "semi-manual distributed datawarehouse" can be improved technically. Methods for quality control, raising and calculation can be discussed and unified. Development and test of software modules can be done once and reused by all. The biggest challenge in this is not technical – it is in organisation, coordination and trust. This challenge has been addressed by FishFrame - a web-based datawarehouse application. The "bottom-up" approach with maximum involvement of end users from as many labs and user groups as possible has been rather slow but quite successful in building international trust and cooperation around the system. This is mandatory prerequisites when our primary goal is not the programming project itself, but the creation of a tool that adds real value to users and in the end improves the way we work with our data. FishFrame version 4.2 is presented and the lessons learned from the process are discussed.

General information

State: Published
Organisations: Section for Monitoring, National Institute of Aquatic Resources, Section for Population- and Ecosystem Dynamics
Authors: Degel, H. (Intern), Jansen, T. (Intern)
Pages: 1-22
Publication date: 2006
Main Research Area: Technical/natural sciences

Publication information
Journal: ICES Council Meeting
Volume: M:02
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: 225258
Publication: Research › Conference article – Annual report year: 2006

http://www.ices.dk/products/CMdocs/2006/M/M0206.pdf
FishFrame. Estimation of discard using FishFrame 4.2

General information
State: Published
Organisations: Section for Population- and Ecosystem Dynamics, National Institute of Aquatic Resources, Section for Monitoring
Authors: Jansen, T. (Intern), Degel, H. (Intern)
Publication date: 2006
Main Research Area: Technical/natural sciences
Links:
Source: orbit
Source-ID: 284449
Publication: Research › Poster – Annual report year: 2006

FishFrame Baltic Sea.: Status and documentation of web application, tests and calculations

General information
State: Published
Organisations: Section for Ocean Ecology and Climate, National Institute of Aquatic Resources, Section for Public Sector Consultancy
Authors: Jansen, T. (Intern), Degel, H. (Intern)
Publication date: 2005
Conference: ICES Council Meeting, HAMBURG, GERMANY, 01/01/2005
Main Research Area: Technical/natural sciences
Publication information
Journal: ICES Council Meeting
Issue number: WD12
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
Links:
Source: orbit
Source-ID: 231434
Publication: Research › Conference article – Annual report year: 2005

BaltCom Datawarehouse: Online data mining using MS Analysis Services

General information
State: Published
Organisations: Section for Population- and Ecosystem Dynamics, National Institute of Aquatic Resources, Section for Software and GIS development
Authors: Jansen, T. (Intern), Degel, H. (Intern), Heilmann, J. (Intern)
Pages: 153-162
Publication date: 2004

Host publication information
Title of host publication: IOC Workshop Report : VLIZ Special Publication
Volume: 188
Publisher: UNESCO, IOC
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 250460
FishFrame - Fisheries Stock Assessment Framework. Description of web application, calculations and use.

General information
State: Published
Organisations: Section for Population- and Ecosystem Dynamics, National Institute of Aquatic Resources, Section for Monitoring
Authors: Jansen, T. (Intern), Degel, H. (Intern)
Publication date: 2004
Main Research Area: Technical/natural sciences

BaltCom - Baltic Sea Commercial Catch Database: Description of web application, calculation and use

General information
State: Published
Organisations: Section for Monitoring, National Institute of Aquatic Resources, Section for Population- and Ecosystem Dynamics
Authors: Degel, H. (Intern), Jansen, T. (Intern)
Publication date: 2003
Main Research Area: Technical/natural sciences

Evaluation of market sampling strategies for a number of commercially exploited stocks in the North Sea and development of procedures for consistent data storage and retrieval (EMAS). Final Report of the EU study no 98/075. Rivo (the Netherlands), CEFAS (UK), DFU (Denmark), SOAEFD (Scotland), CLO-DZ (Belgium)

General information
State: Published
Organisations: Section for Monitoring, National Institute of Aquatic Resources, Section for Fisheries Advice
Publication date: 2001

The precision of international market sampling for North Sea herring and its influence on assessment

General information
The precision of international market sampling for North Sea stock (Gadus morhua) and its influence on stock assessment

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Fisheries Advice
Authors: O’Brian, C. (Ekstern), Darby, C. (Ekstern), Rackham, B. (Ekstern), Maxwell, D. (Ekstern), Degel, H. (Intern), Flatman, S. (Ekstern), Pastoors, M. (Ekstern), Simmonds, E. (Ekstern), Vinther, M. (Intern)
Pages: 1-17
Publication date: 2001
Main Research Area: Technical/natural sciences

Publication information
Journal: ICES C.M. 2001/
Volume: P:14
Original language: English

Bibliographical note
Quality and Precision of Basic Data Underlying Fish Stock Assessment and Implications for Fisheries Management Advice
Source-ID: 226957
Publication: Research › Conference article – Annual report year: 2001

The precision of international market sampling for North Sea stock (Pleuronectes platessa L.) and its influence on stock assessment

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Fisheries Advice
Authors: O’Brian, C. (Ekstern), Darby, C. (Ekstern), Maxwell, D. (Ekstern), Rackham, B. (Ekstern), Degel, H. (Intern), Flatman, S. (Ekstern), Pastoors, M. (Ekstern), Simmonds, E. (Ekstern), Vinther, M. (Intern)
Pages: 1-15
Publication date: 2001
Main Research Area: Technical/natural sciences

Publication information
Journal: ICES C.M. 2001/
Volume: P:13
Original language: English

Bibliographical note
Quality and Precision of Basic Data Underlying Fish Stock Assessment and Implications for Fisheries Management Advice
Source: orbit
Some observations on the food selection of plaice and dab in Øresund, Denmark

General information
State: Published
Organisations: Unknown
Authors: Degel, H. (Intern), Gislason, H. (Intern)
Pages: 7
Publication date: 1988
Conference: ICES Council Meeting 1988, 01/01/1988
Main Research Area: Technical/natural sciences

Publication information
Journal: ICES C.M.
Volume: G:50
Original language: English

Bibliographical note
Also published as: DF&H rapport, nr. 316
Source: orbit
Source-ID: 281916
Publication: Research › Conference article – Annual report year: 1988

Projects:

Tender for scientific support to the Saudi Arabian fisheries sector (SaudiTender I) (39153)

Objective
The general aim of the Fisheries Program at the Marine Studies Section, Center for Environment and Water, Research Institute, King Fahd University of Petroleum and Minerals (KFUPM/RI), is to establish a modern system of data collection, biological and ecological assessment, stock assessment modelling, and government management, in order to evaluate the exploitation status and enhance the sustainability of finfish and invertebrate stocks of Saudi Arabia (SA) Exclusive Economic Zone in the Arabian Gulf. The overall principle underlying this effort is the food security of SA, and the duty to carry out the best efforts to guarantee sustainable exploitation of fishery resources and ensure economic viable fisheries. The Program is organized in four main branches, or Work Packages: Population Dynamics and Stock Assessment, Essential Fish Habitats, Environmental Impacts of Fishing Methods, and Management Strategy Framework.

Background
The KFUPM/RI of Saudi Arabia and AZTI-Tecnalia, Marine and Food Research Institute of the Basque Country, Spain, in partnership with DTU-Aqua, runs this project with an extensive collaboration program in fisheries monitoring, research, and management advice. A service contract according has been signed between KFUPM/RI and AZTI. A sub-contract to this service contract has been made between AZTI and DTU Aqua where parts of the service contract forms an integral part of the subcontract and where DTU Aqua is co-responsible for the below listed specific tasks and deliverables.

Tasks and Deliverables
Population Dynamics and Stock Assessment: Provision and further development of suitable model software to carry out stock assessment for data limited fish stocks. Stock assessment models suitable to data-poor fisheries are applied to historical catch and effort data (2002-2012) and to data from the new Data Collection Framework (2013-) for major stocks. DTU Aqua is responsible for provision of model software to carry out assessments and application of this to 5 major finfish stocks out of the appointed 13 major stocks exploited by SA in the area. The work include estimation of fish stock growth parameters, performing yield per recruit analyses, and conducting stock assessments with application of a stochastic stock production model using the above data to estimate MSY (Maximum Sustainable Yield) sustainability reference levels according to exploitation. Templates for assessment and advice are developed on the basis of the data and knowledge available in cooperation with AZTI which includes a Stock Summary Sheet for each of the stocks.

Management Strategy Evaluation (MSE) for Major Stocks: Conducting and reporting MSE for data-poor fisheries considering several prospective harvest control rules in the short to medium term according to MSY. This involves identification of biological reference points (biomass- and fishing mortality based reference points) and identification of input or output based harvest control rules according to short term forecast for the 5 major fish stocks. Also, this involves provision and further development of model software to carry out MSE according to MSY in the short to medium term.

Management Strategy Framework: Provision of formal considerations, evaluations, recommendations and reporting of relevant and appropriate management regimes and systems of data collection and stock assessments for scientifically-based advice to the SA Ministry of Agriculture on basis of current fishery system and exploitation of the 13 major stocks. This addresses needs for data, methods, institutional set-up, provision of advice, and possible management systems.
This project is coordinated by AZTI Technalia, Spain. The project is funded by AZTI Technalia, Spain as to KFUPM University Saudi Arabia.

National Institute of Aquatic Resources
Section for Ecosystem based Marine Management
AZTI-Tecnalia
King Fahd University of Petroleum and Minerals
Period: 01/05/2015 → 30/06/2017
Number of participants: 5
Research area: Fisheries Management
Project participant:
Pedersen, Martin Wæver (Intern)
Berg, Casper Willestofte (Intern)
Degel, Henrik (Intern)
Bastardie, Francois (Intern)
Project Coordinator:
Nielsen, J. Rasmus (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)

Pilot project for the preparation of certification (MSC) of gillnet fishing in the Baltic Sea (38974)
Fishing for some important stocks has been assessed in accordance with Marine Stewardship Council (MSC) principles for sustainable fisheries. All these fisheries have now passed the assessment and are certified, with a single exception: Gillnet fishing in the Baltic. This is due to the lack of evidence for gillnet fishing East of Bornholm not having by-catches of the very small population of harbor porpoises which are found in the Baltic Sea in Ices Subdivision (SD) 24 and East.

There has not been registered by-catch of porpoises in the Danish gillnet fishing East of Bornholm, neither in biological studies nor by fishermen themselves. But as the Swedish and Polish studies have shown individual by-catches in some gillnet fisheries and the current estimates of stock size means that the by-catch of even a few individuals can prevent it from being restored, the MSC considered that it was not sufficiently proven that the Danish gillnet fisheries did not constitute a threat to the population.

There is therefore a need for documentation of the level of by-catch of harbor porpoises in the Danish gillnet fisheries.

This project is coordinated by Danish Fishermen's Association.
National Institute of Aquatic Resources

Section for Monitoring and Data

Danish Fishermen's Association

Period: 09/06/2011 → 01/05/2015

Number of participants: 6

Research area: Fisheries Management

Project participant:

Larsen, Finn (Intern)

Kindt-Larsen, Lotte (Intern)

Degel, Henrik (Intern)

Rasmussen, Mie Lundsfryd (Intern)

Lundgaard, Louise Scherffenberg (Intern)

Project Manager, academic:

Olesen, Hans Jakob (Intern)

Project

Development of tools for logbook and VMS data analysis (38751)

Objectives and Background

The project "Development of tools for logbook and VMS data analysis" was an EU project under studies for carrying out the common fisheries policy (No MARE/2008/10 Lot2). The aim of the project was to develop a set of standard protocols for coupling and simultaneous analyses of EU fisheries logbook and VMS satellite vessel record data.

Tasks and Deliverables

The process began with the construction of standardized data formats for logbook (EFLALO) and VMS (TACSAT). The software for analyzing the data took the form of a fully documented package called vmstools, built using the freeware package, R (http://cran.rproject.org/). Once the data have been imported into R in the correct format, a series of R programs or 'functions', linked by 'scripts' enable all tasks necessary to be completed in a single software environment. The software can 'clean' data and format input data, estimate distances between VMS positions, and métiers can be identified objectively from species assemblages in catch data using multivariate statistical techniques. We have included a range of complimentary methods for determining fishing activity from VMS position registrations. Positions at sea, for example, can be distinguished from vessels in harbor or erroneous positions on land. Position registrations of vessels actually fishing can be separated from those engaged in other activities (e.g. steaming) using their speed in conjunction with other information such as vessel size and gear being used.

Logbook and VMS data can be merged such that high-resolution spatial maps of catches of various commercial species can be generated. Individual vessel tracks can be reconstructed for more realism through different interpolation techniques (both linear and non-linear, i.e. using Hermite spline functions). Further, all the fishing activity indicators required under the Data Collection Framework can be calculated using vmstools. The package can also be used to explore the impact of different spatial (grid size) and temporal aggregations (month, quarterly, annual) which need to be explicitly considered when assessing fishing impact on the sea floor. There are also scripts for displaying results using Google Earth which is a useful aid for dissemination.

The combination of all these routines ‘under one roof’ permitted and permits the construction of ‘Regional’ databases (i.e. FishFrame developed by DTU Aqua - a regional database hosted by one of the project partners) and scripts to produce output suitable for this are included with the vmstools package. As proof of concept, all analyses performed within each work package have been tested, using the vmstools package, against national datasets with contributions from the French, Danish, Irish, UK and Dutch institutes. As an example, FishFrame has been populated with Dutch and Danish combined VMS and logbook data for 2005-2009.

The project demonstrated emphatically that logbook and VMS data from disparate countries with often different data collection regimens can be combined and compared using generic tools and that the output can be sent to regional databases permitting more holistic assessments of fishing activity.

The project has built further on the networks and platforms produced under EU FP6 EFIMAS Project coordinated by DTU Aqua, and the DTU Aqua team associated with the project has produced several peer reviewed journal papers under Lot 2.

The project is coordinated by Institute for Marine Resources and Ecosystem Studies (IMARES), Wageningen UR, The Netherlands.

This project is funded by EU, Framework Programme 7.

Software Engineering

National Institute of Aquatic Resources

Section for Ecosystem based Marine Management
Activities:

**ICES - Baltic Fisheries Assessment Working Group - WGBFAS (External organisation)**
*Period: 2015*
Henrik Degel (Participant)
National Institute of Aquatic Resources
Section for Monitoring and Data
Degree of recognition: International

**Related external organisation**

**ICES - Baltic International Fish Survey Working Group - WGBIFS (External organisation)**
*Period: 2015*
Henrik Degel (Participant)
National Institute of Aquatic Resources
Section for Monitoring and Data
Degree of recognition: International

**Related external organisation**

**ICES - Benchmark Workshop on Plaice - WKPLE (External organisation)**
*Period: 2015*
Henrik Degel (Participant)
National Institute of Aquatic Resources
Section for Monitoring and Data
Degree of recognition: International

**Related external organisation**
ICES - Benchmark Workshop on Plaice - WKPLE
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

ICES - A Benchmark Workshop on Baltic Flatfish Stocks - WKBALFLAT (External organisation)
Period: 2014
Henrik Degel (Participant)
National Institute of Aquatic Resources
Section for Monitoring and Data
Degree of recognition: International

Related external organisation

ICES - A Benchmark Workshop on Baltic Flatfish Stocks - WKBALFLAT
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

ICES - Baltic Fisheries Assessment Working Group - WGBFAS (External organisation)
Period: 2014
Henrik Degel (Participant)
National Institute of Aquatic Resources
Section for Monitoring and Data
Degree of recognition: International

Related external organisation

ICES - Baltic Fisheries Assessment Working Group - WGBFAS
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

ICES - Baltic International Fish Survey Working Group - WGBIFS (External organisation)
Period: 2014
Henrik Degel (Participant)
National Institute of Aquatic Resources
Section for Monitoring and Data
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 - The Steering Committee for the Regional Database FishFrame - SC-RDB (External organisation)
Period: 2014
Henrik Degel (Participant)
National Institute of Aquatic Resources
Section for Monitoring and Data
Degree of recognition: International

Related external organisation

ICES - The Steering Committee for the Regional Database FishFrame - SC-RDB
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ICES - Workshop on Integrated DATRAS Products - WKIDP (External organisation)
Period: 2014
Henrik Degel (Participant)
National Institute of Aquatic Resources
Section for Monitoring and Data  
Degree of recognition: International

**Related external organisation**

**ICES - Workshop on Integrated DATRAS Products - WKIDP**  
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

**ICES - Baltic International Fish Survey Working Group - WGBIFS (External organisation)**  
Period: 2012 → …  
Henrik Degel (Participant)  
National Institute of Aquatic Resources  
Section for Public Sector Consultancy  
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 - Second ICES/HELCOM Workshop on Flatfish in the Baltic Sea - WKFLABA2 (External organisation)**  
Period: 2012 → …  
Henrik Degel (Participant)  
National Institute of Aquatic Resources  
Section for Public Sector Consultancy  
Degree of recognition: International

**Related external organisation**

**ICES - Second ICES/HELCOM Workshop on Flatfish in the Baltic Sea - WKFLABA2**  
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

**ICES - Working Group on Data and Information Management - WGDIM (External organisation)**  
Period: 2012 → …  
Henrik Degel (Participant)  
National Institute of Aquatic Resources  
Section for Public Sector Consultancy  
Degree of recognition: International

**Related external organisation**

**ICES - Working Group on Data and Information Management - WGDIM**  
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

**ICES - Workshop on Regional Database (External organisation)**  
Period: 2012 → …  
Henrik Degel (Participant)  
National Institute of Aquatic Resources  
Section for Public Sector Consultancy  
Degree of recognition: International

**Related external organisation**

**ICES - Workshop on Regional Database**  
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar
Henrik Degel (Participant)

National Institute of Aquatic Resources

Section for Public Sector Consultancy

Degree of recognition: International

Related external organisation

ICES - Workshop on Regional Database

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