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Discards monitoring in the Gillnet Sole Fishery

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The Gillnet Sole Fishery Study Group monitored discards since 2011. This document describes results from the self-sampling.

No observer trips in the Dutch Sole Gillnet Fishing have taken place under the EU data collection framework (DCF). Under the DCF The Netherlands are obliged to sample ten gill net fishing trips. However, it is not specified which type of gill net fishing trips should be sampled, i.e. no target species is specified. In 2011 observers only went on board gill net trips in which cod was targeted. In 2012, up to November 2012, no observer trips were carried out in these fisheries.

Self-sampling

In the period April-September 2012, seven fishermen sampled their catch during in total 114 fishing trips. The fishers counted discards by species in three segments: in the beginning, middle and end of the net. By default, they sampled 3 times 100 meters, if there were a lot of discards they sampled 3 times 50 meters. The numbers of discards by species were registered on EU logbook forms, where also total landings by trip were registered (see the protocol – in Dutch – in Annex 1). The data were combined in an excel sheet and sent to IMARES where the data were processed.

Results

In total, data from six vessels and 110 trips were used in the analyses (Table 1). From vessel 7 (4 trips) no information was available on total landings. Therefore the numbers of discards could not be standardised, neither could the landings composition be presented in a chart.

It was unknown which length of net was sampled by the vessels. For one vessel only we know that 3 times 50 meters were sampled. To avoid under-estimation of numbers of discards, we assume that all vessels sampled 3 times 50 meters of net by trip. Another assumption is that all fishers actually sampled three parts of the net: in the beginning, middle and end of the total net. It was not confirmed to IMARES that they actually did. The net lengths that are known, vary from 2000-15000 meters. To calculate the total number of discards by trip, the values presented below would need to be multiplied by a factor 13 (for 2000 m) up to a factor 100 (15000 m).

The results of the analyses are presented in Table 1, Figure 1 and Annex 2. The discards presented in Table 1 are total numbers by species by sampled part of the net for each trip. Total net length was not available for each trip, therefore it was impossible to convert these numbers to totals per trip. As soaking time was also not available, we cannot give any information on the dependency of numbers of discards on soaking time. In order to standardise the discard numbers, we calculated numbers of discards by landed weight. The results are presented in Figure 1.

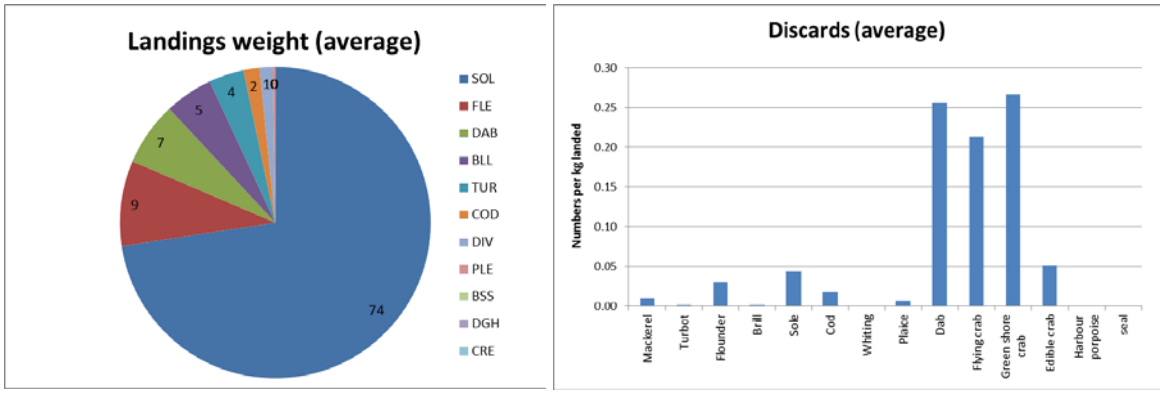
On average, sole is the most abundant species in the landings of these gill net fishers (Figure 1, Annex 2). The most abundant species in the discards are dab, flying crab and green shore crab (Figure 1, Annex 2). Both landings composition and numbers of discards vary substantially between vessels (Annex 2). There is also a lot of variation between trips: figures showing that are not included in this document.

The results of the self-sampling can be compared to data from an observer who carried out a number of discards monitoring trips on board two gillnet vessels targeting sole (Den Heijer, 2012): the results of confirms the presence of dab and several species of crab in the discards.

Table 1. *Data by vessel: number of trips, total landed weight of all sampled trips and number of discards by species in the sampled parts of the net.*

		Landings (kg)	**Discards by species (numbers)**													
Ship	*Trips*	*Total of all species*	*Mackerel*	*Turbot*	*Flounder*	*Brill*	*Sole*	*Cod*	*Whiting*	*Plaice*	*Dab*	*Flying crab*	*Green shore crab*	*Edible crab*	*Harbour porpoise*	*Seals*
1	25	78	0	0	0	0	0	0	0	0	1	4	3	4	0	0
2	22	88	0	0	2	0	0	3	0	0	15	5	25	3	0	0
3	9	64	2	0	2	0	5	0	0	0	0	29	18	0	0	0
4	44	132	0	0	1	0	1	0	0	1	13	7	5	2	0	0
5	4	131	1	0	1	1	0	1	0	4	22	0	0	0	0	0
6	6	59	0	0	8	0	0	0	0	0	9	0	0	0	0	0
7	4	?	0	3	1	3	2	0	0	7	3	6	0	4	0	0
total	**114**	**553**	**3**	**3**	**14**	**3**	**8**	**4**	**0**	**13**	**63**	**51**	**52**	**13**	**0**	**0**

Figure 1*. Results expressed in averages over all trips. Left: landings composition in kilograms. Species: SOL=sole, FLE=flounder, DAB=dab, BLL=brill, TUR=turbot, COD=cod, DIV=various, PLE=plaice, BSS=sea bass, DGH=dogfish, CRE=edible crab. Right: number of discards in 3x50 meters sampled net, by kilogram of landed weight. Based on 110 fishing trips from April-September 2012.*



Discussion

The fact that seven gillnet fishermen sampled their catch during 114 trips is a good development. Up to 2011, hardly any discard data were available. It is very expensive to carry out discards monitoring with observers and because vessels in the Dutch gillnet fishery are relatively small, it is not always feasible having observers on board. Self-sampling is a worthy alternative, if some conditions are met.

One condition is the possibility to verify results. For verification of results from a self-sampling scheme, another data source is required. For the Dutch Sole Gillnet Fishery this data source can either be (preferably:) Electronic Monitoring, which includes the use of video camera's (CCTV; Dalskov and Kindt-Larsen, 2009) or observer trips. At the moment, there are no vessels with onboard cameras. In general, it is difficult and expensive to set-up a representative observer scheme. The observer trips carried out by Den Heijer in 2012, are a good start. For IMARES it is impossible to assess the quality of the work carried out by the observer, therefore we cannot make certain statements about the results.

Because IMARES was only involved in setting up the protocol for the self-sampling and analysing the data, IMARES cannot guarantee the validity of the results. Furthermore, parts of the needed information was missing (net length, soaking time, length of sampled net), resulting in difficulties when interpreting the information.

The results presented in this document give some insight in catch composition and amount of discards in the Dutch sole gillnet fishery. In each of the catch sampling schemes described in this document, no distinction was made between dead or alive discards. It is impossible to give an indication of the proportion of discards that survive the fishery. So far, IMARES assumes that practically all animals are dead at the moment they are discarded.

Recommendations

Apart from the need to validate the data, in order to improve the self-sampling scheme, we recommend that:

- participants get together to make sure they all carry out the sampling protocol in the same way. The person analysing the data should be present as well;
- participants are instructed to register all required information, including soaking time, total net length and length of the sampled net;
- the unit of discards is standardised to numbers per hour and 1000 meters net.
- results from the self-sampling are cross-checked with other sources of information on discarding, preferably based on monitoring data from independent observers or onboard cameras.

References

Dalskov,J. and Kindt-Larsen, L., 2009. Final report on Fully Documented fishery. DTU Aqua report no. 204-2009. Charlottenlund: 49p.

Den Heijer, Willem Ment, 2012. By catch sampling in the Dutch gill-net fishery for North Sea Sole. Scheveningen, September 2012.

Annex 1. Protocol self-sampling gillnet fishery

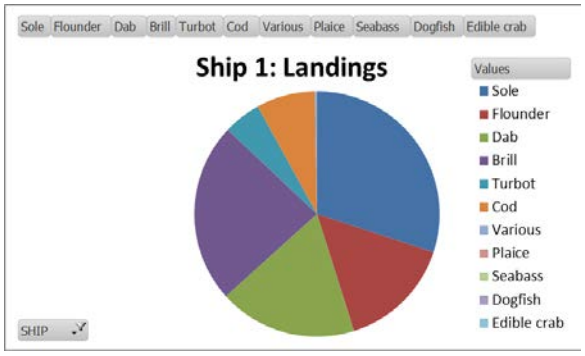
A. Meeldijk, B. Couperus en M. Kraan - september 2011

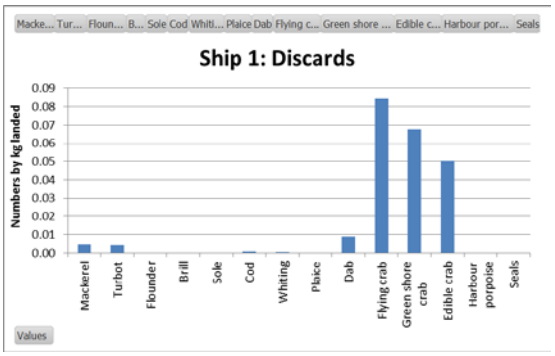
- Naast het invullen van de vangst op het logboek, dienen nu ook de discards genoteerd te worden.
- Discards moeten onderscheiden kunnen worden van aan te landen soorten. Dit doen we door voor de soortnaam een **D** op te schrijven. (zie voor de meeste soorten lijst onderaan)
- Discards zijn al die vissen en krabben die de visser normaal overboord zou gooien of in zijn net zou laten zitten, dus ondermaatse commerciële vissen, krabben en vis die wel gevangen is maar niet aangeland wordt.
- Per vis-sessie worden **3 stukken net van 100m** bemonsterd, 1 aan het begin, 1 in het midden en het laatste stuk van het net. Bij het binnenhalen van het net wordt dus meteen bemonsterd.
- Als er zeer veel discards in zitten (bijvoorbeeld omdat er 'in de schar gelopen' is) kan volstaan worden met 3x50 m net te tellen. Als er niet zoveel discards zijn dan 3x100 m net. Dit besluit wordt genomen tijdens het tellen in het eerste stuk net. GEEF DIT DAN AAN MET '50m' BIJ OPMERKINGEN IN HET LOGBOEK. Als dat er niet staat gaan we uit van 100m net.
- De discards moeten opgeschreven worden **in aantallen**, dus niet in kilo's. Tel het aantal stuks in het net, turf ze per soort en noteer het totaal aantal stuks op het logboek.
- LET OP: alle interacties met bruinvis moeten ook opgeschreven worden!

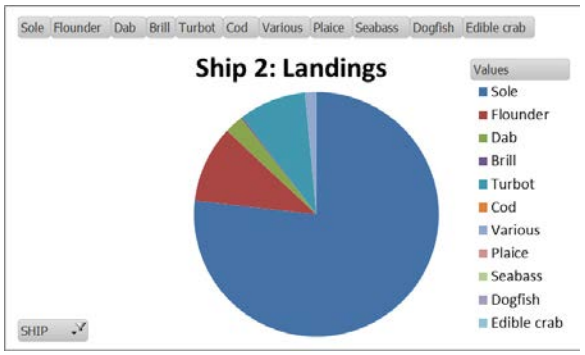
Vis / benthos soort	**Code vissoort**	**Discards**
Makreel	MAC	DMAC
Tarbot	TUR	DTUR
Bot	FLE	DFLE
Griet	BLL	DBLL
Tong	SOL	DSOL
Kabeljauw	COD	DCOD
Wijting	WHG	DWHG
Schol	PLE	DPLE
Schar	DAB	DDAB
Zwemkrab	CAD	DCAD
Strandkrab	CAN	DCAN
Noordzeekrab	NCAD (CRE)	DNCAD
Bruinvis		PHO
Zeehond		SEAL

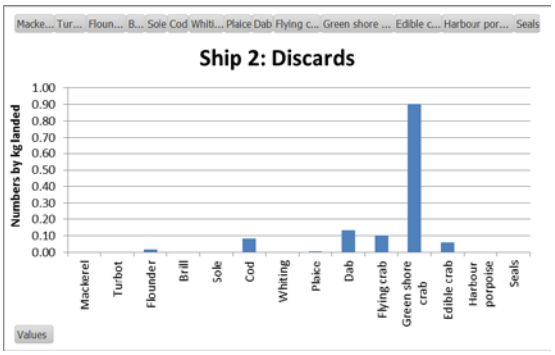
Annex 2. Results by vessel

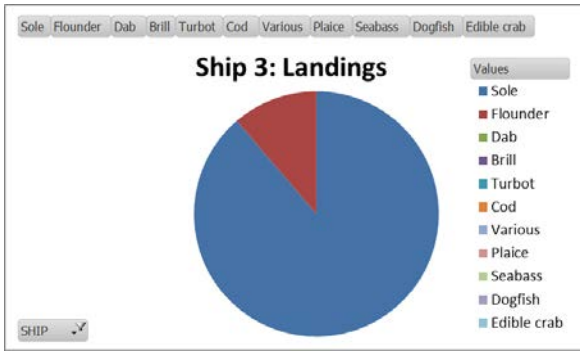
- Left: Landings composition by vessel, averaged over all sampled trips.
- Right: Number of discards by kilogram of landed weight. Note that only discards in the sampled part of the net are included, i.e. ~3 times 50 meters of net.

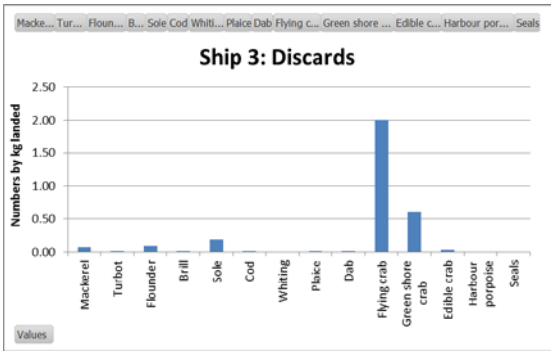


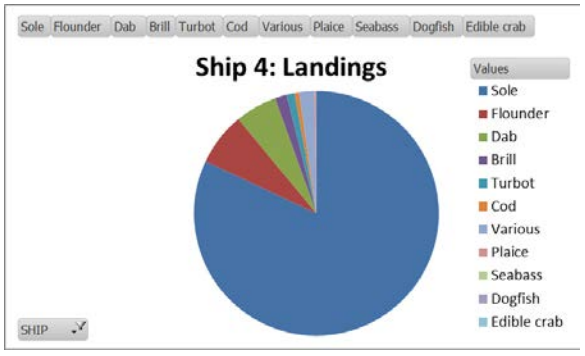


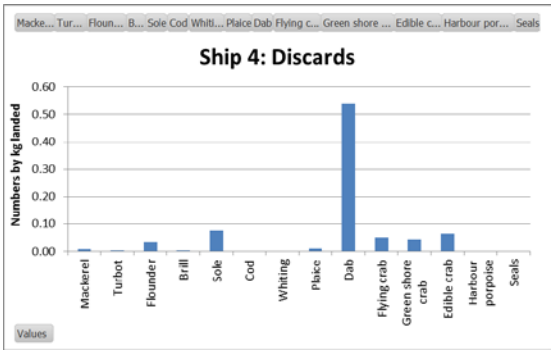


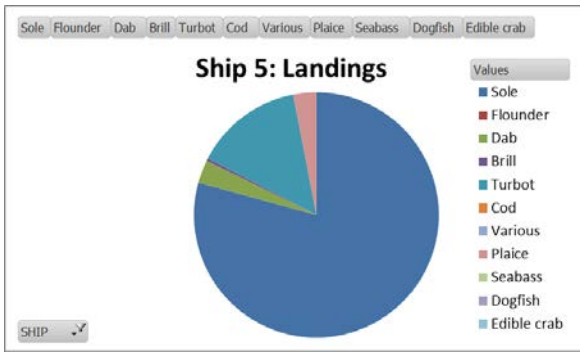


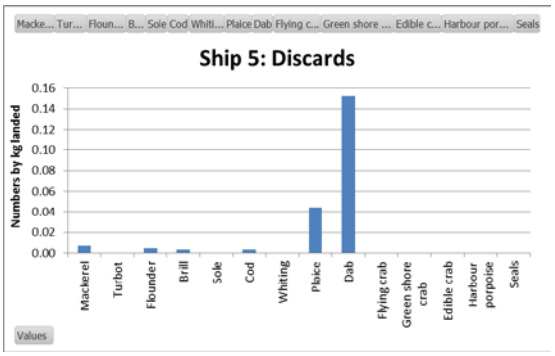









Sole Flounder Dab Brill Turbot Cod Various Plaice Seabass Dogfish Edible crab
Ship 5: Landings
Values
Sole
Flounder
Dab
Brill
Turbot
Cod
Various
Plaice
Seabass
Dogfish
Edible crab
SHIP


Macke... Tur... Floun... B... Sole Cod Whiti... Plaice Dab Flying c... Green shore ... Edible c... Harbour por... Seals
Ship 5: Discards
Numbers by kg landed
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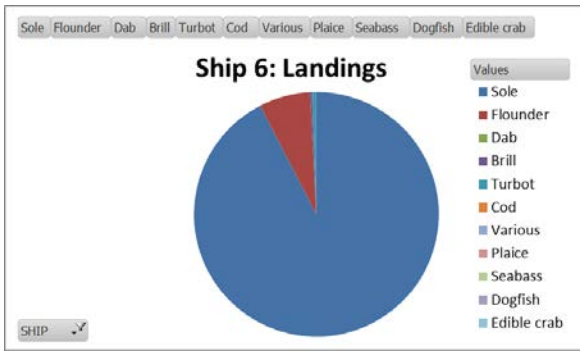
0.12
0.10
0.08
0.06
0.04
0.02
0.00
Mackerel
Turbot
Flounder
Brill
Sole
Cod
Whiting
Plaice
Dab
Flying crab
Green shore crab
Edible crab
Harbour porpoise
Seals
Values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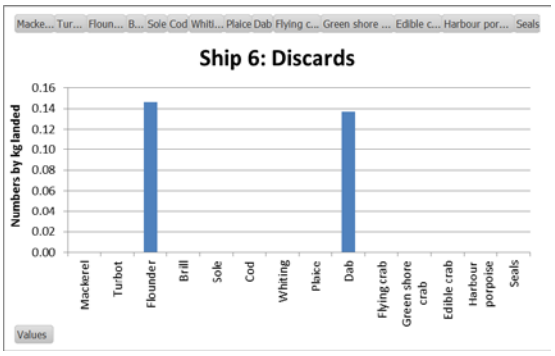
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Seals
Values