

## Threshold-dependent climate effects and high mortality limit recruitment and recovery of the Kattegat cod - DTU Orbit (09/11/2017)

### Threshold-dependent climate effects and high mortality limit recruitment and recovery of the Kattegat cod

Cod in the Kattegat is one of the most dramatic examples of stock collapse, where despite large management efforts, almost no signs of recovery have been observed. We investigate how multiple physical and biological factors could potentially influence recruitment and recovery of Kattegat cod, using non-additive threshold models. In contrast to previous studies on recruitment dynamics of Kattegat cod *Gadus morhua*, we found that recruitment variability may be explained by a combination of the size of the spawning stock and external conditions (i.e. sea surface temperature and oxygen concentrations), but only during periods of low stock size. Our results indicate that the long-term decrease and the present poor state of the Kattegat cod stock is likely caused by high total mortality rates and stock-size dependent effects of climate which together are currently preventing recovery. In addition, we illustrate how only a drastic reduction in total mortalities, primarily by limiting unintended bycatch and discards, may promote a recovery of the stock. This knowledge is important for evaluating the success or failure of various management measures which have been employed to recover the stock and for developing future management strategies which can take the environmental and/or ecosystem impacts into account

### General information

State: Published

Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Scripps Institution of Oceanography

Authors: Lindegren, M. (Intern), Eero, M. (Intern)

Pages: 223-232

Publication date: 2013

Main Research Area: Technical/natural sciences

### Publication information

Journal: Marine Ecology - Progress Series

Volume: 490

ISSN (Print): 0171-8630

Ratings:

BFI (2017): BFI-level 2

Web of Science (2017): Indexed yes

BFI (2016): BFI-level 2

Scopus rating (2016): CiteScore 2.4

Web of Science (2016): Indexed yes

BFI (2015): BFI-level 2

Scopus rating (2015): CiteScore 2.56

Web of Science (2015): Indexed yes

BFI (2014): BFI-level 2

Scopus rating (2014): CiteScore 2.75

Web of Science (2014): Indexed yes

BFI (2013): BFI-level 2

Scopus rating (2013): CiteScore 2.79

ISI indexed (2013): ISI indexed yes

Web of Science (2013): Indexed yes

BFI (2012): BFI-level 2

Scopus rating (2012): CiteScore 2.9

ISI indexed (2012): ISI indexed yes

Web of Science (2012): Indexed yes

BFI (2011): BFI-level 2

Scopus rating (2011): CiteScore 2.85

ISI indexed (2011): ISI indexed yes

Web of Science (2011): Indexed yes

BFI (2010): BFI-level 2

Web of Science (2010): Indexed yes

BFI (2009): BFI-level 2

Web of Science (2009): Indexed yes

BFI (2008): BFI-level 2

Web of Science (2008): Indexed yes

Web of Science (2007): Indexed yes

Web of Science (2006): Indexed yes

Web of Science (2005): Indexed yes

Web of Science (2004): Indexed yes

Web of Science (2003): Indexed yes

Web of Science (2002): Indexed yes

Web of Science (2001): Indexed yes

Web of Science (2000): Indexed yes

Original language: English

Electronic versions:

Publishers version. Embargo ended: 02/10/2017

DOIs:

10.3354/meps10437

Source: dtu

Source-ID: n::oai:DTIC-ART:intres/392312196::32405

Publication: Research - peer-review › Journal article – Annual report year: 2013