Using a science-industry partnership to identify herring spawning locations in the North Sea

Cryptic behaviour of juvenile turbot *Psetta maxima* L. and European flounder *Platichthys flesus* L.

The aim of this study was to examine the burying behaviour of hatchery-reared European flounder *Platichthys flesus* and turbot *Psetta maxima*, and whether conditioning on a sandy substrate would improve burying efficiency. Both species buried shortly after release on a sandy substrate. However, the study revealed interspecies differences; the flounder buried immediately after release, while the turbot buried gradually. No significant difference in burying efficiency was observed between naïve and conditioned flounder and turbot. An effect of size on burial efficiency was observed for both flounder and turbot with a tendency for larger fish to bury more efficiently than smaller fish, despite previous conditioning. Size at settlement was found to be >2 cm for flounder and >3 cm for turbot.

Cryptic_Behaviour_of_Juvenile.pdf
Scanning for PIT-tagged flatfish in a coastal area using a sledge equipped with an RFID antenna

A radio frequency identification (RFID) antenna system, build into a sledge that can be towed behind a vessel like a trawl and thereby has the potential to detect the position of a passive inductor technology (PIT)-tagged fish in a wide variety of habitats, is presented. By scanning for hatchery-reared PIT-tagged turbot Psetta maxima released into a natural habitat, the performance of the system was compared to a standard juvenile trawl and results suggested that the efficiency of the sledge was five times that of the trawl, which in absolute values corresponds to 75% of P. maxima lying in the pathway of the sledge.

General information

State: Published
Organisations: National Institute of Aquatic Resources, Section for Freshwater Fisheries Ecology, Section for Ecosystem based Marine Management, Cefas
Authors: Sparrevohn, C. R. (Intern), Aarestrup, K. (Intern), Stenberg, C. (Intern), Righton, D. (Ekstern)
Pages: 523-529
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Main Research Area: Technical/natural sciences

Publication information

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BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.57 SJR 0.741 SNIP 0.882
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.951 SNIP 0.935 CiteScore 1.64
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.944 SNIP 0.934 CiteScore 1.76
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.049 SNIP 1.118 CiteScore 1.98
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.93 SNIP 1.035 CiteScore 1.88
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.895 SNIP 0.946 CiteScore 1.66
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.774 SNIP 0.834
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.773 SNIP 0.891
Climate-induced response of commercially important flatfish species during the 20th century

The consequence of elevated ocean temperatures on commercial fish stocks is addressed using time series of commercial landings (1906–2004) and juvenile survey catch data (1904–2006) collected around Denmark. We analyze (i) whether warm-water sole (Solea solea) has increased relative to Boreal plaice (Pleuronectes platessa) and (ii) whether two related warm-water species (turbot, Psetta maxima and brill, Scophthalmus rhombus) show similar responses to increasing temperature or, alternatively, whether turbot (which has a broader juvenile diet) has been favored. Since the early 1980s, both sole and turbot have constituted an increasing part of the commercial landings and survey catches, as compared with plaice and brill, respectively. These changes in species composition were linked to sea surface temperatures, Northern Hemisphere temperature anomalies (NHA) and the North Atlantic Oscillation. NHA was closely related and explained 43% of the observed variation in sole survey catches relative to the plaice catches and almost 38% of the observed variation in the sole landings relative to the plaice landings. For the less common species, turbot and brill, none of the global change indicators explained more than 15% of the variation, although all showed a positive relationship. Survey catch per unit effort increased significantly for both sole and turbot around the early 1980s, whereas catch per unit effort for plaice and brill remained constant. The results indicate that the abundance of warm-water species is likely to increase with increasing temperature but also that species with similar life histories might react differently according to degree of specialization.

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Coastal Ecology, Centre for Ocean Life
Authors: Sparrevohn, C. R. (Intern), Lindegren, M. (Intern), Mackenzie, B. R. (Intern)
Pages: 400-408
Publication date: 2013
Main Research Area: Technical/natural sciences

Publication information
Journal: Fisheries Oceanography
Volume: 22
Issue number: 5
ISSN (Print): 1054-6006
Ratings:
BFI (2018): BFI-level 2
For many overfished marine stocks, recreational fishing continues even though recovery plans are implemented and commercial landings regulated. In such cases, unbiased and precise estimates of recreational harvest are important for successful management. Harvest estimation often relies on interview-based surveys where fishers are asked to recall harvest within a given timeframe. However, the importance of whether fishers are requested to provide figures in weight or number is unresolved. Therefore, a recall survey aiming at estimating recreational harvest was designed, such that respondents could report harvest using either weight or numbers. It was found that: (1) a preference for reporting in numbers dominated; (2) reported mean individual weight of fish caught, differed between units preferences; and (3) when an estimate of total harvest in weight are calculated, these difference could result in a substantial bias through the conversion from numbers to weight. Based upon these results it is recommended that recreational harvest should be requested in numbers and not weight.
Identification of seasonal migration, vertical activity and thermal experience of Greenland halibut Reinhardtius hippoglossoides (Walbaum) in west Greenland waters

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Ecology and Oceanography, Section for Ecosystem based Marine Management, Section for Marine Living Resources
Authors: Behrens, J. W. (Intern), Neuenfeldt, S. (Intern), Sparrevohn, C. R. (Intern), Eigaard, O. R. (Intern), Boje, J. (Intern)
Publication date: 2013
Event: Poster session presented at Society of Experimental Biology, Annual Main Meeting, Valencia, Spain.
Main Research Area: Technical/natural sciences
Publication: Research › Poster – Annual report year: 2013

Leps (Pleuronectes platessa X Platichthys flesus hybrid) i danske farvande

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Living Resources
Authors: Larsen, W. B. (Ekstern), Sparrevohn, C. R. (Intern), Hansen, J. H. (Intern), Møller, P. R. (Ekstern)
Publication date: 2013
Event: Abstract from 17. Danske havforskermøde, Roskilde, Denmark.
Main Research Area: Technical/natural sciences
Publication: Research › Conference abstract for conference – Annual report year: 2013

Unexpectedly high catch-and-release rates in European marine recreational fisheries: implications for science and management

Unexpectedly high catch-and-release rates in European marine recreational fisheries: implications for science and management. – ICES Journal of Marine Science, 70: .While catch-and-release (C&R) is a well-known practice in several European freshwater recreational fisheries, studies on the magnitude and impact of this practice in European marine recreational fisheries are limited. To provide an overview of the practice and magnitude of C&R among marine recreational anglers in Europe, the existing knowledge of C&R and its potential associated release mortality was collected and summarized. The present study revealed that in several European countries over half of the total recreational catch is released by marine anglers. High release proportions of >60% were found for Atlantic cod (Gadus morhua), European sea bass (Dicentrarchus labrax), pollack (Pollachius pollachius), and sea trout (Salmo trutta) in at least one of the studied European countries. In the case of the German recreational Baltic Sea cod fishery, release proportions varied considerably between years, presumably tracking a strong year class of undersized fish. Reasons for release varied between countries and species, and included legal restrictions (e.g. minimum landing sizes and daily bag limits) and voluntary C&R. Considering the magnitude of C&R practice among European marine recreational anglers, post-release mortalities of released fish may need to be accounted for in estimated fishing mortalities. However, as the survival rates of European marine species are mostly unknown, there is a need to conduct post-release survival studies and to identify factors affecting post-release survival. Such studies could also assist in developing species-specific, best-practice guidelines to minimize the impacts of C&R on released marine fish in Europe

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Coastal Ecology, Thünen Institute of Baltic Sea Fisheries, Institute of Marine Research, Instituto Mediterráneo de Estudios Avanzados, Cefas, Wageningen IMARES, IFREMER, National Marine Fisheries Research Institute, Université de Brest, University of Algarve, Swedish Agency for Marine and Water Management, State Research Centre for Agriculture and Fishery Mecklenburg-Vorpommern
Pages: 1319-1329
Publication date: 2013
Main Research Area: Technical/natural sciences
Publication: Research - peer-review › Journal article – Annual report year: 2012

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Public Sector Consultancy, Section for Coastal Ecology, Section for Monitoring
Eel, cod and seatrout harvest in Danish recreational fishing during 2011

Marine recreational fishing is a popular outdoor leisure activity, yet the impact on the targeted stocks is often unidentified. In order to estimate 2011 cod, eel and seatrout harvest (fish caught and kept) in the Danish angling and passive gear fishing, two interview surveys were conducted in July 2011 and January 2012. Recreational fishing was separated into anglers (with rod and reel) and passive gear fishing (fyke and gillnets). In 2011 a total of 157,762 anglers and 33,911 passive gear fishers had issued the annual license, which is compulsory if saltwater fishing is practiced. In total, it was estimated that 80 t [Relative standard error (RSE)=6%] eel, close to 1,300 t (RSE=5 %) cod and 400 t (RSE=5 %) seatrout (including freshwater catches) was harvested in the recreational fishery. Eel is almost exclusively taken in the passive gear fykenet fishery and seatrout was mainly caught by anglers which accounted for 88 % of the total harvest. Present interview survey indicates that approximately 4.5 % of the total Danish cod yield (commercial landings plus recreational harvest) was taken in the recreational fishery. There were, however, large differences between areas and especially in Kattegat and the Sound the recreational had a large share of the total yield accounting for 51 % and 34 %, respectively. Approximately 18 % of the total eel yield was taken by the recreational fishing. In the estimation, harvest taken by fishers without a legal license was also included. This inclusion increased the estimated harvest with 17 % and 24 %, respectively for passive gear and angling

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Coastal Ecology, Section for Monitoring
Authors: Sparrevohn, C. R. (Intern), Storr-Paulsen, M. (Intern)
Publication date: 2012
Using interview-based recall surveys to estimate cod Gadus morhua and eel Anguilla anguilla harvest in Danish recreational fishing

Using interview-based recall surveys to estimate cod Gadus morhua and eel Anguilla anguilla harvest in Danish recreational fishing. – ICES Journal of Marine Science, 69: 323–330. Marine recreational fishing is a popular outdoor activity in Denmark, practised by both anglers and passive gear fishers. However, the impact on the targeted stocks is unknown, so to estimate the 2009 harvest of cod Gadus morhua and eel Anguilla anguilla, two separate interview-based surveys were initiated and carried out in 2009/2010. The first recall survey exclusively targeted fishers who had been issued with the mandatory Danish fishing licence. The second survey was designed to identify those who fish without a licence. It was estimated that 1231 t of cod were harvested in 2009, corresponding to 4.8% of the entire Danish cod yield (recreational harvest + commercial landings). Area differences were found, and, in certain areas, the recreational harvest of cod accounted for more than 30% of the total yield. The majority (81%) of the recreational cod harvest was taken by anglers. Eels, however, are almost exclusively caught with passive gear (fykenets) and a total of 104 t year−1 was harvested, which corresponds to 19% of the entire Danish eel yield. The inclusion of the harvest taken by fishers without a valid licence was important and added almost 20% to the estimated harvest.
10.000 kr. i dusør for mærkede torsk i Østersøen

**General information**
State: Published
Organisations: Section for Monitoring, National Institute of Aquatic Resources, Section for Coastal Ecology, Section for Population Ecology and Genetics
Authors: Storr-Paulsen, M. (Intern), Sparrevohn, C. R. (Intern), Hüssy, K. (Intern)
Pages: 9
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Pages (from-to): 9
Newspaper: Fiskeritidende
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ISI indexed (2013): ISI indexed no
ISI indexed (2012): ISI indexed no
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Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 273996
Publication: Communication › Newspaper article – Annual report year: 2011

Eel, seatrout and cod catches in Danish recreational fishing: Survey design and 2010 catches in the Danish waters

**General information**
State: Published
Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources, Section for Monitoring, Section for Freshwater Fisheries Ecology
Authors: Sparrevohn, C. R. (Intern), Storr-Paulsen, M. (Intern), Nielsen, J. (Intern)
Number of pages: 22
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ISSN: 1395-8216
Main Research Area: Technical/natural sciences
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Source: orbit
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Fritidsfiskere registrerer deres fangster i fjorde og indre danske farvande

**General information**
State: Published
Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources
Authors: Nicolajsen, H. (Intern), Kristensen, L. (Intern), Sparrevohn, C. R. (Intern), Støttrup, J. (Intern)
Publication date: 2011

**Publication information**
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Main Research Area: Technical/natural sciences
Links:
Fritidsfiskere registrerer deres fangster i fjorde og indre danske farvande

General information
State: Published
Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources
Authors: Nicolajsen, H. (Intern), Kristensen, L. (Intern), Sparrevohn, C. R. (Intern), Støttrup, J. (Intern)
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Main Research Area: Technical/natural sciences

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Original language: Danish
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Publication: Communication › Journal article – Annual report year: 2011

Marin fiskepleje

General information
State: Published
Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources
Authors: Nicolajsen, H. (Intern), Sparrevohn, C. R. (Intern), Stenberg, C. (Intern), Kristensen, L. (Intern), Støttrup, J. (Intern)
Publication date: 2011
Event: Poster session presented at 16. danske havforskermøde, Mols, Denmark.
Main Research Area: Technical/natural sciences

Bibliographical note
Poster og abstract
Source: orbit
Source-ID: 278054
Publication: Research › Poster – Annual report year: 2011

Using recall surveys to estimate harvest of cod, eel and sea migrating brown trout in Danish angling and recreational passive gear fishing

Recreational fishing is a popular outdoor leisure activity in Europe but the actual impact on the targeted stocks is often unknown. Besides angling, marine recreational fishing in Denmark is practiced using passive gear, such as gill- and fykenets. A list of participants is updated continuously, as all recreational fishermen have to purchase a personal non-transferable and time limited national license before fishing. However, this list will not include those fishing illegally without a license. Therefore, two types of recall surveys with their own questionnaires and group of respondents were carried out. The first survey - the license list survey – was carried out once in 2009 and twice in 2010. This survey had a sampling frame corresponding to the list of persons that had purchased a license within the last 12 months. Respondents were asked to provide detailed information on catch and effort per ICES area and quarter. In order to also estimate the fraction of fishermen that fished without a valid license, a second survey, called – the Omnibus survey-, was carried out four times. This survey targeted the entire Danish population between 16 and 74 of age

General information
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Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources, Section for Freshwater Fisheries Ecology, Section for Monitoring
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ISBN (Print): 978-87-7481-109-1
Original language: Danish

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Main Research Area: Technical/natural sciences
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217-10_Åle_og_torskefangst_ved_rekreativt_fiskeri_i_Danmark.pdf
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http://www.aqua.dtu.dk/Publikationer/Forskningsrapporter.aspx
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Source-ID: 260178
Publication: Research › Report – Annual report year: 2010

Eel and cod catches in Danish recreational fishing: Survey design and 2009 catches

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Electronic versions:
217-10_UK_Eel-and-cod-catches-in-danish-recreational-fishing.pdf
Links:
http://www.aqua.dtu.dk/Publikationer/Forskningsrapporter/Forskningsrapporter_siden_2008
Source: orbit
Source-ID: 260177
Publication: Research › Report – Annual report year: 2010
Diet, abundance and distribution as indices of turbot (Psetta maxima L.) release habitat suitability

Selection of a suitable release habitat is critical for stock enhancement. As part of the Danish turbot stock enhancement program, individually tagged, artificially reared juveniles were released into three different habitats. Data from the recaptures in the following year revealed a significant effect of release habitat on turbot growth. This raised the question whether such differences in growth could have been predicted before the release by comparing easily measurable characteristics of wild turbot caught in the different habitats. Three characteristics of wild turbot were examined: the diet, natural abundance, and depth distribution within the habitats. A marked difference was found among habitats in the timing of the diet change from the suboptimal exoskeleton carrying prey items such as crustaceans to fish. The habitat where the wild turbot had the lowest occurrence of fish in their diet was also the habitat with the highest natural abundance of age-0 individuals and the deepest distribution of wild turbot. This was the habitat where released turbot grew more slowly than in the other habitats, which indicate that the diet and depth distribution of wild turbot may provide good indicators for the success of turbot enhancement and restocking.
Evaluating and optimizing stock enhancement of a natural flatfish stock

General information
State: Published
Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources
Authors: Sparrevohn, C. R. (Intern)
Number of pages: 122
Publication date: 2008

Publication information
Publisher: Wageningen University
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions:
Phd Thesis Sparrevohn.pdf
Source: orbit
Source-ID: 227499
Publication: Research › Ph.D. thesis – Annual report year: 2008

Spatial prediction of nursery grounds for juvenile flatfish in the Danish Kattegat: From: Mapping and modeling of marine habitats in the Baltic Sea region

General information

State: Published
Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources
Authors: Sparrevohn, C. R. (Intern), Støttrup, J. (Intern)
Number of pages: 338-347
Publication date: 2008
Main Research Area: Technical/natural sciences

Publication information
Journal: Reviews in Fisheries Science
Volume: 16
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BFI (2014): BFI-level 1
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ISI indexed (2013): ISI indexed yes
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ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
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BFI (2010): BFI-level 1
BFI (2009): BFI-level 1
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Original language: English
DOIs:
10.1080/10641260701686846
Source: orbit
Source-ID: 227497
Publication: Research - peer-review › Journal article – Annual report year: 2008
Substratum selection by juvenile flounder Platichthys flesus (L.): effect of ephemeral filamentous macroalgae

General information
State: Published
Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources
Number of pages: 182
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Publication information
Publisher: BALANCE
Original language: English
Series: BALANCE Interim Report
Number: 27
Main Research Area: Technical/natural sciences
Links:

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Publication: Research › Report – Annual report year: 2008

Substratum selection by juvenile flounder Platichthys flesus (L.): effect of ephemeral filamentous macroalgae

General information
State: Published
Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources
Authors: Carl, J. (Ekstern), Sparrevohn, C. R. (Intern), Nicolajsen, H. (Intern), Støttrup, J. (Intern)
Pages: 2570-2578
Publication date: 2008
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Fish Biology
Volume: 72
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Ratings:
BFI (2018): BFI-level 1
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.57 SJR 0.741 SNIP 0.882
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.951 SNIP 0.935 CiteScore 1.64
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.944 SNIP 0.934 CiteScore 1.76
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.049 SNIP 1.118 CiteScore 1.98
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.93 SNIP 1.035 CiteScore 1.88
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Can stock enhancement enhance stocks?

**General information**

State: Published
Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources
Authors: Støttrup, J. (Intern), Sparrevohn, C. R. (Intern)
Pages: 104-113
Publication date: 2007
Main Research Area: Technical/natural sciences

**Publication information**

Journal: Journal of Sea Research
Volume: 57
Issue number: 2-3, spec. issue
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BFI (2018): BFI-level 1
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.98 SJR 0.932 SNIP 0.931
På besøg hos "nøglefiskere" på Fyn, Als og Vejle Fjord

General information
State: Published
Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources
Authors: Nicolajsen, H. (Intern), Støttrup, J. (Intern), Sparrevo, C. R. (Intern)
Pages: 22-24
Post-release survival and feeding in reared turbot

As part of the Danish restocking program, an experiment was carried out with four groups of turbot Psetta maxima released on two different occasions at the same location in Aarhus Bay, Denmark. One objective was to analyse the duration of post-release mortality and the magnitude of this mortality. In 2003 a group called Large turbot (17.1 cm total length (LT)) and a group called Intermediate (LT = 11.8 cm) were released, and in 2004 two similar-sized groups called Naive and Conditioned (LT = 9.8 cm) were released. The Conditioned differed from the Naive turbot by being transferred to enclosures at the release location six days prior to the actual release. This experiment was performed to investigate whether such a conditioning period had a positive effect on the survival and hence the success of the stocking. All the groups released were monitored daily until day 8, using a juvenile flatfish-trawl to recapture the fish. The catches were analyzed on the basis of a normal distribution approximation method, founded in diffusion theory, from which daily abundance of the released fish and hence post-release mortality could be estimated. The group of Large turbot suffered negligible post-release mortality, but for the Conditioned, Naive and Intermediate groups the loss varied between 34 and 66% d-1. The mortality for the Conditioned group was found to be half that of the Naive turbot released simultaneously. The period of high post-release mortality was estimated to be restricted to three days after release. The only active predators observed in the area were birds. Besides estimating mortality the diffusion model provides an estimate on the catchability of the released turbot when fished with a juvenile flatfish-trawl. Catchabilities varied between 38 and 52% for all releases except for the 17 cm sized turbot released, where catchability was only 12%. The feeding performance of the released fish was also analysed and compared with that of wild fish caught at the same location. These results showed that the proportion of stomachs containing food increased not only with time after release, but also with the size of the turbot. However, whether or not fish was included in the diet was not related to size but to time after release and to whether they had been conditioned or not.

General information
State: Published
Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources
Authors: Sparrevohn, C. R. (Intern), Støttrup, J. (Intern)
Pages: 151-161
Publication date: 2007
Main Research Area: Technical/natural sciences
Towards benthic marine landscapes in the Baltic Sea

General information

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Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources, Section for Shellfish, Section for Management Systems
Number of pages: 118
Delineation of BALANCE pilot areas

General information
State: Published
Organisations: Section for Software and GIS development, National Institute of Aquatic Resources, Section for Coastal Ecology, Section for Management Systems
Authors: Lindeberg, L. (Ekstern), Aigars, J. (Ekstern), Daunys, D. (Ekstern), Geitner, K. (Intern), Isaeus, M. (Ekstern), Kotta, J. (Ekstern), Lamp, J. (Ekstern), Leth, J. (Ekstern), Neuvonen, S. (Ekstern), Sandstrøm, A. (Ekstern), Sparrevohn, C. R. (Intern), Sørensen, T. K. (Intern), Vestergaard, O. (Intern)
Number of pages: 28
Publication date: 2006

Changes in nursey area utilisation by flatfish in Danish coastal waters of the Kattegat 1957-2004

General information
State: Published
Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources, Section for Ocean Ecology and Climate
Authors: Sparrevohn, C. R. (Intern), Nielsen, E. (Intern), Støttrup, J. (Intern), MacKenzie, B. (Intern)
Publication date: 2005
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 259945
Publication: Research › Poster – Annual report year: 2005

Fangstregistrering og nøglefiskere

General information
State: Published
Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources
Authors: Sparrevohn, C. R. (Intern), Nicolajsen, H. (Intern), Støttrup, J. (Intern)
Pages: 5-7
Publication date: 2005
Main Research Area: Technical/natural sciences
Registreringer af fangster i indre danske farvande 2002, 2003 og 2004 - slutrapport

General information
State: Published
Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources
Authors: Pedersen, S. (Ekstern), Støttrup, J. (Intern), Sparrevohn, C. R. (Intern), Nicolajsen, H. (Intern)
Number of pages: 149
Publication date: 2005

The quality of release habitat for reared juvenile flounder, Platichthys flesus, with respect to salinity and depth

One prerequisite for a successful stocking programme is the choice of an appropriate release site, which would ensure good growth, survival and recruitment to the local fishery. The influence of different salinity regimes on habitat quality for juvenile flounder, Platichthys flesus (L.), was examined in Danish inshore waters using enclosures to study growth and survival. Three locations were chosen: Virksund (V) - constant low salinity at 10 parts per thousand; Harre Vig (HV) - constant high salinity at 24 parts per thousand; and Hjerk Nor - variable salinity, 0-25 parts per thousand. Fish movement was examined, using a diffusion model, at the first two sites. At HV the fish had unrestricted dispersal opportunity resulting in average individual movement of 45 m day(-1). Fish at V were restricted in dispersal in one direction because of a dam, about which they would concentrate under certain hydrographical conditions. Growth was highest at the locations with stable salinity and mortality highest at the location with variable salinity

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Authors: Andersen, A. (Ekstern), Schou, J. (Ekstern), Sparrevohn, C. R. (Intern), Nicolajsen, H. (Intern), Støttrup, J. (Intern)
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Journal: Fisheries Management and Ecology
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General information
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Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources
Authors: Sparrevohn, C. R. (Intern), Nicolajsen, H. (Intern), Støttrup, J. (Intern)
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Main Research Area: Technical/natural sciences

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Registreringer af fangster i indre danske farvande 2003

General information
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Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources
Authors: Sparrevohn, C. R. (Intern), Støttrup, J. (Intern), Nicolajsen, H. (Intern)
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Publisher: Dansk Amatørfiskerforening
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Publication: Research › Report – Annual report year: 2004

Udsætning af pighvar ved Begstrup Vig

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State: Published
Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources
Authors: Sparrevohn, C. R. (Intern), Støttrup, J. (Intern)
Pages: 20-23
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Main Research Area: Technical/natural sciences

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**Marin fiskepleje**

**General information**
State: Published
Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources
Authors: Sparrevohn, C. R. (Intern)
Publication date: 2003
Main Research Area: Technical/natural sciences

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Source: orbit
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**Registreringer af fangster i indre danske farvande 2002**

**General information**
State: Published
Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources
Authors: Nicolajsen, H. (Intern), Sparrevohn, C. R. (Intern), Støttrup, J. (Intern)
Number of pages: 20
Publication date: 2003

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Original language: Danish
Main Research Area: Technical/natural sciences
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**Udsætning af pighvar**

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State: Published
Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources
Authors: Sparrevohn, C. R. (Intern)
Publication date: 2003
Main Research Area: Technical/natural sciences

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Source-ID: 227505
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**Udsætninger af pighvar ved Nordsjællands kyst 1991-1997**

**General information**
State: Published
Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources
Authors: Sparrevohn, C. R. (Intern), Støttrup, J. (Intern)
Number of pages: 56
Publication date: 2003
Diffusion of fish from a single release point

In a field experiment, 3529 turbot (Psetta maxima) were released in order to estimate and describe the movements of hatchery-reared fish by applying diffusion theory. After liberation, the development of the population density was estimated during the following 9 days, and from that, the rate of diffusion and the advection were determined. Two approaches were followed to describe the data: a normal distribution approximation (NDA) model and a partial differential equation (PDE) model. In the latter, it was possible to include the effect of sampling. The two models gave similar results, indicating that the sampling of fish during the experiment did not have any detectable effect on the population density. The activity of the released turbot resulted in an individual daily displacement of 151 m-day^{-1}, except for the first 2 days at liberty, where the displacement was estimated to be considerably lower. Advection was significant and was related to the displacement of the water body. Further, it was possible to estimate the postrelease mortality as 14%.day^{-1} and the catchability of the turbot when caught with a young fish trawl as 28%.
On the efficiency of a hand-towed two-metre beam trawl and two different designs of push nets for catching juvenile flounder (Platichthys flesus)

General information
State: Published
Organisations: Section for Coastal Ecology, National Institute of Aquatic Resources, Section for Management Systems
Authors: Nicolajsen, H. (Intern), Carl, J. (Ekstern), Sparrevohn, C. R. (Intern), Eigaard, O. R. (Intern)
Publication date: 2002
Event: Poster session presented at 5th International Symposium on Flatfish Ecology, Isle of Man, United Kingdom.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 227498
Publication: Research - peer-review › Journal article – Annual report year: 2002

The use of releases of reared fish to enhance natural populations: A case study on turbot Psetta maxima (Linné, 1758)

General information
State: Published
Projects:

Population genetics of flounder in Danish waters (38819)
Knowledge about population structure and local adaptation is central for successful management of both freshwater and marine fisheries. For instance, recently accumulated knowledge about the geographical scale and extent of local adaptation in anadromous fishes has resulted in the abandonment of fish transplants and releases of foreign fish into natural populations, because such activities threaten the survival of natural populations. In coastal habitats, local fishermen have expressed interests in moving marine fish between geographically distant areas, but until now a lack of scientific knowledge about the scale and extent of local adaptation has prevented any detailed advice on the scale that such movements may be possible. In one particular case, it was proposed to move European flounder from the western parts of the Limfjord to the Bay of Aarhus in order to support a fishery in the bay where the species had reached very low abundances. Since these two areas are both geographically distant and environmentally different, it is possible that fish are also adapted to local environmental conditions. However, although earlier work has strongly suggested that populations of European flounder may be locally adapted, no study had directly compared samples from these areas.

In this project, we aimed to use a combination of genetic markers previously found not to be affected by selection (so-called “neutral markers”) and markers situated in or close to genes which may be important for local adaption. The application of such a combination of genetic markers may allow the assessment of geographical patterns and scales of both population structure and local adaptation in natural populations. The first stage of the project was the development of new genetic markers through screening candidate genes, identified as differentially expressed in relation to various stressors in laboratory experiments, for the presence of suitable genetic markers. Genetic markers were subsequently analyzed in individuals collected from the target as well as reference populations in 2011 and in additional reference samples available from 2003/2004. Results showed markedly different levels of genetic variation in putatively neutral and candidate gene associated markers throughout the species’ distribution. Furthermore, different frequencies of genetic variants near the stress response candidate gene, Hsc70, were observed between the Limfjord and the Bay of Aarhus, suggesting local adaptation to the two areas. Consequently, it was advised that fish were not moved between these two regions. In addition to providing information about the specific case, these results could also be important for guiding future research on finer geographical scales in this and other marine fishes.

The project was coordinated by DTU Aqua.

The project was funded by the Danish Rod and Net Fishing License Funds.
Fehmarn Belt science provision project: Fehmarn Belt fish and fisheries and related environmental investigations (38669)

Objectives and Background

The purpose of the project was to investigate main exploited fish stock and fisheries dynamics in relation to the marine environment with focus on the Fehmarn Belt area in the Western Baltic Sea, and to provide science and research based investigations and results, as well as reports and scientific peer reviewed journal papers on this. The work was associated to the scientific baseline investigations (2009-13) and impact assessment of the projection of the Fehmarn Belt Fixed Link between Denmark and Germany involving a science cooperation between DTU Aqua, Thünen-Institute and Femern Bælt A/S in order to generate knowledge on potential impacts of establishment of the fixed link. Focus was on the most important commercial fisheries and fish stocks in the area (cod, herring, and sprat, but also flatfish and eels).

Tasks and Deliverables

The work covered WP0: Prospecting, planning and development of the investigations, producing outline and main contents of the science provision contract and coordination of tasks hereunder with DTU Aqua as international project coordinator; WP1: Review of knowledge: Review, provision of data, and analyses of selected historical data on fish stock and fisheries dynamics; WP2: Extension of existing, standard research surveys and linking to standard survey time series to detect potential effects on important fish stocks; WP3: Evaluation of potential integrated effects on important fish stocks and fisheries; WP4: Evaluation of potential effects of change and variability in hydrographic features and conditions on recruitment for important fish stocks (cod, herring, sprat); WP5: Evaluation of herring occurrences and migrations as well as separation of spring and autumn spawning herring stock components in the area.

WP1 included provision of state of the art knowledge from historical surveys and review of quality of survey indices, commercial fisheries data, and information on recruitment dynamics with emphasis on fluctuations in distribution and productivity with respect to environmental and anthropogenic drivers of change including species interactions and fisheries.

WP 2 included extension of existing standard surveys in the near field area and analyses of both the standard and extended time series with respect to variability in distribution, density and abundance patterns of relevant stocks, as well as developing advanced scientific survey evaluation models and methods for doing this.

WP 3 analyzed stock and fisheries dynamics by use and development of complex multi-fleet-multi-stock bio-economic management evaluation models performing analyses on a very high spatial and temporal resolution scale using integrated fisheries, stock and survey data. The models evaluated different management options and scenarios relevant for the establishment of the fixed link.

WP 4 evaluated variability in recruitment and important spawning areas according to hydrographic features and in relation to impact of the fixed link among other by use and further development of complex hydrodynamic models.

WP 5 evaluated herring stock occurrence and migration patterns in the Baltic area by use of genetic identity markers, otolith micro-structures and information from fisheries and research surveys in order to evaluate impact of the fixed link. The project has besides a long row of project reports produced around 30 scientific peer reviewed journal papers where DTU Aqua are first author on more than half and co-author on more than 20 of the papers.

The project was funded by the 3 partners with external Funding from Femern Bælt A/S.
Baltic Sea management: Nature conservation and sustainable development of the ecosystem through spatial planning (BALANCE) (38432)

BALANCE aimed to develop transnational marine spatial planning tools and an agreed template for marine management planning and decision-making. It was based on four transnational pilot areas demonstrating the economical and environmental value of habitat maps and marine spatial planning (exemplified through two zoning plans). The tools and zoning plans integrated biological, geological and oceanographic data with local knowledge from stakeholders. A "blue corridor" concept was developed and promoted, i.e. between protected sites adding spatial development dimensions to the implementation of EU Directives. As a part of this work it was assessed if the Baltic marine Natura 2000 network is ecologically coherent and adequately represents and protects a continuum of habitats. A communication strategy was developed for stakeholder involvement to ensure that objectives and decisions address local stakeholders' needs.

Spatial planning tools included Baltic Sea marine landscapes presented in GIS maps, a holistic approach to marine habitat mapping integrating data on benthic, pelagic and fish habitats in four transnational pilot areas, development of habitat models for areas with little biological information, templates for zoning plans in two pilot areas, including planning guidelines and criteria to evaluate management success, meta-database for Baltic Sea marine data, outlining data formats, techniques and data availability for use by stakeholders in future planning, development of agreed protocols for habitat mapping based on intercalibration of existing national protocols, ensuring compatible data for future transnational mapping.

DTU Aqua was mainly involved in habitat modelling (coastal and pelagic fish habitats) and in development of marine spatial planning and management frameworks.

In addition to DTU Aqua, 23 partners were involved in the BALANCE project, i.e. representing governmental and non-governmental organizations and research institutes from the entire Baltic region in the fields of biology/ecology, fisheries and geology.

The project was coordinated by DTU Aqua.

National Institute of Aquatic Resources

Section for Ecosystem based Marine Management

Period: 01/01/2005 → 31/12/2007

Number of participants: 8

Research area: Ecosystem Based Marine Management

Project participant:

Serensen, Thomas Kirk (Intern)

Geitner, Kerstin (Intern)

Sparrevohn, Claus Reedtz (Intern)

Hüsey, Karin (Intern)
Coastal habitats (3117)
The aim of the project was to characterize coastal habitats based upon their function as optimal areas for stock enhancement projects, where artificially reared individuals are released with the purpose of increasing local stock sizes.

Towards this aim, the basic criteria for stocking were reviewed and discussed (Støttrup & Sparrevohn, 2007). Habitat suitability was examined (Carl et al. 2008) and methods for estimating mortality of newly released fish were developed together with means of securing the highest possible survival after release (Sparrevohn & Støttrup, 2007).

The potential of linking available prey items to growth of released individuals was examined together with potential for this linkage as a parameter to identify areas suitable for stock enhancement (Sparrevohn & Støttrup, 2008). Predation impact was explored through field experiments (avian predators; Sparrevohn & Støttrup, 2007; Støttrup & Sparrevohn, 2007) and theoretically using ecosystem modeling (Dalsgård et al. 2008 and Nielsen et al., 2008 (both reports).

The project was coordinated by DTU Aqua.

National Institute of Aquatic Resources
Section for Ecosystem based Marine Management
Local fishermen associations
Danish Organization for Amateur Fishermen
Aarhus University
Wageningen IMARES
Period: 01/01/2005 → 31/12/2010
Number of participants: 4
Research area: Coastal Ecology & Danish Shellfish Centre
Project participant:
Sparrevohn, Claus Reedtz (Intern)
Nicolajsen, Hanne (Intern)
Nielsen, Anders (Intern)

Project Manager, academic:
Støttrup, Josianne Gatt (Intern)

Activities:

ICES - Annual Meeting of Advisory Working Group Chairs - WGCHAIRS (External organisation)
Period: 2012 → …
Claus Reedtz Sparrevohn (Participant)
National Institute of Aquatic Resources
Section for Coastal Ecology
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 - Second ICES/HELCOM Workshop on Flatfish in the Baltic Sea - WKFLABA2 (External organisation)
Period: 2012 → …
Claus Reedtz Sparrevohn (Participant)
National Institute of Aquatic Resources
Section for Coastal Ecology
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 Recreational Fisheries Surveys - WGREFS (External organisation)
Period: 2012 → …
Claus Reedtz Sparrevohn (Participant)
National Institute of Aquatic Resources
Section for Coastal Ecology
Degree of recognition: International

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