

# Overview of the Dutch recreational fisheries for ICES WGSMRF 2009

Olvin van Keeken

Internal Report 09.010



Institute for Marine Resources and Ecosystem Studies

Wageningen **IMARES**

Publication Date: May 2009

- Wageningen **IMARES** conducts research providing knowledge necessary for the protection, harvest and usage of marine and coastal areas.
- Wageningen **IMARES** is a knowledge and research partner for governmental authorities, private industry and social organisations for which marine habitat and resources are of interest.
- Wageningen **IMARES** provides strategic and applied ecological investigation related to ecological and economic developments.

© 2009 Wageningen **IMARES**

Wageningen IMARES is registered in the Dutch trade record  
Amsterdam nr. 34135929,  
BTW nr. NL 811383696B04.

The Management of IMARES is not responsible for resulting damage, as well as for damage resulting from the application of results or research obtained by IMARES, its clients or any claims related to the application of information found within its research. This report has been made on the request of the client and is wholly the client's property. This report may not be reproduced and/or published partially or in its entirety without the express written consent of the client.

A\_4\_3\_2-V6.1

# Contents

- 1 Introduction ..... 4
- 2 Dutch recreational marine fisheries..... 6
  - 2.1 Number of recreational fishermen ..... 6
    - 2.1.1 Angling..... 6
    - 2.1.2 Non angling recreational fisheries..... 7
  - 2.2 Fishing methods ..... 8
    - 2.2.1 Angling..... 8
    - 2.2.2 Non angling recreational fisheries..... 10
- 3 Earlier studies to estimate recreational catches..... 11
  - 3.1 Pilot survey for cod catches by anglers ..... 11
  - 3.2 Estimates of eel catches by recreational fishers..... 12
    - An estimate on eel catches in the Netherlands was made for recreational fishermen (Vriese et al., 2007) and commercial fishermen (Dekker et al., 2008).12
    - 3.2.1 Angling..... 12
    - 3.2.2 Non angling recreational fisheries..... 12
  - 3.3 Estimates of salmon catches by recreational fishers..... 13
    - 3.3.1 Angling..... 13
    - 3.3.2 Non angling recreational fisheries..... 13
- References ..... 14

# 1 Introduction

The new European Union commission decision of 6 November 2008 adopts a multiannual Community programme pursuant to Council Regulation (EC) No 199/2008 establishing 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 (2008/949/EC). This programme includes the collection of data for recreational fisheries:

For the recreational fisheries targeting the species listed in Appendix IV (for the Netherlands these are cod and eel in area 2, which includes the North Sea (ICES areas IIIa, IV and VIId) and Eastern Arctic (ICES areas I and II)), Member States shall evaluate the quarterly weight of the catches. The data related to annual estimates of the catches in volumes must lead to a precision of level 1, which means that it must be possible to estimate a parameter either with a precision of plus or minus 40 % for a 95 % confidence level or a coefficient of variation (CV) of 20 % used as an approximation.

Where relevant, pilot surveys shall be carried out to estimate the importance of the recreational fisheries. A pilot survey is carried out when it is not possible to define quantitative targets for sampling programmes, neither in terms of precision levels, nor in terms of sample size. Such pilot surveys shall evaluate the importance of the problem and shall also address the utility of future more detailed surveys, and the cost-effectiveness relationship of such detailed surveys.

There is an urgent need to provide Member States with guidelines for statistically robust sampling and data analysis schemes for recreational fisheries and to ensure the harmonisation of methods across geographic areas. Therefore a Workshop on Sampling Methods for Recreational Fisheries [WKSMTF] will be held in Nantes, France, 14–17 April 2009, to:

- a ) Provide a comprehensive description of the marine recreational fisheries in each ICES country including the species/stocks targeted, the potential or known magnitude of recreational catches and effort by geographic area, time period and fishing method, and the definition of appropriate reference populations of recreational fishermen for sampling;
- b ) Review the findings of existing studies on recreational fisheries including DCR Pilot Studies and their relevance for sampling schemes in other areas;
- c ) Recommend appropriate statistical sampling schemes, protocols, and associated data analysis for estimating recreational fishery removals and length/age compositions, taking account of international experience and recent methodological developments. Review potential for conducting parallel studies to establish comparability of results for different sampling schemes.

Terms of Reference (a) and (b) of the Workshop will develop an overview of the nature, magnitude and potential impacts of recreational fisheries in EU waters in the ICES and Mediterranean areas, as a basis for developing appropriate sampling schemes. Term of Reference (c) will build on the experiences gained in existing EU studies, and in countries such as the United States and Australia which have well-established recreational fishery sampling programmes, to develop generic guidelines for designing statistically robust surveys and sampling schemes for collecting data on EU recreational fisheries.

In view of its relevance to the Data Collection Regulation (DCR), the Workshop is expected to attract a wide participation from Member States in the ICES and Mediterranean areas. There will be a requirement for participants with detailed knowledge of national recreational fisheries, as well as international experts on statistical design of recreational fishery survey and sampling schemes. The Workshop will draw on the outcomes of the 2008 ASC Theme Session on Small-scale & Recreational Fisheries Surveys, Assessment, and Management. Outcomes from this Workshop will be relevant to several regional fisheries organisations and advisory bodies, including ICES, NAFO, GFCM, STECF and others.

In order for the Workshop to succeed, the following tasks need to be completed by each participating country prior to the meeting:

Preparation of a Working Document describing the recreational fisheries occurring in each ICES Division, according to fishing method groupings that could be used for defining the populations for sampling (e.g. shore fishing, private boats, charter boats). Information should be given (where known) on target and by-catch species, spatial and seasonal patterns of fishing, qualitative or quantitative information on catches, fishing effort (e.g. numbers of anglers x number of days spent fishing by method, area and time period), potential for access-point and other forms of direct catch and effort surveys, likely sources of bias, and any other factors relevant to the establishment of statistical survey and sampling schemes to estimate total effort, catches and size compositions. A pro-forma for key information will be provided to facilitate inclusion of consistent information in the Workshop report. Tables from this pro-forma can be found in the Annex of this report.

In the Netherlands recreational fisheries can be divided into angling and non angling recreational fisheries with e.g. fykes or gillnets. This report gives a description of the Dutch recreational marine fisheries (Chapter 2) and a summary (Chapter 3) of earlier studies to estimate the Dutch catches of cod by anglers (pilot study; Van Keeken et al., 2007), eel by anglers, snigglers (Vriese et al., 2007) and non angling recreational fishers (Dekker et al., 2008) and salmon by anglers and non angling recreational fishers (Jansen et al., 2008).

## 2 Dutch recreational marine fisheries

### 2.1 Number of recreational fishermen

#### 2.1.1 Angling

In the Netherlands, anglers at sea do not need to have a license. Information on the number of persons angling at sea in the Netherlands was obtained from a study by TNS NIPO in 2003 (4.673 households questioned), 2004 (11.540 households questioned) and 2006 (~30.000), conducted for the Dutch anglers organization "Sportvisserij Nederland" (NIPO 2003, 2004b; NIPO 2006 in Vriese et al., 2007). TNS NIPO estimated a total of 425.000 and 450.000 anglers fishing at sea for all species combined in 2003 and 2004 respectively, while for 2006 a total of 650.000 anglers fished at sea. No estimates were available for anglers targeting different species.

Tabel 2.1. Number of days fishing for man and woman in 2004. (From NIPO, 2004).

Number of days fishing	Man	Woman
1 – 5	72%	67%
6 – 10	15%	21%
11 – 20	3%	3%
21 – 50	4%	3%
51 and more	1%	2%
Unknown	5%	5%
Average number of days	6,05	6,23

Anglers fish either from shore or from vessels. Fishing from the shore can be divided into fishing from the natural coastline e.g. the beach, or fishing from man made structures such as e.g. piers. Fishing from vessels could be divided into small vessels (either private or commercially exploited, Figure 2.1, left) or larger commercial exploited angling vessels (Figure 2.1, right). Most anglers fish from shore or from a commercial angling vessel.



Figure 2.1. Small vessel (left) or larger commercial angling vessel (right)

## 2.1.2 Non angling recreational fisheries

For some areas along the Dutch coast (Waddensea, Eems, Dollard, Oosterschelde, Westerschelde) a license is needed to fish with nets and fykes on a recreational basis. However for the Dutch coast between Den Helder and The Hague, no license is needed. Data on the number of fishers are not available for this area. In the Waddensea, Eems and Dollard there were 436 licenses in 2007, while in the Delta (including Oosterschelde and Westerschelde) there were 563 licenses. About 80% of the licenses are used (Jansen et al., 2008). In the Waddensea about 41% of the fishers use fykes (fuike), 50% use gillnets (staand want) and 9% longline (hoekwant), while in the Delta 70% use fykes, 26% use gillnets and 4% use longline (Figure 2.2). Most fykes are set for one tide, most gill nets and long lines for one day (Figure 2.3). For a description of the gears see Chapter 2.2.2.

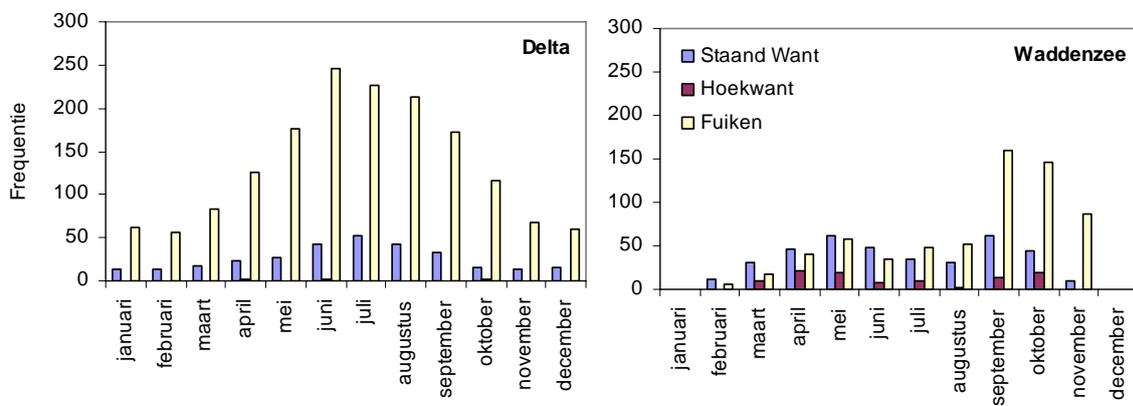


Figure 2.2. Effort of nets set in the Delta and Wadden-sea.

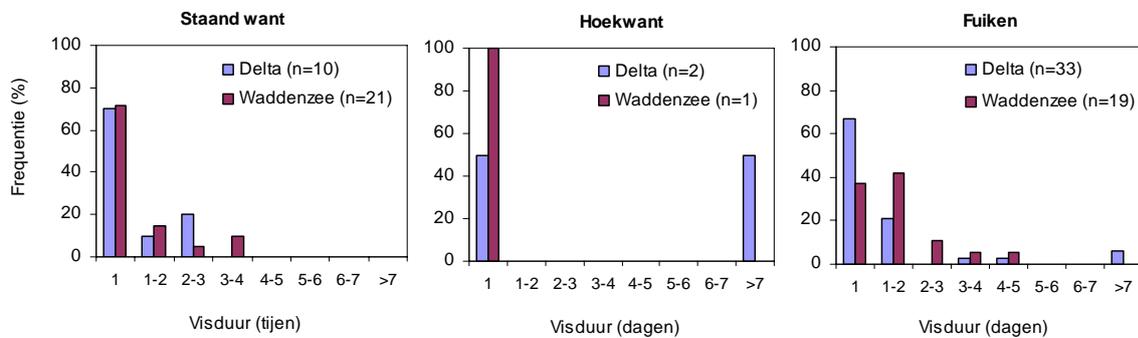


Figure 2.3. Frequency of time of nets set.

## 2.2 Fishing methods

Recreational fisheries can be divided into two major categories; angling (and snigging for eel) and non angling recreational fishing with fykes, nets and long lines.

### 2.2.1 Angling

A wide variety of marine fish are targeted by angling in the Netherlands. Of the major fish targeted, cod, whiting and dab are mainly targeted during the winter period (October-March), while other species such as sole, sea bass, eel, mackerel, mullet and garfish are mainly targeted during the summer period (May-September)

#### **Roundfish (cod, whiting)**

A popular method for catching cod is fishing near ship wrecks from either commercial or small vessels with pilkers or paternosters baited with e.g. worms or pieces of fish (Figure 2.4), which are jigged from the bottom. Whiting can be caught as bycatch.

From the shore, cod and whiting are caught with a more passive way of angling. A paternoster or a side line connected to the main line is connected to a piece of (anchored) lead, which is used for casting and keeping the bait to the bottom. The paternosters and side lines can be rigged in multiple different ways, depending on the preference of the angler.



Figure 2.4. Pilkers (left) and a paternoster with two hooks (right)

#### **Flatfish (sole, plaice, dab, flounder)**

Flatfish is fished for from the shore (beach) or from boats near shore. A lead weight with a paternoster or with one or multiple side lines, baited with lugworms or other worms, is usually used (Figure 2.5).



Figure 2.5. Rig for flatfish (left) and lugworms (right).

### Schooling fish (mackerel, herring)

Mackerel are fished for from commercial vessels or can be caught from shore during the summer, while fishing for herring is more during spring. Usually a paternoster with 3 to 6/7 hooks are used, which are rigged with white or coloured feathers for mackerel (Figure 2.6, left) or shiny plastic strips or reflective nylon threads for herring (Figure 2.6, right). Because mackerel and herring live in large schools, catches of several fish during one cast usually occur.



Figure 2.6. Feather paternoster with 5 hooks for mackerel (left) and herring paternosters (right).

### Sea bass

Sea bass are targeted from the shore (piers) or from boats using different kinds of lures such as small swim- or crankbaits, surface lures, spoons or soft baits such as shads (Figure 2.7). They can also be targeted using a float and a hook baited with e.g. crab, or using a lead weight and a side line with a baited hook.



Figure 2.7. Swimbait (left), surface lure (middle) and soft bait (right).

### Mullet

Mulletts can be found around structure such as piers or weirs and are usually targeted from the shore, using a float and a hook baited with e.g. bread, shrimps or worms. Also a floating piece a bread is used.

### Garfish

Garfish is usually swimming below the surface and are targeted with e.g. small spoons, but also with small trips of fish on a hook, which is connected to a special float. This float has a weight on the bottom and is constructed for casting.

### Salmonids (salmon and sea-trout)

Salmonids are usually bycatch species in both salt and fresh water angling for e.g. sea bass in salt water or pike and pikeperch in fresh water. However in some areas they can be targeted directly.

### Eel

In salt water, eel is usually a bycatch species but are targeted in some areas. Usually a lead weight with one or multiple side lines, baited with lugworms, other worms or small species of fish is usually used.

In fresh water, eel is targeted using a lead weight with a side line, baited with worms, cheese or small pieces of fish.

Snigging (peuren in Dutch) is a special way of angling, directed at eel. For this fishery worms are rigged on a line of several meters, tied in rings and attached to a pole (Figure 2.8). The worms are jigged above the bottom. When an eel takes the bait, the eel can be lifted out of the water and shaken off from the bait.

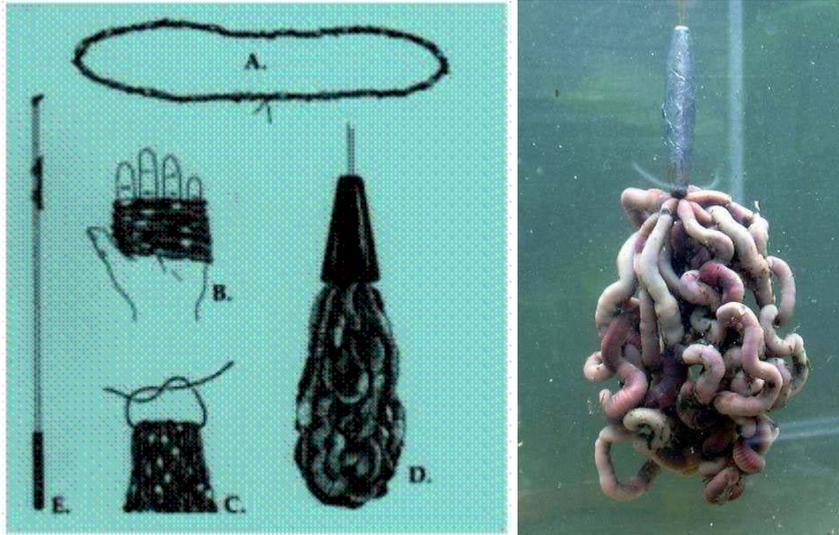


Figure 2.8. Snigging (source [ww.peuren.nl](http://ww.peuren.nl))

## 2.2.2 Non angling recreational fisheries

### **Fykes (fuiken)**

A fyke exist of two or more rings (in coastal areas restricted to a maximum diameter of 75 cm) with one or two wings (coastal areas restricted to 15 m wide and a maximum height of 75 cm). The first ring must have a net of maximum 14 cm mesh to protect seals and birds from drowning. In the Dutch coastal waters where fykes are allowed (Westerschelde, Oosterschelde, Waddenzee, Eems, Dollard), a maximum of two fykes are allowed.

### **Gillnets (staand want)**

A gillnet is a net with a weighted bottom line and a top line with floats, and a single or multifilament net between these lines, which is not moved by man power or tidal power. In the Dutch coastal waters where stand want is allowed (Westerschelde, Waddenzee, Eems), the maximum length is 30 meter.

### **Longline (hoekwant)**

A "hoekwant" is a long main line with side lines with baited hooks. A "hoekwant" is usually set for one tide. In the Dutch coastal waters where a hoekwant is allowed (Westerschelde, Oosterschelde, Waddenzee, Eems), the maximum length is 30 meter.

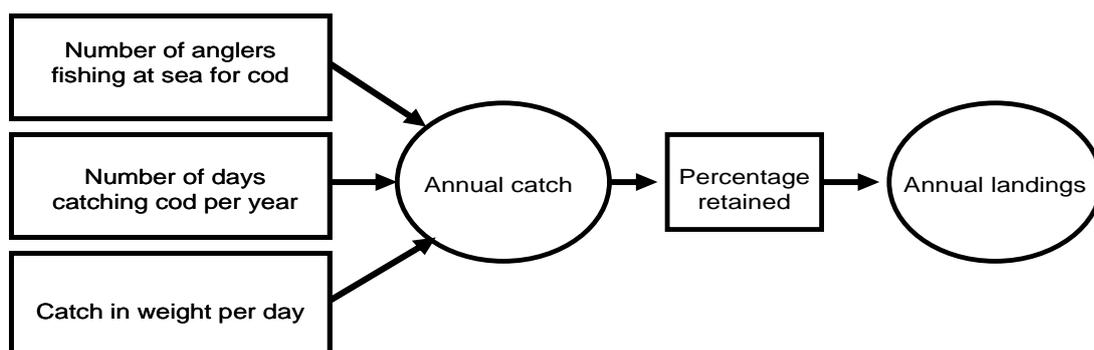
### 3 Earlier studies to estimate recreational catches

#### 3.1 Pilot survey for cod catches by anglers

In 2006 and 2007, a pilot survey was carried out for the catches of cod by recreational fisheries in the Netherlands (Van Keeken et al., 2006; Van Keeken et al., 2007). Two questions had to be addressed.

- What are the annual catches of North Sea cod in weight by recreational fishermen in the Netherlands?
- Is it possible to establish a regular monitoring program to estimate catches of cod by recreational fishermen (recreational anglers and other recreational fishermen)

For the recreational angling for cod sufficient data could be collected to estimate the catches of cod by anglers. For the other types of recreational fisheries, such as fishing with nets, insufficient data could be collected to make an estimate of the catches of cod. As a result only the annual catches of North Sea cod in weight by recreational angling in the Netherlands were estimated? Information on catches of cod was gathered through a questionnaire, a catch sheet, and through field observations. These sources gave information on the number of fishing days and catches by anglers, but not on the total number of people angling for cod at sea, which was obtained from a study by NIPO in 2003 and 2004. The total catch and total landings of cod were calculated using the overview below.



The annual number of anglers at sea was obtained from TNS NIPO (2003, 2004b) and was estimated to be between 425.000 and 450.000, of which between 20% and 25% were assumed to fish for cod, which resulted in estimates of 85.000-106.250 anglers in 2003 and 90.000-112.500 anglers in 2004 targeting cod. From the IMARES questionnaire the percentage of anglers targeting cod was over 50%, but this high percentage is due to the fact that mainly anglers targeting cod sent in their data. Because of this the percentage of anglers fishing for cod from the questionnaire was thought not to be representative for the entire population of anglers. The percentage was therefore corrected downwards.

The anglers were divided into five groups, depending on the number of days fishing per year (1-5, 6-10, 11-20, 21-50 and over 50 days fishing at sea per year). Three different main fishing methods were assumed; shore, small boat and charter vessel. The distributions of number of anglers using different methods were multiplied by the number of days per year that an angler caught cod and by the weight of cod caught per day. The weight of cod caught from a charter vessel for anglers fishing between 1-5 days a year was corrected, since the numbers from the questionnaire were much higher than those from the observations made by IMARES observers.

This calculation resulted in the annual catch of cod in the Netherlands of between 456 and 1.765 tonnes. To this catch the retain rate was applied, which was based on numbers instead of weight. Because smaller fish are usually returned that weigh less, the retain rate is an underestimate. However since no other data were available, the retain rate based on numbers was applied, what resulted in a landings weight of cod of between 264 and 1.037 tonnes.

## 3.2 Estimates of eel catches by recreational fishers

An estimate on eel catches in the Netherlands was made for recreational fishermen (Vriese et al., 2007) and commercial fishermen (Dekker et al., 2008).

### 3.2.1 Angling

Vriese et al. (2007) estimated eel catches for fresh and salt water angling. For fresh water angling they used the numbers of anglers and catches estimated by TNS NIPO (2002, 2004a). In 2002 there were 913.000 anglers above 15 years old, of which 15% took fish home. Of these 42% took on average 18 eels home. With an estimated weight of an eel of 150 gram, this resulted in 155.301 kg of eel. For 2004 these numbers were 1.050.000 fishermen, 14% taking fish home of which 49% took home 9 eels. This resulted in 131.969 kg of eel taken annually by anglers from fresh water bodies. Vriese et al. (2007) also estimated catches, using information from a questionnaire of 272 anglers. From these, a total of 114 anglers caught eel (42%) and eel home (19%). They took home 24 eel, which is higher than from the NIPO questionnaires. Taking account for 1.050.000 anglers (NIPO 2004), then 718.200 kg of eel is taken home by anglers annually from fresh water.

For angling at sea, Vriese et al (2007) estimated that 505.000 anglers took 0,3 kg of eel home annually, resulting in an estimate of 151.500 kg of eel.

### 3.2.2 Non angling recreational fisheries

An estimate of catches by commercial fishermen and non angling recreational fishermen was made by Dekker et al. (2008) but no distinction between the two groups was made, so no data could be given on eel catches by non angling recreational fishermen.

### 3.3 Estimates of salmon catches by recreational fishers

An inventory on data available on the bycatches of salmonids in the Dutch fisheries was made by Jansen et al. (2008), which included estimates of catches of salmon and sea trout in recreational fisheries. Both estimates of salmon catches for anglers and fishers with fykes and gillnets were retrieved through questionnaires.

#### 3.3.1 Angling

A questionnaire was put on the internet with questions on catches of salmon and sea trout. In total 287 persons filled in the questionnaire, of which 21 respondents caught one or more salmonids in fresh water. In total 2.4% of the respondents caught salmon while 5.6% caught sea trout. Most of these respondents were fishing for pike or were fly fishing. As with the pilot study for cod, most respondents were fishing more days a year than an average angler and were fishing with techniques that have higher change (fishing for pike of fly fishers) of catching salmonids than an average angler. Based on these numbers a total of 4.422 salmon and 21.589 sea trout is caught annually in fresh water (Table 3.1). For salt water, 4,3% of the anglers catch salmonids occasionally (NIPO 2007 in Jansen et al., 2007). With 650.000 anglers at sea for 2006, this results in about 28.000 anglers catching salmonids at sea. Not much is known about the catches.

Table 3.1. Estimates of catches in number of salmon and sea trout in fresh water in the Netherlands by angling.

	1-6 times	7-14 times	15-39 times	Over 40 times	Total
Number of anglers	557.600- <i>316.520</i> (41%)	394.400- <i>162.120</i> (29%)	285.600- <i>223.880</i> (21%)	122.400- <i>69.480</i> (9%)	<b>1.360.000- <i>772.000</i> (100%)</b>
Catch frequency					
<i>Salmon</i>	0	0	0.00	0.03	
<i>Sea trout</i>	0	0	0.01	0.13	
Total Catch					
<i>Salmon</i>	0	0	999-567	3.424-1.943	<b>4.422-2.510</b>
<i>Sea trout</i>	1.950-1.107	1.379-783	1.997-1.134	16.263-9.232	<b>21.589-12.255</b>

#### 3.3.2 Non angling recreational fisheries

A questionnaire was sent to a random selection of 219 fishers (out of 999 fishers) with a license for fishing in the Waddensea, Eems, Dollard, Oosterschelde and Westerschelde. In total 83 respondents returned the questionnaire. Catches of salmon were estimated between 85-1450 per year (Table 3.2). Because no data on fishers along the Dutch coast between Den Helder and the Hague was available, no estimate was given for these fishers.

Table 3.2 Number of licenses and catches in number per area by recreational fishermen with nets.

	Number of fishers				Catches	
	Fyke	Gill net	Hoek want	Total number	Catch per fisher	Total catch
<b>Waddensea, Eems, Dollard</b>						
Number of licenses used (83% of 436)	143	175	31	349		
<i>Salmon</i>	0%	20.8%	16.7%	41	1-25	40-1000
<i>Sea trout</i>	21.1%	29.2%	0%	81	1-10	80-800
<b>Delta</b>						
Number of licenses used (80% of 563)	327	121	19	467		
<i>Salmon</i>	3.8%	27.3%	0%	45	1-10	45-450
<i>Sea trout</i>	7.7%	9.1%	0%	36	1-10	36-360

## References

- Dekker, W., C. Deerenberg & H. Jansen. 2008. Duurzaam beheer van de aal in Nederland: onderbouwing van een beheersplan. Wageningen IMARES Rapport C041/08. Pp. 99.
- EC. 2004. COMMISSION REGULATION No 1581/2004 of 27 August 2004 amending Regulation (EC) No 1639/2001 establishing the minimum and extended Community programmes for the collection of data in the fisheries sector and laying down detailed rules for the application of Council Regulation (EC) No 1543/2000.
- EC. 2008. COMMISSION DECISION of 6 November 2008 adopting a multiannual Community programme pursuant to Council Regulation (EC) No 199/2008 establishing 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 (2008/949/EC).
- Jansen, H.M., H.V. Winter, I. Tulp, T. Bult, R. Van Hal, J. Bosveld & R. Vonk. 2008. Bijvangst van salmoniden en overige trekvis vanuit een populatieperspectief. Wageningen IMARES Rapport C039/08. Pp. 55.
- TNS NIPO. 2002. Sportvisakte 2002: De visparticipatie blijft nagenoeg gelijk, het aantal zwartvissers stijgt echter. NIPO Nederlands Instituut voor de Publieke Opinie en het Marktonderzoek. Amsterdam.
- TNS NIPO. 2003. Zeevissers 2003. NIPO report B-5675.
- TNS NIPO. 2004a. Sportvisakte 2004. Visparticipatie onder mannen van 15 jaar en ouder stijgt wederom tot circa 1.000.000. Rapport B-8219 december 2004. TNS NIPO, Amsterdam.
- TNS NIPO. 2004b. Zeevissers 2004. NIPO report B-8219.
- Van Keeken, O., A. Dijkman Dulkes & P. Groot. 2006. Resultaten vragenlijst recreatieve kabeljauwwisserij. Wageningen IMARES report C045/06. Pp. 18.
- Van Keeken, O., A. Dijkman Dulkes & P. Groot. 2007. Pilot study: Catches of North Sea cod by recreational fishermen in the Netherlands. CVO report 07.002. Pp. 28.
- Vriese, F.T., J. Klein Breteler (VIVION), M.J. Kroes & I.L.Y. Spierts. 2007. Beheer van de aal in Nederland Bouwstenen voor een beheersplan. Visadvies Rapport VA2007\_01. Pp. 174.