Behind the curtains – Using expert interviews to evaluate the problem of overfishing from different perspectives

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The COD PROBLEM

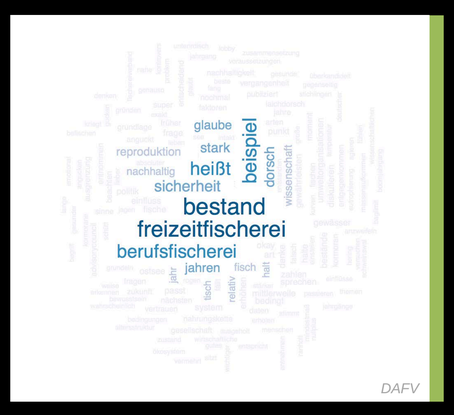
Decades of overfishing have negatively affected the productivity and especially the resilience of Western Baltic cod to environmental changes. One of the reasons for overfishing is a suboptimal management resulting from non-transparent interests of involved stakeholders such as politics, eNGOs and commercial fisheries. Conflicts between these stakeholders lead to mutual distrust and unaccepted management decisions. To contribute to a better management of the Western Baltic cod stock (*Gadus morhua*), knowledge on the perception and judgment of participating stakeholders with regards to ecology, management and communication is needed.

The INTERVIEWS

In total, we conducted 13 structured expert interviews with German stakeholders from politics, administration, eNGO, tourism, science, fisheries and recreational fisheries. The guided interviews were based on questions focusing on the conflict fields ecology, management, communication and solving approaches. To test the similarities and differences between the stakeholders, wordclouds and multidimensional scaling (MDS) were applied.

We assume the greatest similarities between stakeholders from the same interest group (IG), whereas the greatest differences are expected between stakeholders from different IGs.

The WORDCLOUDs



- ***Berufsfischerei* (commercial fisheries) occurs in a 100% of the interviews and presents with ~ 78% the word with the highest frequency in each interview**
- **~ 56% of all interviews stated *Freizeitfischerei* (recreational fisheries) in various frequencies**

- *Fisheries*
- *Recreational fisheries*
- *Nature conservation*
- *Science*
- *Politics & administration*
- *Tourism*

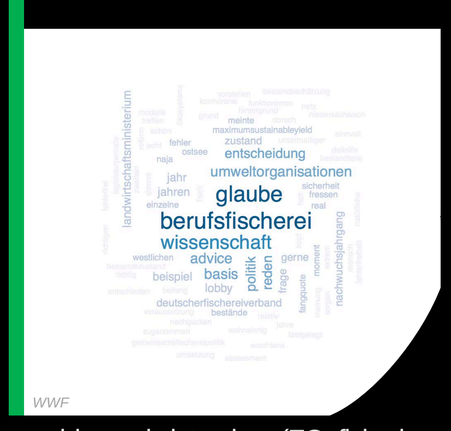


Fig. 1: Related to 12 questions from interviews, wordclouds presenting the relative frequency of words (size, colour), that occurred in each interview (FC=fisheries cooperative, DFV=Deutscher Fischerei-Verband, EGOH=Entwicklungsgesellschaft Ostholstein, BUND=Bund für Umwelt und Naturschutz, WWF=Worldwide Fund for Nature, MELUND=Ministerium für Energiewende, Landwirtschaft, Umwelt, Natur und Digitalisierung SH, DAFV=Deutscher Angelfischerverband). A word needs to be mentioned at least two times to be represented in the wordclouds.

The SCALING

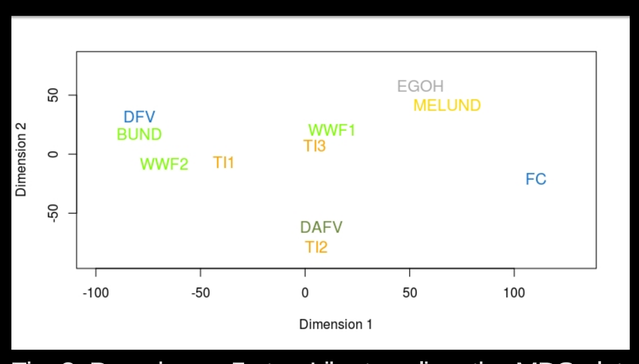


Fig. 2: Based on a 5-step Likert scaling, the MDS plot (multidimensional scaling) shows the comparison of various interest groups related to 5 selected questions from the interviews. (blue = fisheries, darkgreen = recreational fisheries, green = nature conservation, yellow = politics, orange = science, grey = tourism).

- **The use of the method wordcloud is well suited for visualisation of text and primary data analysis. Furthermore, the MDS plot directly visualizes the strength of similarities between stakeholders.**
- **However, to make a statement about which stakeholders are most closely related in the questions of the management of Western Baltic cod further analysis is needed.**

With the methods of *MDS* and *wordcloud* we showed:

- **Stakeholders from different interest groups differ in their perception and valuation on the topic related to Western Baltic cod.**
- **Contrary to our assumption, stakeholders of the same interest group do differ as well.**

The AREA

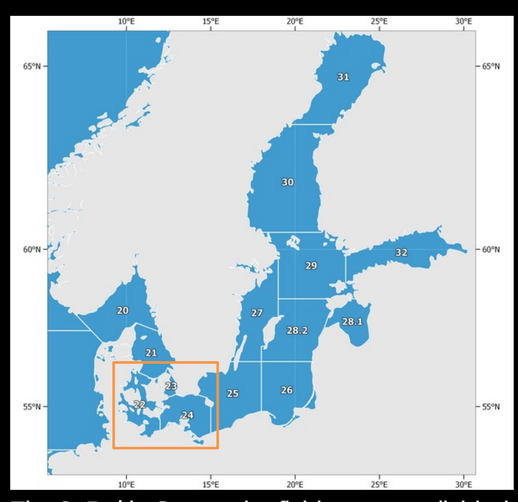


Fig. 3: Baltic Sea major fishing areas divided by the FAO. (Source: FAO 2018)