Discard data and scientific advice

NWWAC / EFCA / NWW CEG LO Workshop

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ICES
CIEM
Science for sustainable seas

Presentation outline

- Overview of ICES
- Basis of scientific estimates of discards
- Overview of Discards in NWW stocks
- How are discards included in the advice
- Future needs

What is ICES?

HOW WE WORK

What is ICES?
Knowledge provider for decision makers

- ICES provides best available, scientific advice to international & national authorities

- Advice on over 240 fish stocks, bycatch advice, deep sea impact, vulnerable marine habitats, marine protected areas and other marine ecosystem related advice

Data Collection - MAP

EMFF OPERATIONAL PROGRAMME 2014-2020

European Union
European Maritime and Fisheries Fund

€520 M

Data Collection

To collect the data the scientists need to improve our knowledge of the seas and the long term management of our fisheries:

Understanding and monitoring of commercial species

Dynamics of single stocks and mixed fisheries

Ecological modelling of regional basins

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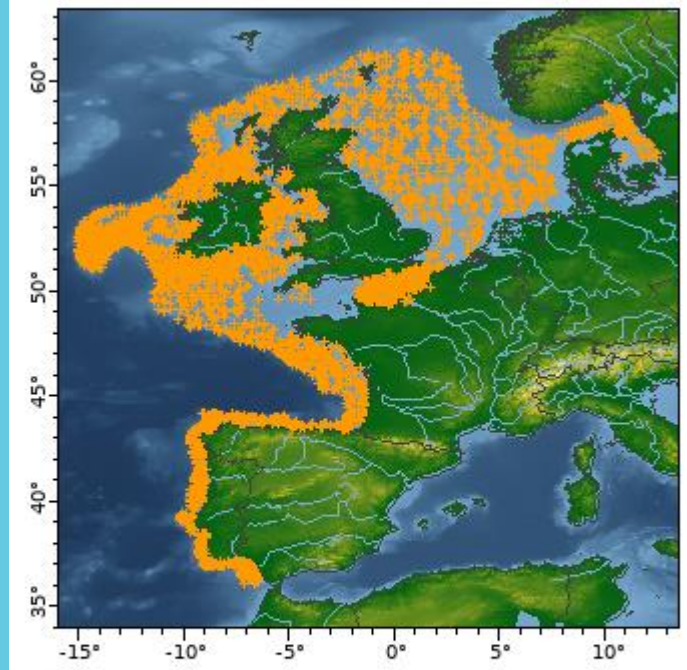
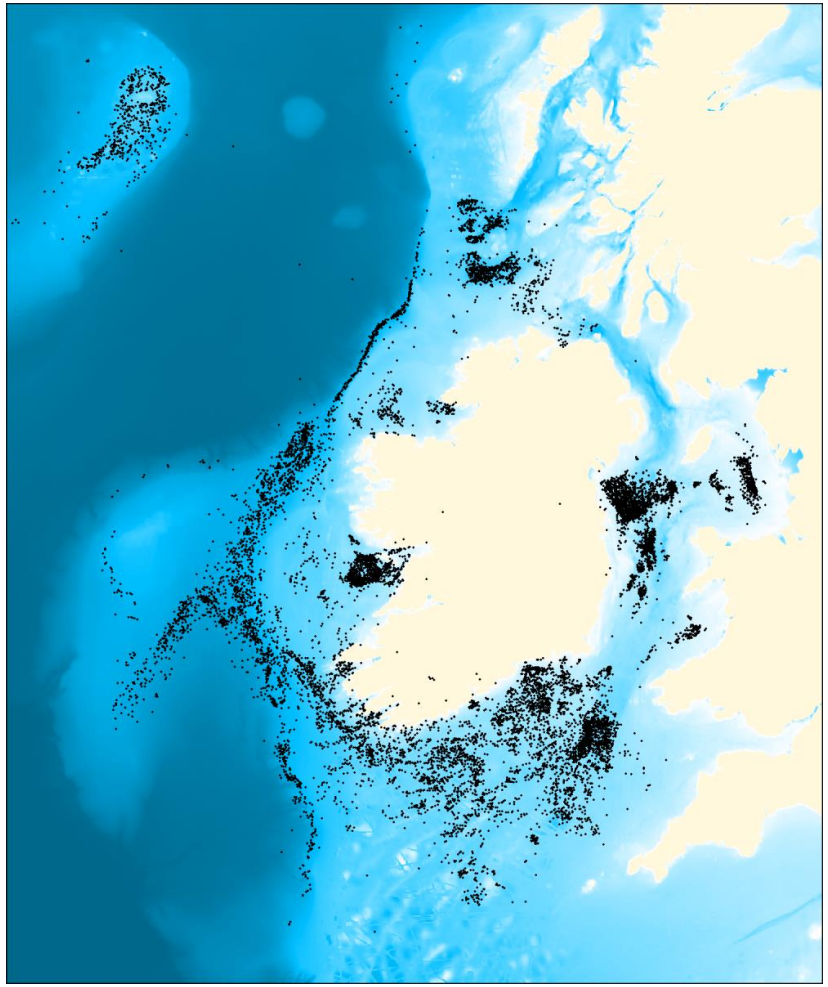
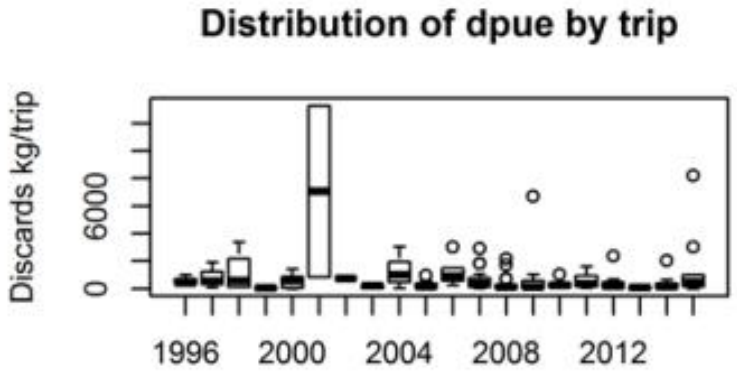
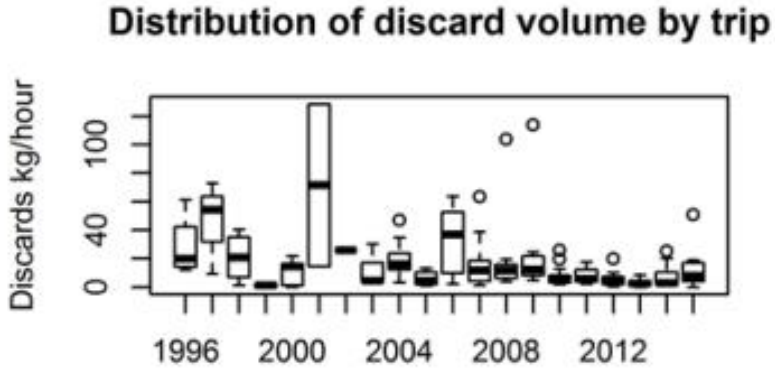
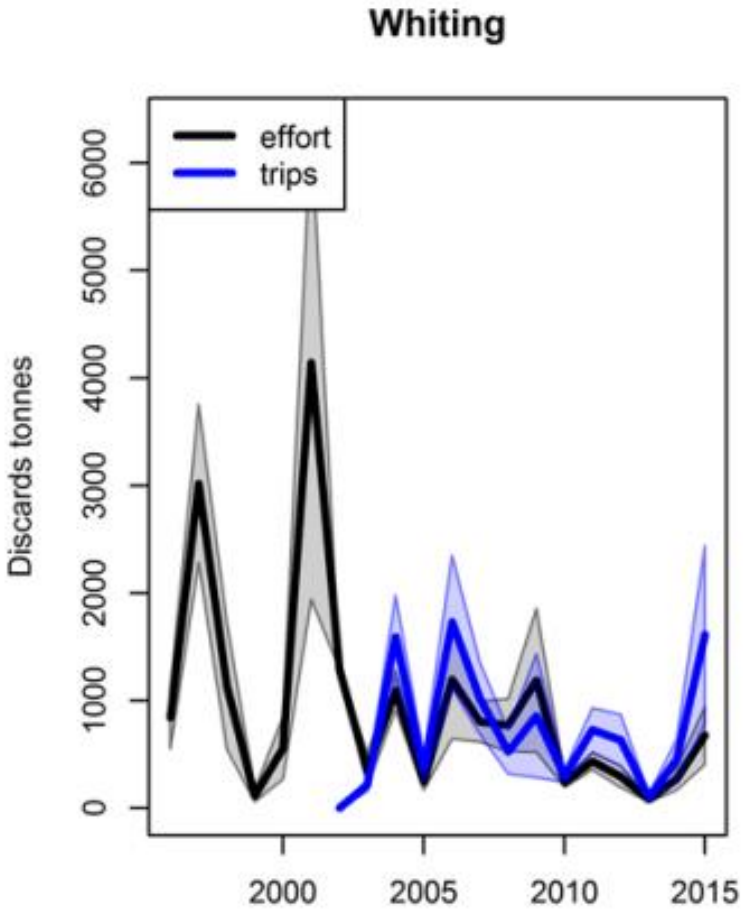


At-sea catch sampling programmes

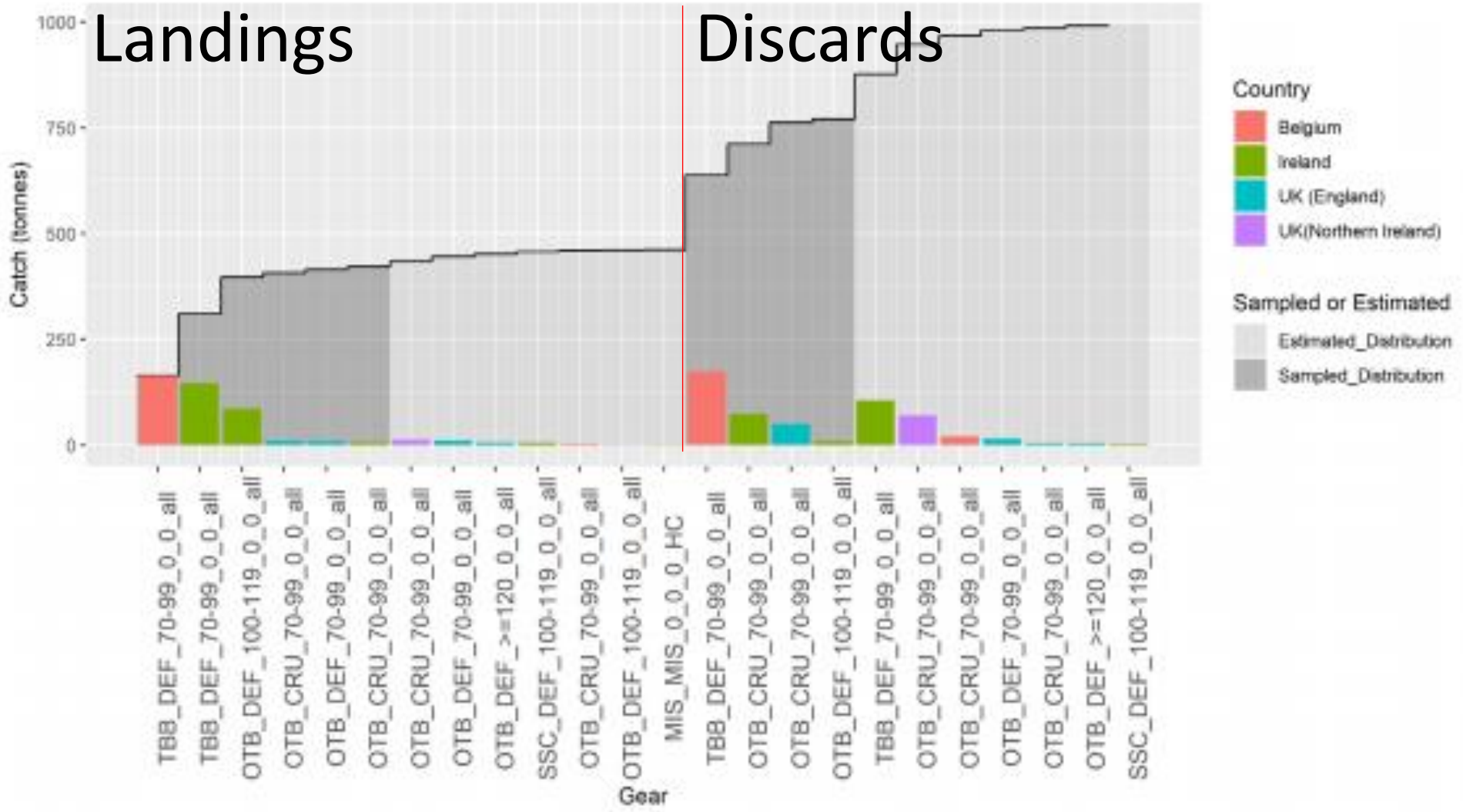






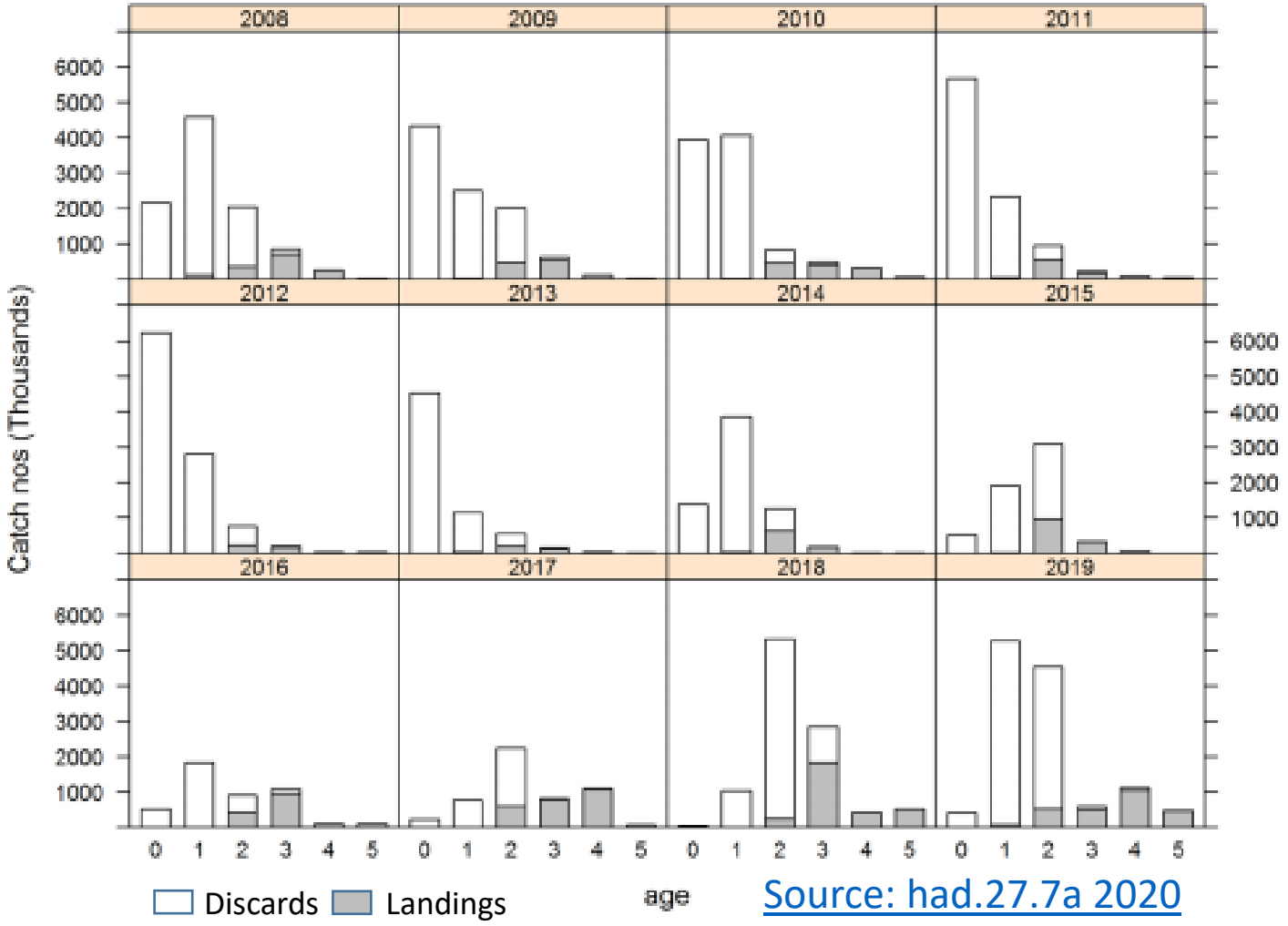


Data compilation at ICES

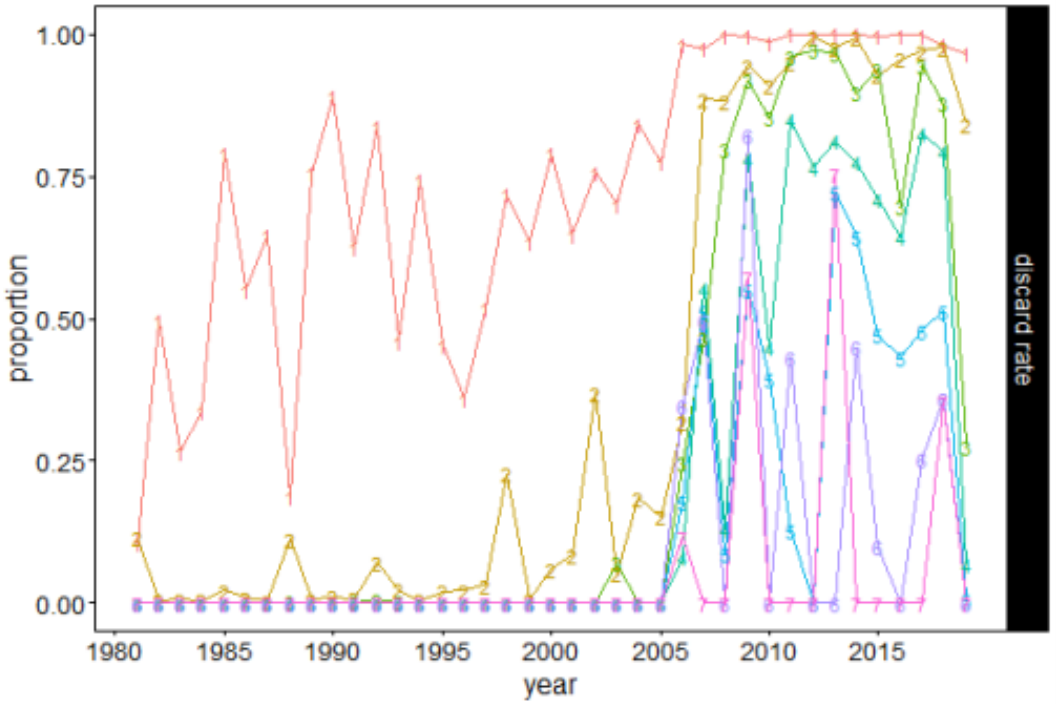


Source: Ple.27.7a 2020

Discards in Stock Assessment



Source: had.27.7a 2020

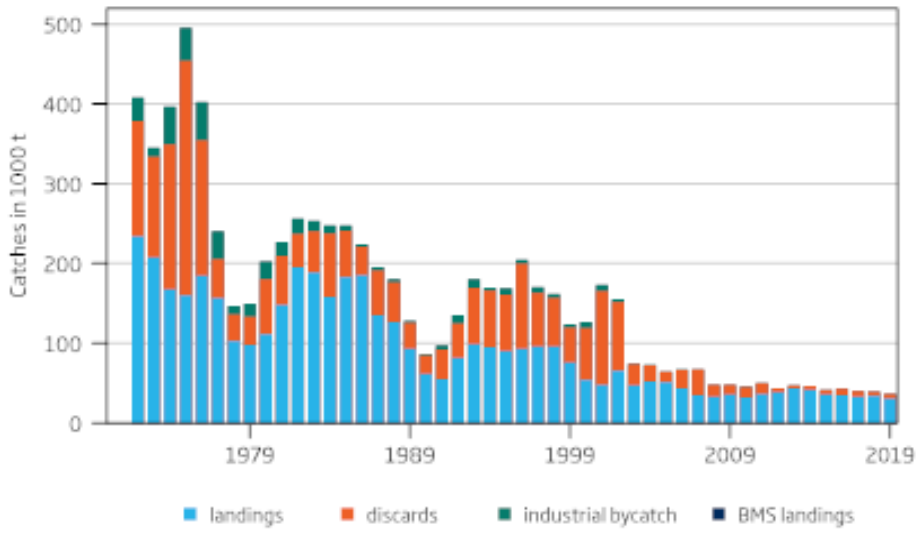


Source: cod.27.6a 2020

Haddock in the North Sea, West of Scotland, Skagerrak (4, 6.a and Subdiv. 20)

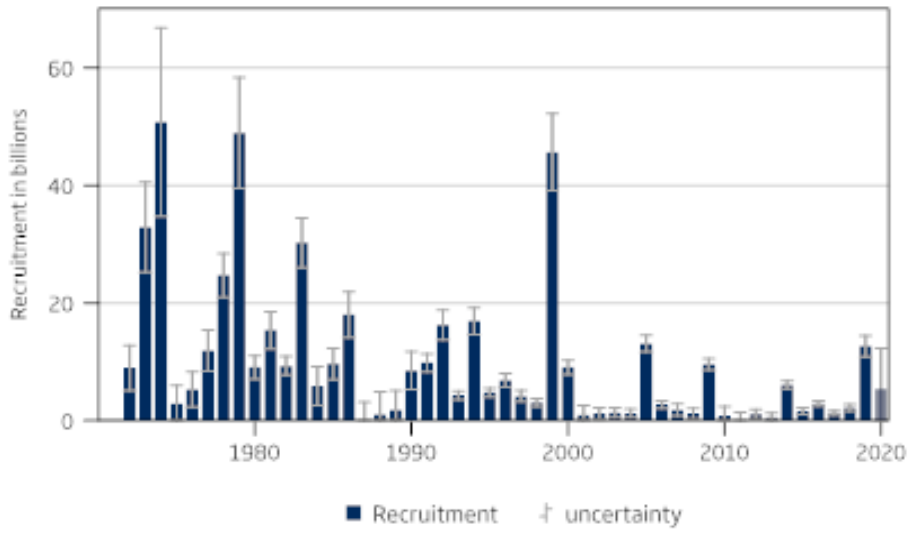
Catches

had.27.46a20_2020_13515_2020629020008



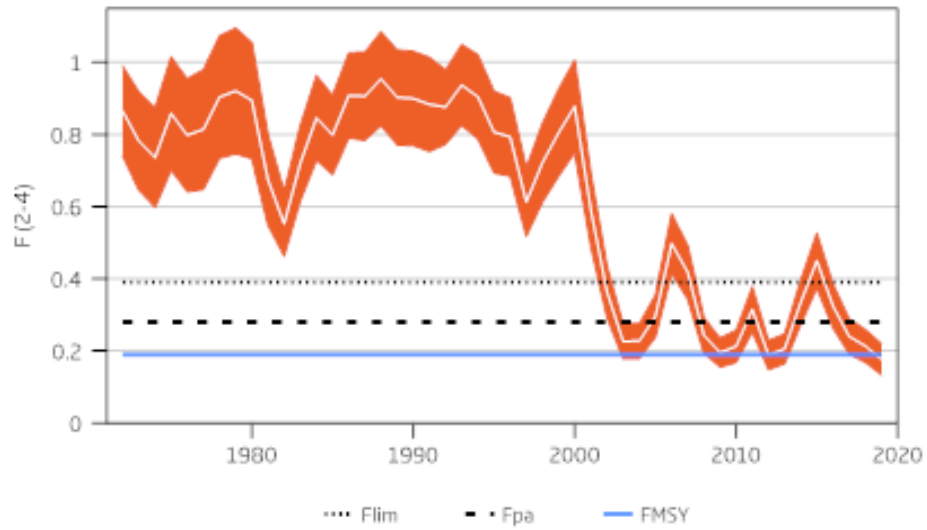
Recruitment (age 0)

had.27.46a20_2020_13515_2020629020008



Fishing pressure

had.27.46a20_2020_13515_2020629020008



Spawning Stock Biomass

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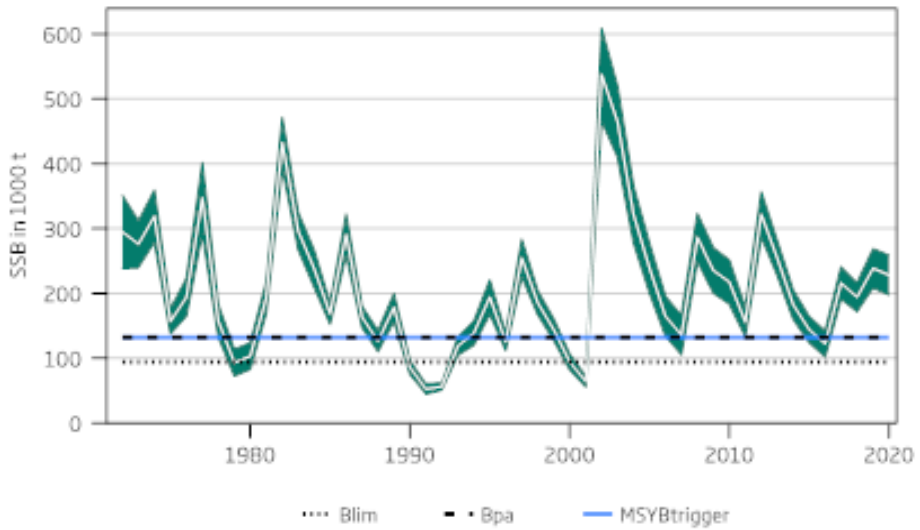
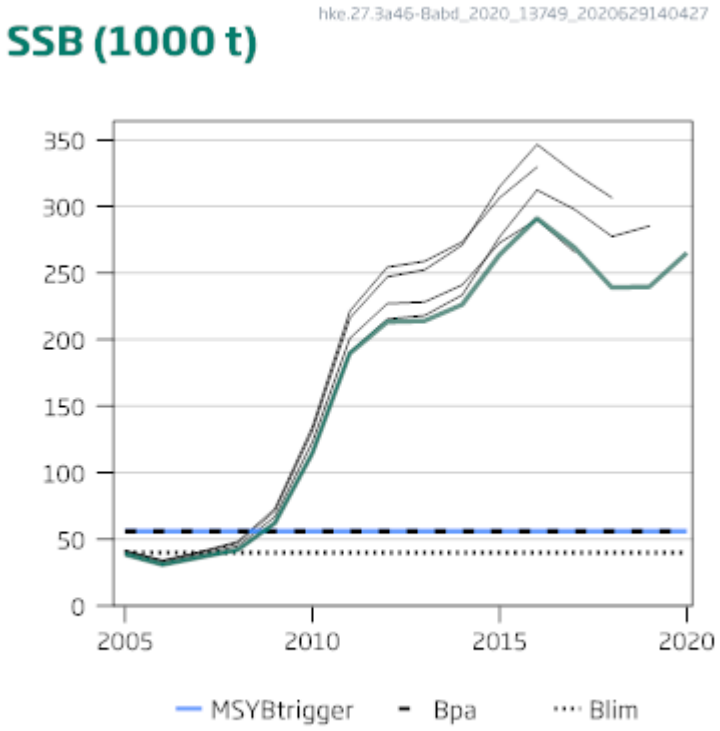
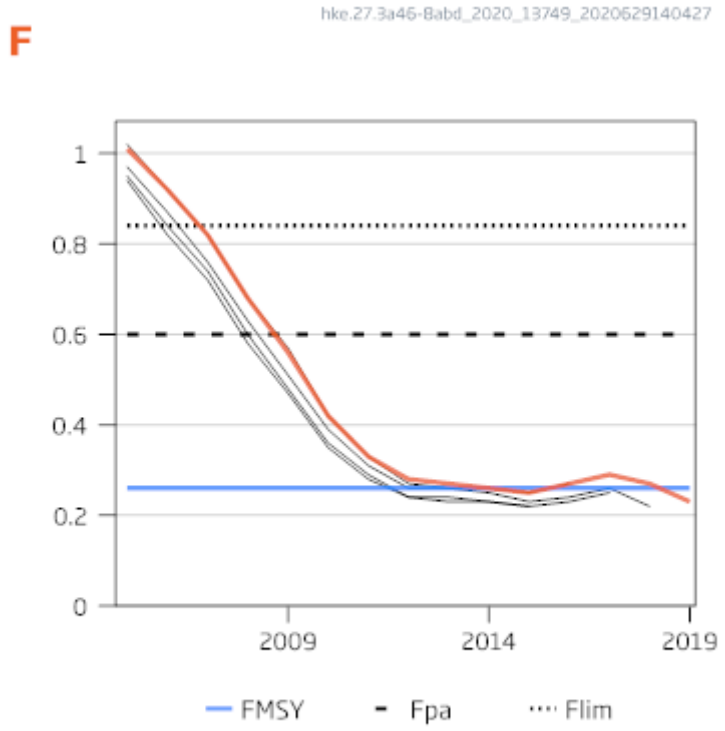


Quality of the assessment





- Accuracy of catch data (landings + discards)
- Accuracy & Precision of catch sampling data
- Many other factors….

Megrim (*Lepidorhombus whiffiagonis*) in divisions 7.b–k, 8.a–b, and 8.d

Catch scenarios

Table 2 Megrim in divisions 7.b–k, 8.a–b, and 8.d. Assumptions made for the interim year and in the forecast.

Variable	Value	Notes
F (2020)	0.21	Average F (2017–2019) (not rescaled to 2019, owing to the retrospective pattern).
SSB (2021)	111674	Assessment forecast; tonnes.
R (2020–2021)	223393	Geometric mean of recruitment (1984–2017); thousands.
Catch (2020)	20350	Based on F (2020); tonnes.
Landings (2020)	17201	Average landing rate of 2017–2019; tonnes.
Discards (2020)	3149	Average discard rate of 2017–2019; tonnes.

Table 3 Megrim in divisions 7.b–k, 8.a–b, and 8.d. Annual catch scenarios. All weights are in tonnes. Note: The % change in TAC is not computed because the TAC is for the two species (*Lepidorhombus whiffiagonis* and *L. boscii*) combined.

Basis	Total catch (2021)	Projected landings (2021)	Projected discards (2021)	F_{total} (2021)	SSB (2022)	% SSB change *	% advice change **
ICES advice basis							
EU MAP ***: F_{MSY}	19184	16454	2730	0.191	115734	3.6	−4.0
F = MAP $F_{MSY\ lower}$	12706	10911	1795	0.122	122644	9.8	−3.9
F = MAP $F_{MSY\ upper}$	27748	23756	3992	0.289	106695	−4.5	−3.8
Other scenarios							
MSY approach = F_{MSY}	19184	16454	2730	0.191	115734	3.6	−4.0
F = 0	0	0	0	0.000	136281	22	−100
F_{pa}	40123	34250	5874	0.451	93752	−16.0	101
F_{lim}	45727	38978	6749	0.533	87852	−21	129
SSB (2022) = B_{lim}	96223	80131	16092	1.871	37100	−67	382
SSB (2022) = B_{pa}	91298	76284	15014	1.649	41800	−63	357
SSB (2022) = MSY $B_{trigger}$	91298	76284	15014	1.649	41800	−63	357
F = F_{2020}	21310	18269	3041	0.210	113491	1.63	6.6

* SSB 2022 relative to SSB 2021 (111 674 tonnes)

**Advice values for 2021 relative to their corresponding 2020 values (MAP advice of 19 982, 13 218 and 28 838 tonnes respectively, others are relative to the 2020 F_{MSY}).

*** The EU multiannual plan (MAP; EU, 2019).

https://doi.org/10.17895/ices.advice.5860.

Special cases: Discard survival

Catch scenarios

Table 2 Plaice in Division 7.a. Assumptions made for the interim year and the forecast.

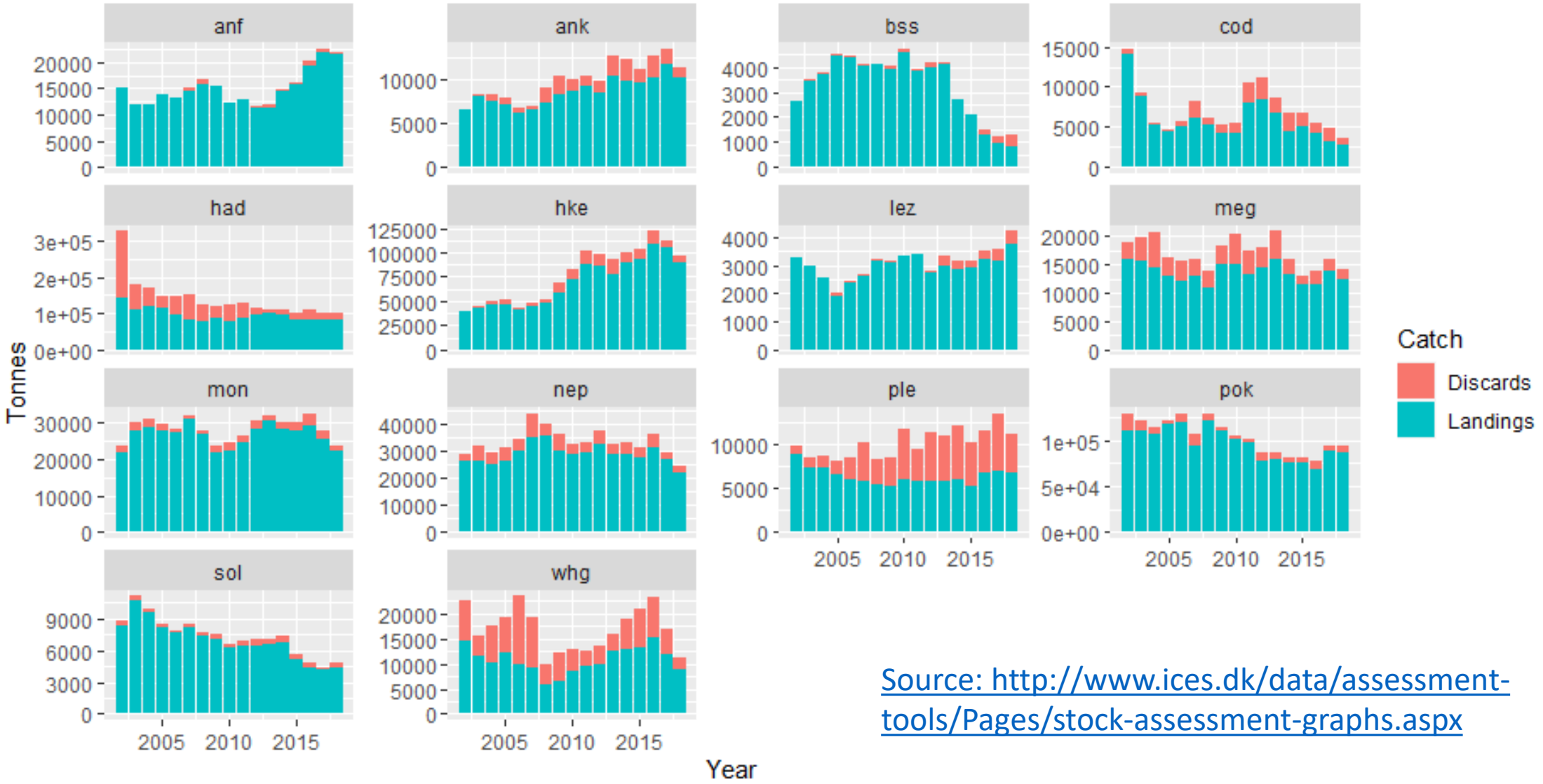
Variable	Value	Notes
$F_{ages\ 3–6}$ (2020)	0.068	$F_{sq} = F_{average}$ of F (2017–2019).
SSB (2021)	17344	Fishing at *status quo* (F_{sq}); in tonnes.
$R_{age\ 1}$ (2020 and 2021)	13989	Median resampled recruitment (2015–2019) as estimated by a stochastic projection; in thousands.
Total catch (2020)	1025	Fishing at F_{sq}, plus surviving discards; in tonnes.
Projected landings (2020)	477	Assuming average discard pattern (2017–2019); in tonnes.
Projected discards (2020)	549	Assuming average discard pattern (2017–2019); in tonnes.
Discard survival rate	40%	Catchpole *et al*. (2015).
Projected surviving discards (2020)	219	Assuming average discard pattern (2017–2019) where 40% of the discards survive; in tonnes.
Projected dead discards (2020)	329	Assuming average discard pattern (2017–2019) where 40% of the discards survive; in tonnes.

Table 3 Plaice in Division 7.a. Annual catch scenarios. All weights are in tonnes.

Basis	Total catch (2021)	Projected landings (2021)	Projected Surviving discards (2021)	Projected dead discards (2021)	Total projected discards * (2021)	F_{total} (2021)	$F_{projected\ landings}$ (2021)	$F_{projected\ discards}$ ** (2021)	SSB (2022)	% SSB change ***	% advice change ^
ICES advice basis											
F_{MSY}	2846	1323	609	914	1523	0.196	0.047	0.149	16219	−6.5	−50

Overview of Demersal discards in Northwestern Waters

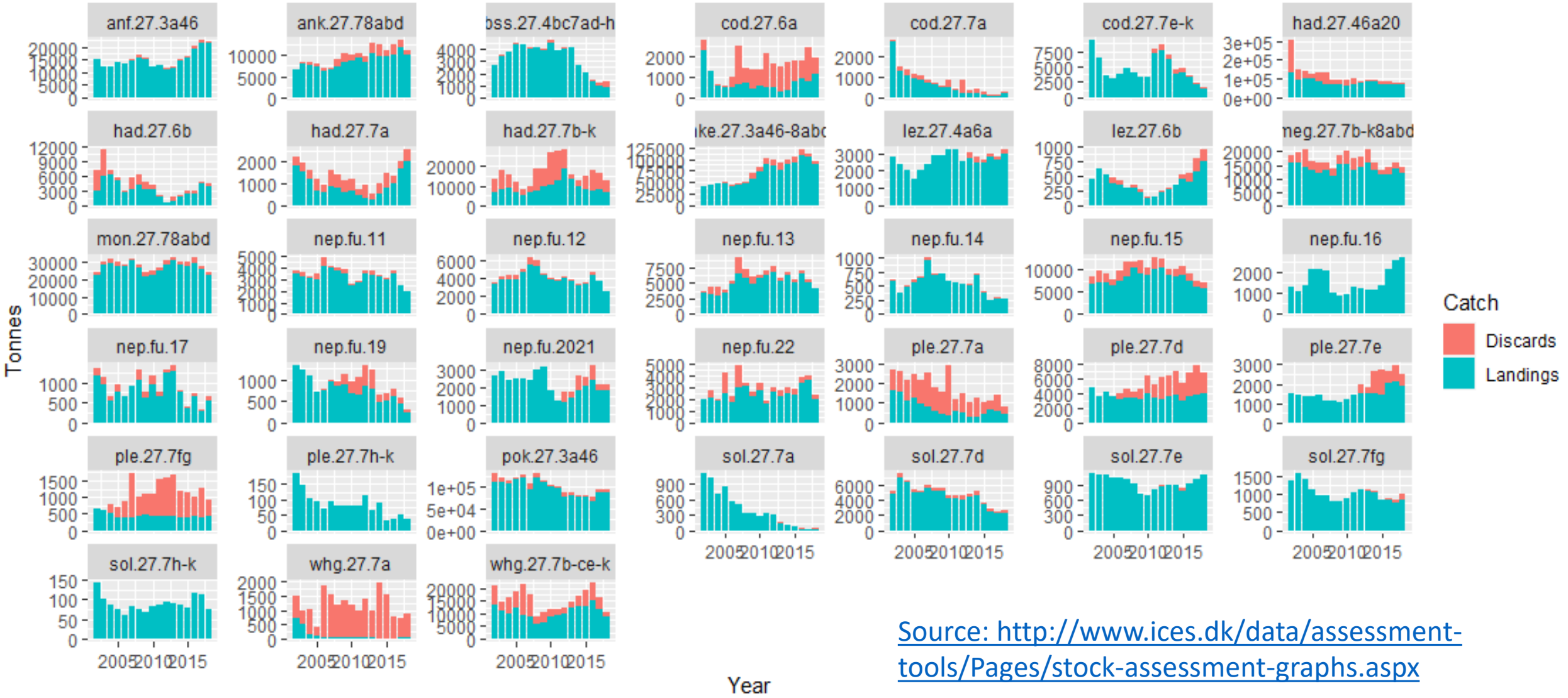
By species



Source: http://www.ices.dk/data/assessment-tools/Pages/stock-assessment-graphs.aspx

Overview of Demersal discards in Northwestern Waters

By stock



Source: http://www.ices.dk/data/assessment-tools/Pages/stock-assessment-graphs.aspx

Future discards estimation needs

- The introduction of the LO has complicated the role of scientific catch observers.
- Variable responses across countries, fleets and time to scientific programmes.
- Further reductions in sampling levels will impact on the assessment quality This will inevitable lead to down grading of assessment categories and more precautionary advice
- Several ICES working on innovative ways to improve sampling levels e.g. Working Group on Technology Integration for Fishery-Dependent Data, **Workshop on Standards and Guidelines for Fisheries Dependent Data**

Thank you for your attention!

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