

Priority research areas for evaluating ecosystem consequences of a discard ban

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Summary

Elucidating ecosystem effects of discarding will require that data are collected in such a way that enables detection of ecological changes occurring prior to and after the discard ban is implemented. The priority areas highlighted require different types of information related to (1) catch monitoring, (2) ecosystem surveys, including scavenging birds, fish and invertebrates and (3) fishing distribution.

Introduction

The underlying aim within the reform of the Common Fisheries Policy's (CFP) landing obligation is to end the wasteful discarding of valuable marine resources and to facilitate recovery of fish populations. Discard of landed fish is already banned in Norwegian EEZ. The CFP also aims to integrate the ecosystem-based approach to fisheries management, which entails ensuring that all negative impacts of fishing activities on the marine ecosystem are minimised. While the landing obligation and the CFP seek to ensure that fishing practices do not harm the ability of fish populations to reproduce through more selective fishing practices and the phasing out of the practice of discarding unwanted fish, the ecosystem consequences of landing previously discarded organisms were not directly addressed. WGECO has addressed this shortcoming by recommending priority research areas to determine the ecosystem consequences of the landing obligation.

Material and Methods

Discard estimates are available from STECF database, based on data from the DCF data call. Details on sampling and analysis can be found in the report produced by the STECF Expert Working Group (STECF, 2013).

Results and Discussion

The relative contribution of extracting additional biomass in the form of otherwise discarded organisms will have consequences for the populations from which their extracted, scavenger species that feed on discarded organisms and secondary responses in the ecosystem. With the introduction of the landing obligation, the amount of discarded fish and invertebrates is expected to decrease considerably. A direct consequence of banning discards may therefore be the potential creation of a food shortage for scavenging species. The effect of this shortage depends on the ability of the scavengers to compensate by switching to other food sources and on the changes in conversion efficiency of their food. This may limit the direct effects on these species, but may also cause unpredictable cascading effects on other species through increased predation or competition. Given that the extent and direction of changes in the fishery are unknown at present and that the knowledge of the potential trophic responses to such a dramatic reduction in discards is very limited, the expected effects of a landings obligation on the ecosystem can only be described in very broad terms.

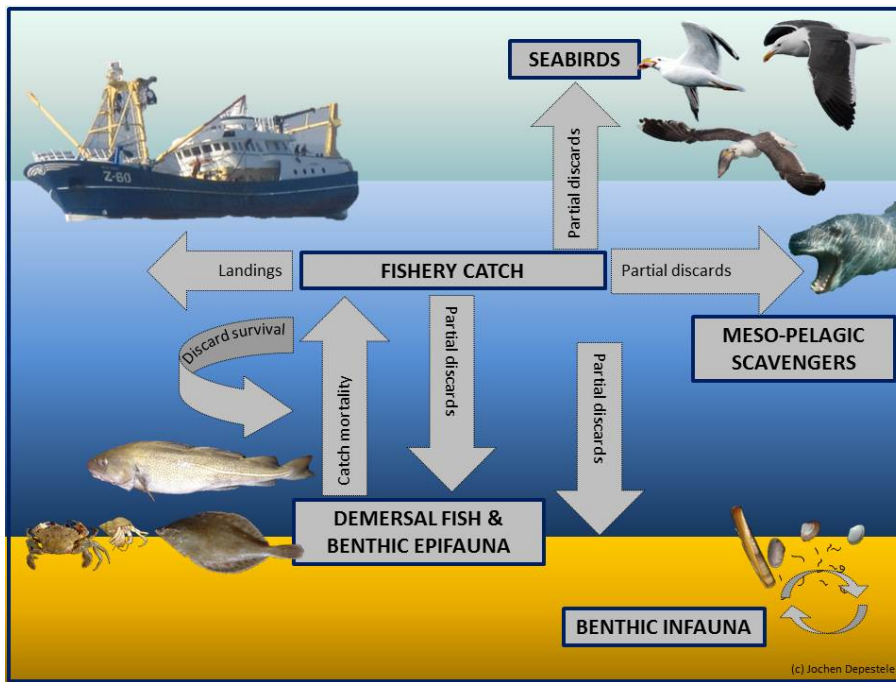


Figure 1. Schematic representation of the endpoints of fishery catches. Discarded organisms can be landed, or discarded. The fate of discards can be the consumption by scavenging seabirds and meso-pelagic scavengers. When they are not consumed, they reach the seafloor at the advantage of benthic scavengers or they survive the capture-and-discard process and return to the fish or invertebrate community.

Fisheries generate carrion as a result of material discarded. As discarding has been ongoing for decades, communities may have developed that are reliant on discards as a food source (Kaiser and Hiddink, 2007). In general, the fate of discarded organisms has only been the topic of limited investigations (Wassenberg and Hill, 1990; Figure 1) and it is unclear e.g. whether the increases in the population sizes in scavenging seabirds partially attributed to discarding practices (Votier *et al.*, 2004) might be mirrored in changes in populations of meso-pelagic and benthic scavengers. Elucidating these and other possible ecosystem effects of discarding will require that data are collected in such a way that enables detection of ecological changes occurring prior to and after the discard ban is implemented.

It is key for the assessment of ecosystem consequences of the landing obligation that data on non-commercial species and other bycatch continue to be collected in catch monitoring systems and that cost-effective methods are developed to carry out such monitoring. It is also important to establish a comparison between the current, baseline information and the altered situation after the implementation of the discard ban from other data sources than fisheries catches. Survey data from locations with low and high discard rates and/or fishing effort are needed, as is a good sampling scheme for scavenging species. Monitoring should take account of possible changes in fishing behaviour as a result of the landing obligation, e.g. spatial and temporal fisheries distribution.

References

- Kaiser, M.J., and Hiddink, J.G. 2007. Food subsidies from fisheries to continental shelf benthic scavengers. *Marine Ecology Progress Series*, 350: 267–276.
- Scientific, Technical and Economic Committee for Fisheries (STECF) – Landing obligation in EU fisheries (STECF-13-23). 2013. Publications Office of the European Union, Luxembourg, EUR 26330 EN, JRC 86112. 115 pp.
- Votier, S.C., Furness, R.W., Bearhop, S., Crane, J.E., Caldow, R.W.G., Catry, P., Ensor, K., Hamer, K.C., Hudson, A.V., Kalmbach, E., Klomp, N.I., Pfeiffer, S., Phillips, R.A., Prieto, I., and Thompson, D.R. 2004. Changes in fisheries discard rates and seabird communities. *Nature*, 427: 727–730.
- Wassenberg, T.J., Hill, and B.J. 1990. Partitioning of Material Discarded from Prawn Trawlers in Moreton Bay. *Australian Journal of Marine and Freshwater Research*, 41: 27–36.