

**Stichting Wageningen Research  
Centre for Fisheries Research (CVO)**

**Annual report on the implementation of Council  
Regulation (EC) No 812/2004 – 2017**

A.S. Couperus

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# **Stichting Wageningen Research Centre for Fisheries Research (CVO)**

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A.S. Couperus

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## **Annual report on the implementation of Council Regulation (EC) No 812/2004<sup>1</sup> – 2017**

**Member State: Netherlands**

**Reference Period: 2017**

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<sup>1</sup> Council Regulation (EC) No 812/2004 of 26.4.2004 laying down measures concerning incidental catches of cetaceans in fisheries and amending Regulation (EC) No 88/98.

Article 6 of the Regulation,

*1. Each year, Member States shall send the Commission, by 1 June, a comprehensive annual report on the implementation of Articles 2, 3, 4 and 5 during the previous year. The first report shall cover both the remaining part of the year following the entry into force of this Regulation and the entire year that follows.*

*2. On the basis of the observers' reports provided according to Article 5(3) and all other appropriate data, including those on fishing effort collected in application of Council Regulation (EC) No 1543/2000 of 29 June 2000 establishing a Community framework for the collection and management of the data needed to conduct the common fisheries policy, the annual report shall include estimates of the overall incidental catches of cetaceans in each of the fisheries concerned. This report shall include an assessment of the conclusions of the observers' reports and any other appropriate information, including any research conducted within the Member States to reduce the incidental capture of cetaceans in fisheries. When reporting on the results of scientific studies or pilot projects as provided for in Articles 2(4) and 4(2), Member States shall ensure that sufficiently high quality standards are reached in their design and implementation and shall provide detailed information concerning those Standards to the Commission.*

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## Summary

This report contains the results of the on-going monitoring programme on the incidental bycatch of cetaceans in Dutch pelagic fisheries in 2017. EU Council Regulation 812/2004 requires observer coverage in ICES areas VI, VII and VIII in the period 1 December – 31 March (fleet segment NLD003) and outside this area in all areas year round (fleet segment NLD004). In the Dutch situation the monitoring is integrated with the collection of catch data under the EC Data Collection Regulation 199/2008 and Decision 93/2010.

In 2017, during 10 fishing trips, 71 days and 210 hauls were observed in fleet segment NLD003, and 78 days and 192 hauls were observed in fleet segment NLD004. With a total number of fleet days of 388 in fleet segment NLD003 and 776 in fleet segment NLD004, the coverage was 18.3% and 10.1% respectively. Thus the target of the Pilot Monitoring Scheme (PMS) of 10% for NLD003 and 5% for NLD004 has been fulfilled. In addition to these trips, two more observer trips were carried out on board of foreign flagged trawlers which makes the total number of monitored trips by the Netherlands twelve. The observer effort on board foreign trawlers consisted of 27 days (62 hauls), covering approximately 13.4% of the total Dutch monitoring effort. The data collected during the trips on foreign flagged vessels will be made available to the ICES database on incidental bycatch.

The observed bycatch rate of 0.00 dolphins per day in the pelagic fishery in 2017 is in line with the findings in 2006 - 2016 when the observed bycatch rate was 0.00-0.01 dolphins per day.

In addition to cetaceans, this report includes information on incidental bycatches of mega fauna species listed in Table 1D of EU Decision 2016/2051. Seven blue fin tuna (*Thunnus thynnus*) were caught in five incidents by the NLD003 and NLD004 fleet segments in 2017; one grey seal (*Halichoerus grypus*) was caught in one incident; four porbeagles (*Lamna nasus*) were caught in 4 incidents; one thresher shark (*Alopias sp.*) was caught in one incident.

This report also presents the results of 3 monitoring day trips in set gill nets fishery and 2 day trips in trammel net fishery. In one of the gill net trips, 2 guillemots (*Uria aalge*) and 4 red throated divers (*Gavia stellata*) were caught.

Since January 2017 the monitoring of all protected species is implemented in the new Data Collection Framework (DCF). The national data on bycatch will be provided in a yearly data call from ICES WGBYC including data on bycatch of cetaceans presented in this report.

# ACOUSTIC DETERRENT DEVICES

## 1 General Information

EU regulation 812/2004 obliges the use of pingers in set gill net and drift net fleet segments. According to the criteria mentioned in the regulation, the Dutch fishery includes no fleet segments in which pingers are mandatory.

## 2 Acoustic Deterrent Devices

### 2.1 Mitigation measures

The use of pingers is obligatory in ICES sub area IV for vessels larger than 12m in the period 1 August till 31 October, using nets that do not exceed 400m length (the regulation intends to cover set nets fishery at wrecks, where relatively short net lengths are being used). The vast majority of the Dutch set gillnet fleet fishes in this period for sole with much longer nets.

## 3 Monitoring and assessment

### 3.1 Monitoring and assessment of the effects of pinger use

If some vessels are required to use pingers, this is not registered or known by governmental authorities, nor are the fishermen aware that they should use pingers. Most probably, no acoustic deterrents are in use by Dutch gill net fishers. This would be against the EU Council Regulation 812/2004. However, the number of vessels larger than 12m fishing on wrecks (that is with nets that not exceed 400m) is most likely very low if not zero.

# OBSERVER SCHEMES

## 4 General information on implementation of Articles 4 and 5

Council Regulation No 812/2004<sup>2</sup> obliges Member States to monitor bycatches of cetaceans in certain fisheries, certain periods of the year and in certain European Waters and to report the results of the monitoring to the European Commission. In the Netherlands, the monitoring is commissioned by the Ministry of Agriculture, Nature and Food Quality to Wageningen Marine Research (WMR). The aim of this study is to assess the incidental bycatch of cetaceans in the Dutch pelagic fisheries.

Under the regulation the following fleet segments in the Netherlands should be monitored:

- Pelagic fishery in the period of 1 December till 31 March in ICES areas VI, VII and VIII; in this report referred to as fleet segment NLD003 for single pelagic vessels.
- Pelagic fishery in European waters during the year excluding the fishery in the period 1 December till 31 March in ICES areas IV, VII and VIII; in this report referred to as fleet segment NLD004 for single pelagic vessels.

The regulation does not require monitoring of fishery with set gill nets in ICES area IVc where (most of) the overall fishery activity from Dutch ports takes place. However, observer effort in set gill net fishery is reported here, because gill nets are known to be relatively sensitive for incidental bycatch of cetaceans and the regulation encourages the execution of pilot studies in other fleet segments.

Under the regulation, a coverage should be reached leading to a CV of the bycatch estimate of 30% or less. However, in a situation where there are very few bycatch incidents, this CV is not realistic (ICES 2009). Therefore, the target of the current monitoring programme in the Netherlands is to cover the fleet effort according to the Pilot Monitoring Scheme (PMS), in the Regulation originally set for the first two years. The required pilot coverage is 10% (effort fishing days) for the period of 1 December till 31 March in ICES area VI, VII and VIII and 5% in the remainder of the year with exclusion of fleet segment NLD003. In the Dutch situation the monitoring is integrated with the collection of catch data through scientific observers under the EU Data Collection Framework: CD 2010/93<sup>3</sup> and CR 199/2008<sup>4</sup>. The project under this regulation aims at an overall coverage of approximately 10% fishing effort (days) in European waters and includes pelagic trawlers under foreign flag, which land the catch in Dutch ports. Data collected under EC. Reg. 812/2004 on board of these vessels are sent to the scientists responsible for the execution of the national monitoring programs in their countries.

Earlier studies on the incidental bycatch of cetaceans have been reported by Couperus (1995; Couperus 1997a) covering the period 1992 -1996. The period 2004 – 2016 is covered by standard reports on the implementation of EC Regulation 812/2004.

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<sup>2</sup> Council Regulation (EC) No 812/2004 of 26.4.2004 laying down measures concerning incidental catches of cetaceans in fisheries and amending Regulation (EC) No 88/98

<sup>3</sup> Commission Decision 2010/93 of 18 December 2009 adopting a multiannual Community programme for the collection, management and use of data in the fisheries sector for the period 2011-2013 (extended to 2016)

<sup>4</sup> COUNCIL REGULATION (EC) No 199/2008 of 25 February 2008 concerning the establishment of a Community framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the Common Fisheries Policy



Monitoring of bycatch of cetaceans is conducted by of the Centre of Fisheries Research (*Centrum voor Visserijonderzoek: CVO*) on behalf of the Ministry of Agriculture, Nature and Food Quality. CVO hires WMR staff to carry out the observer trips and to prepare the report.

**Difficulties:** In the observer programme for the pelagic freezertrawler fleet, the observer effort is spread quasi random over the year. Annually, 12 trips are sampled, homogenously distributed (monthly) over the year. Vessels are selected in cooperation with the pelagic fishery companies. Each company is asked to accommodate 3-4 observer trips in each year. The selection procedure is ad hoc, and, therefore not considered random. The fishing area is not a consideration in the stratification of sampling trips. The choice of fishing area and target species is usually a last minute decisions of the owner of the vessel, and may even alter during the trip itself. Therefore, it is impossible to foresee or plan the exact effort in the area that has to be monitored under EC Regulation No 812/2004.

The fact that the sampling programme includes the monitoring of vessels that are fishing under foreign flag and land in Dutch ports, adds to the unpredictability of the coverage of the Dutch fleet segments. As mentioned above, the Dutch observer effort on board foreign trawlers was 13.4% in 2017, which has a negative effect on the coverage of the Dutch trawlers. In 2016 this effect was even stronger when the Dutch observer effort was 59%.

## 5 Monitoring

### 5.1 Description of fishing effort and observer effort in towed gear

In 2017 the pelagic freezer trawler fleet fishing in EU waters consisted of 17 freezertrawlers of which 8 fished under Dutch flag. The remaining 9 fished under German (4 vessels), French (2 vessels), UK (1 vessel), Faroese (1 vessel), and Litanian (1 vessel) flag. The freezertrawlers fishing from December to March in ICES sub areas VI, VII and VIII are labelled fleet segment NLD003. Fleet segment NLD004 are the same freezertrawlers fishing in area's I-XIV all year round. The single set of pair trawlers under UK flag did not fish in 2017 (in reports till 2007 the freezertrawlers and the pair trawlers have been treated as one fleet consisting of two fleet segments; from 2008 till 2013 they were treated as a separate fleet).

In 2017 an observer joined 10 trips fishing under Dutch flag that can be attributed to segments NLD003-NLD004, corresponding with 149 observer days. According to the national logbook database, the number of days fished by the whole pelagic Dutch flagged fleet (NLD003-NLD004) in 2017 was 1164 days. With 149 observer days the overall coverage of the Dutch pelagic fleet was 12.8%. The number of sampled hauls was 402, 210 in NLD003 and 192 in NLD004. The text table provides the effort and coverage by fleet segment:

Fleet segment	Fleet days	Observer days	Coverage required according to PMS	Coverage achieved
Pelagic trawl (NLD003)	388	71	10%	18.3%
Pelagic trawl (NLD004)	776	78	5%	10.1%
Trammel nets	45	2	0%	4.4%
Gill nets	1643	3	0%	0.2%
Set Nets (unspecified)	73	..	..	..

Table 2 provides fleet effort and observer coverage by ICES subarea.

Notice that a vessel may have visited several areas on one day which means that a day on which a vessel fished in two areas is counted as two days. Thus the sum of all days at sea is not necessarily the same as the total fishing days at sea. Observer days and fleet days during which no fishing took place are not counted as effort days. The data collected during these trips are made available to the ICES database on incidental bycatch (WGBYC Database)

In addition to the 10 trips on board Dutch flagged freezertrawlers, 2 observer trips took place on board foreign flagged freezertrawlers (27 days, 62 hauls), consisting of 13.4% of the total Dutch observer effort in the pelagic freezertrawler fishery. The data collected during the trips onboard foreign vessels are also made available to the ICES database on incidental bycatch (WGBYC Database).

## **5.2 Description of fishing effort and observer effort in static gear**

In 2017 the set gill net fishery was monitored under the DCF (see footnotes paragraph 4 ). The Dutch set gill net fleet consists of 70-100 vessels. Most of them are operated by part time fishermen. Therefore, many vessels do not fish for extended periods during the year. Some do not fish at all. Most of the vessel fish with tangle nets for sole. Part of the fleet (5-10 vessels, depending on the catches and the market) switches in winter to trammel nets, targeting cod, turbot and mixed flatfish (brill, plaice, dab, flounder). A few vessels (the exact number is unknown) may fish at wrecks with gill nets for cod or near dams for bass. A few vessels (the exact number is unknown) operate from the beach. Since most vessels are very small, trip duration is normally one day. Approximately five vessels are larger than 12m and may stay at sea overnight. Since 2017 the Dutch government aims to sample 10 trips of vessels that operate with passive gear per year without pre-stratification to net type. Sampled fleets include vessels that fish with nets, fykes, lines and traps. In 2017 nets were used in five of the 10 sampled trips of which one was a fisher who operates from the beach. This type of fishery has not been sampled before.

## **6 Estimation of incidental catches**

### **6.1 Incidental catch rates by fleet segment and target species**

In the Dutch pelagic fishery monitoring programme (fleet segment NLD003 and NLD004) and in the gill net fishery, no incidental bycatch incidents of cetaceans were reported. Incidental bycatch within the pelagic fishery programme of non-cetacean species, including birds, mammals and reptiles and fish (of fish only "megafauna" is reported here) protected under Union legislation and international agreements as listed in Table 1D of the new DCF<sup>5</sup>, consisted of 1 incident in which 1 grey seal (*Halichoerus grypus*) was caught; 5 incidents in which 7 blue fin tuna (*Thunnus thynnus*) were caught; 4 incidents with 4 individuals of porbeagle (*Lamna nasus*) and one incident in which a thresher shark (*Alopius* sp.) has been recorded as bycatch (table 4).

Some incidental bycatch incidents were recorded during the observer trips on board foreign trawlers. These data will be added to the dataset of the involved countries for the calculation of the bycatch rate. Furthermore in one of the gill net trips, 2 guillemots (*Uria aalge*) and 4 red throated divers (*Gavia stellata*) were caught.

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<sup>5</sup> COMMISSION IMPLEMENTING DECISION (EU) 2016/1251 of 12 July 2016 adopting a multiannual Union programme for the collection, management and use of data in the fisheries and aquaculture sectors for the period 2017-2019 (notified under document C(2016) 4329)

## 7 Recording of incidental catches

On board the pelagic freezertrawlers, the observer was present on the bridge during shooting and hauling of each tow. Position and time were recorded at the beginning ending of each haul. The rear window of the bridge gives a good view on the rear deck, so that most bycatches of cetaceans can be recorded from there. Any incidental bycatch, species and number of specimens must be recorded and if possible length and sex of each specimen. In some fisheries – where bycatch of megafauna is expected – netting with large meshes is used to prevent large catch items end up in the codend obstructing the entrance of the fish pump, the so called “haaienvanger” (En “shark catcher”). In these cases the crew may get rid of bycaught megafauna during hauling by zipping the part of the net open that is not yet on deck: large items which got stuck in the netting fall into the water without being recorded by the observer. The observer is instructed to check and ask for the use of this netting, but may not always be aware when it is used.

On board gill net vessels, the hauling continues over extended periods of time. Observers take length frequency samples of the fish caught during hauling. Therefore they may miss the bycaught specimens of cetaceans that drop out of the net before the net during the process of hauling. For this reason numbers presented in this report are considered to be minimum numbers. However, given the closeness of the observer to the actual hauling process on board these very small vessels, it is believed that the observed numbers are unlikely to differ from the actual numbers.

## 8 Discussion

With 18.3% coverage of fleet segment NLD003 the PMS target of 10% has been fulfilled. Also the target of 5% for the fleet segment NLD004 has been fulfilled (10.1% coverage). As explained above, the observer effort is combined with the DCF sampling following a quasi-random scheme. The observer programme is combined with the collection of catch data which aims at an overall random coverage of 10%. Therefore, the coverage in the fleet segments varies from year to year.

The fishing area of a freezertrawler trip is often not known until it leaves port and may change during the trip itself. In addition, the actual observer effort during transport towards -, from - and between fishing areas is not taken into account in this report for practical reasons. For example the assignment to metiers of sail- and search time is complicating – whereas an observer needs to be paid during the whole stay on board. The reason that this year’s coverage exceeds the PMS target with such a high degree is that the main observer effort in 2017 was on Dutch vessels. For example, more than half of the Dutch observer effort in 2016 – when the PMS target was not fulfilled - was carried out on board foreign vessels and did not add to the coverage of the Dutch fleet, but to the German and French coverage.

The recorded bycatch rate of cetaceans in the Dutch pelagic fishery is 0.00 (no cetaceans in 91 observed days), which is similar to rates found in 2005 - 2016. In the Dutch fishery, bycatches of dolphins occurred in the past mainly in the fishery for horse mackerel and mackerel west of Ireland in February and March (Couperus 1997b). The relatively low bycatch rates in 2005 – 2015 compared to the rates in the nineties are probably related to a shift in effort from the horse mackerel towards the blue whiting fishery during these two months (Couperus 2006).

As explained above the observer may miss large bycatches due to the use of a “shark catcher” to prevent large catch items ending up in the codend. Any numbers presented here should therefore be considered as minimum numbers.

Due to the high number of hauls without bycatches it is not possible to estimate the bycatch rate with any accuracy with the current observer effort. If extrapolated to the fleet the total bycatch mortality of cetaceans caused by Dutch pelagic freezertrawlers in the 2005-2017 seasons is in the order of magnitude of zero to several tens. However, data from the nineties suggest that the bycatch rate may vary, partly induced by changes in the quotas of pelagic target species (Couperus, 1997b).

In the set net monitoring programme no bycatch incidents of cetaceans were observed in 5 day trips (2 days in trammel- and 3 days in set gill net fishery). Earlier monitoring pilot studies resulted in zero bycatches in 34 day trips with gill nets for mullet and bass (Klinge 2008); 1 harbour porpoise during 48 day trips with trammel- and gill nets (Couperus *et al.* 2009); 6 harbour porpoises in 24 REM-monitoring days and zero porpoises in 6 days of Remote Electronic Monitoring (REM) for sole and 4 for bass (Helmond en Couperus 2011). Bycatch of harbour porpoises in the Dutch fishery is currently under investigation in an REM study over the period of 2012 to (start of 2017), in which 10 vessels participated. In one observation day of gill net fishery in 2017, 4 red throated divers and 2 guillemots were reported as bycatch in a fishery targeting bass from the beach, in very shallow water. This type of fishery is very different from the overall effort recorded in Dutch set gillnet fishery, which targets sole in the North Sea. The bycatch rate is therefore not extrapolated to the fleet in table 4. The fishery in which these bycatches were reported is probably more similar to recreational fisheries along the Dutch coast. In 2015 the number of licenses for recreational use of gill nets were 388 of which the majority make little or no use or the license to fish (Van der Hammen 2017). Every other year license holders are asked to participate in a voluntary survey on catch and effort. However up till 2017 participants were not asked to report incidental bycatch of mammals and birds. For the period May 2016 – April 2017, 63 recreational fishermen participated in the survey (Van der Hammen 2017).

Since January 2017 the monitoring of all protected species is implemented in the new Data Collection Framework. The national data on bycatch will be provided in a yearly data call from ICES WGBYC including data on bycatch of cetaceans presented in this report.

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## TABLES

Table 1. Pingers used in fleet segment set gill nets.

Metier	Fishing area	Pinger characteristics	Other mitigation measures
-	-	-	-

Table 2. Fleet effort and observer effort in towed gear

Fishery segment (ref in this report)	Metier	Fishing area	Total fishing effort						Total observer effort achieved						Type of monitoring*	Coverage
			No. of vessels	No. of trips	Days at sea	Months of operation	No. of hauls	Total towing time	No. of vessels	No. of trips	Days at sea	Months of operation	No. of hauls	Total towing time (min)		
NLD003	OTM small pelagic fish	27.6.a	8	14	106	1,2,3 & 12	unk	unk	2	2	25	1,2,3 & 12	64	15832	PMS	23.6%
NLD003	OTM small pelagic fish	27.6.b	2	2	3	1,2,3 & 12	unk	unk	0	0	0	1-12	0	0	PMS	0.0%
NLD003	OTM small pelagic fish	27.7.b	5	10	61	1,2,3 & 12	unk	unk	1	1	6	1,2,3 & 12	15	3970	PMS	9.8%
NLD003	OTM small pelagic fish	27.7.c	6	16	127	1,2,3 & 12	unk	unk	2	2	17	1,2,3 & 12	44	7865	PMS	13.4%
NLD003	OTM small pelagic fish	27.7.d	7	11	66	1,2,3 & 12	unk	unk	2	2	21	1,2,3 & 12	85	5130	PMS	31.8%
NLD003	OTM small pelagic fish	27.7.e	2	3	7	1,2,3 & 12	unk	unk	1	1	1	1,2,3 & 12	1	50	PMS	14.3%
NLD003	OTM small pelagic fish	27.7.h	2	4	15	1,2,3 & 12	unk	unk	0	0	0	1,2,3 & 12	0	0	PMS	0.0%
NLD003	OTM small pelagic fish	27.7.j	2	2	2	1,2,3 & 12	unk	unk	0	0	0	1,2,3 & 12	0	0	PMS	0.0%
NLD003	OTM small pelagic fish	27.7.k	0	0	0	1,2,3 & 12	unk	unk	1	1	1	1,2,3 & 13	1	345	PMS	#DIV/0!
NLD003	OTM small pelagic fish	27.8.b	1	1	1	1,2,3 & 12	unk	unk	0	0	0	1,2,3 & 12	0	0	PMS	0.0%
NLD004	OTM small pelagic fish	27.2.a	5	9	83	1-12	unk	unk	0	0	0	1-12	0	0	PMS	0.0%
NLD004	OTM small pelagic fish	27.4.a	8	32	279	1-12	unk	unk	3	4	36	1-12	95	15645	PMS	12.9%
NLD004	OTM small pelagic fish	27.4.b	8	21	84	1-12	unk	unk	3	3	15	1-12	37	5610	PMS	17.9%
NLD004	OTM small pelagic fish	27.4.c	3	5	12	1-12	unk	unk	2	2	2	1-12	3	165	PMS	16.7%
NLD004	OTM small pelagic fish	27.5.b	3	3	36	1-12	unk	unk	0	0	0	4-11	0	0	PMS	0.0%
NLD004	OTM small pelagic fish	27.6.a	6	19	162	4-11	unk	unk	1	1	3	4-11	8	1850	PMS	1.9%
NLD004	OTM small pelagic fish	27.7.b	3	4	13	4-11	unk	unk	0	0	0	4-11	0	0	PMS	0.0%
NLD004	OTM small pelagic fish	27.7.c	2	2	3	4-11	unk	unk	0	0	0	4-11	0	0	PMS	0.0%
NLD004	OTM small pelagic fish	27.7.d	7	12	53	4-11	unk	unk	2	2	18	4-11	45	4540	PMS	34.0%
NLD004	OTM small pelagic fish	27.7.e	4	9	25	4-11	unk	unk	2	2	2	4-11	2	255	PMS	8.0%
NLD004	OTM small pelagic fish	27.7.g	1	1	4	4-11	unk	unk	0	0	0	4-11	0	0	PMS	0.0%
NLD004	OTM small pelagic fish	27.7.h	1	1	1	4-11	unk	unk	0	0	0	4-11	0	0	PMS	0.0%
NLD004	OTM small pelagic fish	27.7.j	4	6	19	4-11	unk	unk	1	1	1	4-11	1	260	PMS	5.3%
NLD004	OTM small pelagic fish	27.7.j	0	0	0	4-11	unk	unk	1	1	1	4-11	1	595	PMS	#DIV/0!
NLD004	OTM small pelagic fish	27.8.b	1	1	2	4-11	unk	unk	0	0	0	4-11	0	0	PMS	0.0%

\*PMS = Pilot Monitoring Scheme

Table 3. Fleet effort and observer effort in static gear (Nets=unspecified; GNS=Set Gill Nets; GTR; Trammel Nets)

Metier	Fishing area	Total fishing effort						Total observer effort achieved						Type of monitoring*	Coverage
		No. of vessels	No. of trips	Days at sea	Months of operation	Total length of nets	Total soak time	No. of vessels	No. of trips	Days at sea	Months of operation	Total length of nets	Total soak time		
Nets	27.4.c	11	65	67	1-12	unk	unk	0	0	0	1-12	0	0	PMS	0.0%
GTR	27.4.c	2	45	45	10-12 & 1-4	unk	unk	2	2	2	10-12 & 1-4	4500	35	PMS	4.4%
GNS	27.4.b	4	6	7	1-12	unk	unk	0	0	0	1-12	0	0	PMS	0.0%
GNS	27.4.a	1	1	1	1-12	unk	unk	0	0	0	1-12	0	0	PMS	0.0%
GNS	27.4.c	86	1542	1635	1-12	unk	unk	3	3	3	1-12	22690	56	PMS	0.2%

\* PMS = Pilot Monitoring Scheme

Table 4. Bycatch rates. Incidental catch rates are expressed as in specimens/days. No incidental catch estimate is provided for GNS, because the sampled trip was not representative for Dutch set gill net effort (see main text).

Fishery segment (ref in this report)	Metier	Fishing area	Main target species	Incidental caught species	Number of incidents	Number of specimens incidentally caught by species		Incidental catch rates		Total incidental catch estimate	CV
						With pingers	Without pingers	With pingers	Without pingers		
NLD003	OTM small pelagic fish	27.7.b	Horse mackerel	<i>Thynnus thunnus</i>	2	0	3	0	0.50	30.5	152.8%
NLD003	OTM small pelagic fish	27.7.b	Horse mackerel	<i>Halichoerus grypus</i>	1	0	1	0	0.17	10.2	223.6%
NLD003	OTM small pelagic fish	27.7.d	Herring	<i>Thynnus thunnus</i>	2	0	2	0	0.10	6.3	264.2%
NLD003	OTM small pelagic fish	27.6.a	Blue whiting	<i>Thynnus thunnus</i>	1	0	2	0	0.08	8.5	489.9%
NLD003	OTM small pelagic fish	27.6.a	Blue whiting	<i>Lamna nasus</i>	2	0	2	0	0.08	8.5	339.1%
NLD004	OTM small pelagic fish	27.7.d	Horse mackerel	<i>Lamna nasus</i>	1	0	1	0	0.06	2.9	412.3%
NLD004	OTM small pelagic fish	27.7.j	Horse mackerel	<i>Lamna nasus</i>	1	0	1	0	1.00	19.0	0.0%
NLD004	OTM small pelagic fish	27.7.e	Horse mackerel	<i>Alopias</i> sp.	1	0	1	0	0.50	12.5	100.0%
GNS	Set gillnet	27.4.c	Bass	<i>Uria aalge</i>	2	0	2	0	0.67		
GNS	Set gillnet	27.4.c	Bass	<i>Gavia stellata</i>	4	0	4	0	1.33		



## Signature

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The quality of this report has been peer reviewed by a colleague scientist and the head of CVO.

Approved by:                   Drs. H.W.J. van Overzee  
Researcher



Signature:

Date:                           7 November 2018

Approved by:                   Ing. S.W. Verver  
Head Centre for Fisheries Research



Signature:

Date:                           7 November 2018