

**Ministry of the Flemish Community**  
Sea Fisheries Service (Oostende, Belgium)  
ILVO-Fisheries (Oostende, Belgium)



**National Data Gathering Programme**  
under EC Regulation 1639/2001  
amended by EC Regulation 1581/2004

**Belgium**

**2005 - Technical report**

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# 1 Introduction

The present document contains the Technical Report of the Belgian National Data Gathering Programme (NDGP) 2005, in fulfilment of the requirements of the Data Collection Regulation (DCR; Council Regulation No. 1543/2000, Commission Regulation No. 1639/2001 and Commission Regulation No. 1581/2004).

The report follows SGRN's *Guidelines for the Submission of Technical Reports on the National Data Collection Programmes under Commission Regulation (EC) N° 1639/2001 as Amended by Commission Regulation (EC) N° 1581/2004*, Version 2005, and is kept as concise as possible. The prime aim of the document is to give an overview of what has been achieved in 2005 (without actually reviewing or discussing the scientific results) and to which extent the goals of the 2005 national programme (NP) proposal were met. If this was not the case, then the essential elements are provided to explain why the programme failed to meet its targets. Overviews and comments are arranged by Module section of the DCR.

## **2 Participating institutes**

### **2.1 National correspondent**

#### **Dr. Frank Redant**

Head of Biology & Aquaculture Section  
Instituut voor Landbouw en Visserij Onderzoek (ILVO) - Visserij  
Ankerstraat 1  
B-8400 Oostende, Belgium

Phone: + 32 (0)59 56.98.33 (direct) or + 32 (0)59 34.22.50 (operator)

Fax: + 32 (0)59 33.06.29

E-mail: [frank.redant@dvz.be](mailto:frank.redant@dvz.be)

### **2.2 Participating institutes**

#### **❖ Ministry of the Flemish Community - Policy Domain Agriculture & Fisheries**

##### ***Dienst Zeevisserij - Sea Fisheries Service***

Administratief Centrum  
Vrijhavenstraat 5  
B-8400 Oostende, Belgium

Phone: + 32 (0)59 43.19.20

Fax: + 32 (0)59 80.76.93

URL: [www2.vlaanderen.be/ned/sites/landbouw/visserij/index.html](http://www2.vlaanderen.be/ned/sites/landbouw/visserij/index.html)

##### ***Instituut voor Landbouw en Visserij Onderzoek (ILVO) - Institute for Agriculture and Fisheries Research***

ILVO-Fisheries (formerly CLO - Sea Fisheries Department)  
Ankerstraat 1  
B-8400 Oostende, Belgium

Phone: + 32 (0)59 34.22.50

Fax: + 32 (0)59 33.06.29

URL: [www.dvz.be](http://www.dvz.be)

### 3 Precision levels

#### 3.1 Required and achieved precision levels

##### *Precision levels of 2005 data*

Required and achieved precision levels are summarized in Table 3.1. For most data sets however, particularly the ones that are derived from sea and port sampling programmes (such as the estimates of quantities discarded, the length and age compositions of landings and discards, the updates of biological parameters, etc.), there was no information yet on the precision levels achieved in 2005 at the time the Technical Report was written.

##### *Precision levels of 2004 data*

An overview of the precision levels of the 2004 market sampling programmes for plaice (*Pleuronectes platessa*) and sole (*Solea solea*) is given in the text table below. Details on the method used to calculate the precision levels can be found in Annex 1 to the 2004 Technical Report.

Species	Area / Stock	Precision (%) for a 95% confidence level	DCR precision level
Pleuronectes platessa	IV	23.1	1
Pleuronectes platessa	VIIa	53.0	0
Pleuronectes platessa	VIIId	30.5	0
Pleuronectes platessa	VIIIfg	22.1	1
Solea solea	IV	49.0	0
Solea solea	VIIa	30.0	0
Solea solea	VIIId	45.0	0
Solea solea	VIIIfg	20.7	1
Solea solea	VIIIab	40.0	0

##### *Accuracy of market sampling regimes for Nephrops*

In 2005, a study was performed on the accuracy of different strategies for the length sampling of the Belgian *Nephrops* landings. The approach taken in this study was the one suggested by Hampton & Majkowski (1987) <sup>(1)</sup>, and which had already successfully been applied to simulate length sampling for the estimation of biological population parameters in brown shrimp, *Crangon crangon* (Redant, 1996) <sup>(2)</sup>.

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<sup>(1)</sup> Hampton, J. & Majkowski, J. (1987): A simulation model for generating catch length-frequency data. In: Pauly, D. & Morgan, G.R. (eds.), Length based methods in fisheries research. ICLARM Conference Proceedings, **13**, 193-202.

<sup>(2)</sup> Redant, F. (1996): Effect of population structure, sampling strategy and sample size on the estimation of length-frequency distributions and biological parameters: a case study on brown shrimp (*Crangon crangon*). ICES, Statistics Comm., CM 1996/D:6.

The starting point in this approach is a theoretical, user-defined population, composed of a succession of age cohorts of known size, which grow along a user-defined Von Bertalanffy growth curve, and which are subjected to user-defined natural and fishing mortality rates. This theoretical population is then 'fished' along user-defined catchability and selectivity patterns (and in the case of *Nephrops*, along user-defined availability curves for the females, to reflect high accessibility to trawling during the non-berried season and low accessibility during the berried season), to create a theoretical, unsorted catch of known size and sex composition. The catch is then sub-divided into discards and landings by means of a user-defined fishermen's selection curve, and the landings are further sub-divided into market classes by means of user-defined grading curves. The outcome is a set of market classes (tails, medium and large whole *Nephrops*) of known size and sex composition. All parameters used in the 'generation process' are based on observations in the field, to ensure realistic size compositions of the theoretical catches, landings and market categories.

The market categories thus generated are then 'sampled' through a system of computer-generated random sampling, using different scenarios with respect to sample size, simple vs. length-stratified sampling, etc. Next, the numbers in the total landings are back-calculated from the 'samples', using the same types of raising factors that are also used in 'real life', and the back-calculated size-frequency distributions are compared to the real size-distribution of the theoretical landings, across a pre-set number of repetitions (usually 500) of each sampling regime. The outcome of the exercise gives an idea on the accuracy of the sampling regimes tested, and allows defining the optimum sampling regimes with respect to the estimates of the numbers-at-length (for males and females separately and for the two sexes combined), the sex ratios by size class, etc.

A brief summary of the results of this study was presented to the ICES Workshop on *Nephrops* Stocks (WKNEPH) in January 2006, and it was the intention to also include an overview of the main findings in this Technical Report, but time constraints have prevented us from doing so. The review will now either be sent to SGRN as a separate document, or be included in next year's Technical Report.

### **3.2 Methods used to calculate precision levels**

Over the past years, the potential of several statistical methods has been explored to calculate (i) the precision levels of the landings-at-age vectors, and (ii) the accuracy of different sampling regimes. Methods tested were mostly based on the fairly straightforward analytical and bootstrap approaches (see Annex 1 in the 2004 Technical Report for details) but also on much more complicated and data-hungry theoretical simulations (see previous section).

## **4 Data transmission**

### **4.1 Data transmitted**

Table 4.1 gives an overview of the data that were transmitted to international working groups, study groups, advisory committees, *ad hoc* expert groups, etc. In the table, a distinction is made between data available and actually transmitted (datasets marked 'X') and data available but not requested / not used by the expert group (datasets marked 'A').

### **4.2 Reasons for non-transmission of data**

In 2005, all data collected under the DCR were transmitted to the relevant assessment working groups, study groups, advisory committees, *ad hoc* expert groups, etc., when and as requested.

## 5 Module C - Fishing capacities

### 5.1 MP - Required and achieved sampling

Data collection was exhaustive and comprised all fishing vessels in the EU Fleet Register that were active in 2005. The programme was executed as planned. Fleet segmentation for gathering fishing capacity data took into account the amendments imposed by Commission Regulation 1581/2004, and is given in the text table below.

Type of fishing technique	Vessel LOA
Beam trawlers	12-24 m
	24-40 m
Demersal trawlers (a)	12-40 m
Static gear (b)	12-24 m
(a) There are < 10 vessels for the two LOA segments (12-24 and 24-40 m) combined	
(b) There are < 10 vessels in this fleet segment	

The data that are currently collected on the Belgian vessels include gross tonnage, maximum continuous power (kW) of the main engine (as registered by the Federal Ministry of Transport and Infrastructure) and vessel age based on the hull (years).

### 5.2 MP - Deviations from aim

There were no deviations from the objective.

### 5.3 EP - Required and achieved sampling

Belgium did not apply for an EP under this Module of the DCR.

### 5.4 EP - Deviations from aim

Not applicable (see previous section).

### 5.5 Action taken to remedy shortfalls

Since there were no shortfalls under Module C, the data gathering system will remain unchanged in the years to come.

## 6 Module D - Fishing effort

### 6.1 MP - Required and achieved sampling

#### ❖ Fuel consumption

Currently, the estimates of fuel consumption are based on annual fuel costs, as reported by vessel owners on a voluntary basis (also see Section 12.1). The most recent data available relate to 2004 and are applicable to the beam trawlers only. For the other fleet segments (with < 10 vessels in total), no data to calculate fuel consumption were provided by the vessel owners.

#### ❖ Fishing effort

Quarterly fishing effort data were gathered by fleet segment, gear type and ICES Sub-area as requested by the DCR and as foreseen in the programme proposal. The fleet segments that were distinguished are given in the text table below.

Type of fishing technique	Disaggregation
Beam trawlers	North Sea ≤ 221 kW
	North Sea > 221 kW
	Outside North Sea
Demersal trawlers	All ICES Sub-areas
Static gear	All ICES Sub-areas

#### ❖ Species specific effort

Specific fishing effort data were collected by fleet segment (as given in the text table above), gear type and ICES Sub-area, as requested by the DCR and as foreseen in the programme proposal. Species covered are those listed in Appendix VI of the DCR, in as much as these are being caught and landed in sensible quantities by the Belgian fleet, viz. *Gadus morhua*, *Melanogrammus aeglefinus*, *Merlangius merlangus*, *Merluccius merluccius*, *Nephrops norvegicus*, *Pleuronectes platessa*, *Pollachius virens* and *Solea solea*.

### 6.2 MP - Deviations from aim

There were no deviations from the objective.

### 6.3 EP - Required and achieved sampling

Belgium did not apply for an EP under this Module of the DCR.

#### **6.4 EP - Deviations from aim**

Not applicable (see previous section).

#### **6.5 Action taken to remedy shortfalls**

Since there were no shortfalls under Module D, the data gathering system will remain unchanged in the years to come.

## 7 Module E - Catches and landings

### 7.1 MP - Landings - Required and achieved sampling

Landings (and revenues) by species were recorded as foreseen in the national programme proposal. Geographical and temporal strata and fleet segments used, are the ones requested by the DCR. Species for which species-wise landings data were collected, are shown in the table below.

Species for which species-wise landings data were collected in 2005	
<b>Demersal fish species</b>	<i>Scophthalmus rhombus</i>
<i>Anarhichas lupus</i>	<i>Scylliorhinus canicula</i>
<i>Aspitrigla cuculus</i>	<i>Sebastes spp.</i>
<i>Conger conger</i>	<i>Solea solea</i>
<i>Dicentrarchus labrax</i>	<i>Squalus acanthias</i>
<i>Eutrigla gurnardus</i>	<i>Trigla lucerna</i>
<i>Gadus morhua</i>	<i>Trisopterus luscus</i>
<i>Hippoglossus hippoglossus</i>	<b>Pelagic fish species</b>
<i>Lepidorhombus spp.(a)</i>	<i>Clupea harengus</i>
<i>Limanda limanda</i>	<i>Scomber scombrus</i>
<i>Lophius spp. (a)</i>	<i>Sprattus sprattus</i>
<i>Melanogrammus aeglefinus</i>	<i>Trachurus trachurus</i>
<i>Merlangius merlangus</i>	<b>Crustaceans</b>
<i>Merluccius merluccius</i>	<i>Cancer pagurus</i>
<i>Microstomus kitt</i>	<i>Crangon crangon</i>
<i>Molva molva</i>	<i>Homarus gammarus</i>
<i>Mullus surmuletus</i>	<i>Nephrops norvegicus</i>
<i>Mustelus mustelus</i>	<b>Molluscs</b>
<i>Platichthys flesus</i>	<i>Buccinum undatum</i>
<i>Pleuronectes platessa</i>	<i>Loligo spp.</i>
<i>Pollachius pollachius</i>	<i>Octopus spp.</i>
<i>Pollachius virens</i>	<i>Pecten maximus</i>
<i>Psetta maxima</i>	<i>Sepia officinalis</i>
<i>Rajidae (a)</i>	
(a) Species segregation performed as part of the market sampling programmes	

In previous years, the idea of having a 'restricted' list of species for which landings data are recorded, has been labelled as a 'non-conformity' by the External Evaluators. However, as already explained in the NP proposals, there is a rationale behind the idea of the restricted list. Species that do not figure in the restricted list are not deliberately omitted from the data recording system – *they are simply not landed by the Belgian fleet in quantities of any importance*. As such, the list should not be seen as an attempt 'to get away with the minimum', but rather as a reflection of the actual composition of the Belgian fish and

shellfish landings. In its evaluation of the 2004 and 2005 NP proposals, SGRN stated that it saw no contradiction between the requirements of the DCR and the use of a restricted list of species for which landings data are recorded, "*as long as the 'restricted list' is a correct reflection of the species composition of the landings*". Belgium has repeatedly confirmed that this is the case (see e.g. SEC(2004)179, page 16, and SEC(2005)255, page 26).

In Belgium, effort and landings data are collected in two ways: from logbooks and from sales notes. The logbooks contain extensive information on the retained catches and their species composition by haul (albeit with certain restrictions), but they do not contain information on the size composition (in terms of market categories) of the retained catches. The sales notes on the other hand, contain information on the quantities auctioned by market category for all species landed (and not just for the species recorded in the logbooks), but they do not provide information on the exact origin (in terms of statistical rectangles) of the landings. The two systems are equally important to the Belgian data collection system, they are complementary, and the combination of the two has clear advantages with regards to species coverage and data quality.

## **7.2 MP - Landings - Deviations from aim**

There were no deviations from the objective.

## **7.3 EP - Landings - Required and achieved sampling**

Belgium did not apply for an EP under this Module of the DCR.

## **7.4 EP - Landings - Deviations from aim**

Not applicable (see previous section).

## **7.5 MP & EP - Discards - Required and achieved sampling**

Estimates of the total weight of the discards of all Appendix XII species, together with some particularly abundant Appendix XIII species, were collected for the flatfish directed beam trawl fisheries in ICES Sub-areas IV (North Sea), VIIa (Irish Sea), VIId (Eastern Channel), VIIe (Western Channel), VIIfg (Celtic Sea) and VIIIab (inner part of the Bay of Biscay), and the *Nephrops* directed fishery in the southern North Sea (FU 5, Botney Gut - Silver Pit area). The sampling programmes were also used to estimate the length and age composition of the discards (mandatory under Module H of the DCR). Planned and achieved sampling levels are summarised in Table 7.1.

## **7.6 MP & EP - Discards - Deviations from aim**

As can be seen in Table 7.1, only the sampling programme on the *Nephrops* fishery in the southern North Sea fell short of its target. The sampling programmes on the beam trawl

fisheries in the Irish Sea (ICES Sub-area VIIa) and the inner part of the Bay of Biscay (ICES Sub-area VIIIab) just met the minimum targets.

#### ***Nephrops fishery - ICES Sub-area IVbc, Nephrops FU 5***

Discard sampling in this fishery was done through a system of self-sampling by which a contracted fishing vessel collected unsorted samples of the discards once a month for subsequent analysis by the technical staff of the Sea Fisheries Department. In September 2005 however, the contracted vessel went bankrupt and in the absence of a readily available alternative, discard sampling in the Belgian *Nephrops* fishery was forced to an end.

#### ***Beam trawl fishery - ICES Sub-area VIIa (Irish Sea)***

There are no extenuating circumstances for the relatively low number of observer trips in the Irish Sea (4 achieved on a planned total of 4-8). For the execution of the discard sampling trips, ILVO-Fisheries can rely on a pool of co-operative vessels that have agreed to take sea-going observers. When organising their sea-trips, the observers seek information from the vessels in the pool on the fishing ground(s) the skippers intend to visit during their next voyage. Given this information and taking into account the areas with a high sampling priority, the observers then select a vessel to go on-board with. Although the Irish Sea was high on the priority list in 2005, the actual number of voyages to the Irish Sea only just reached the minimum target.

#### ***Beam trawl fishery - ICES Sub-area VIIIab (Inner Bay of Biscay)***

The fishing season for the Belgian beam trawler fleet in the Bay of Biscay is very short, typically from June till August. Initially, one observer trip was planned in June, one in July and one in August. Since the Belgian fishery in the Bay of Biscay was closed from July 27<sup>th</sup> onwards, the intended observer trip in August was cancelled and only two observer trips took place.

### **7.7 MP - Recreational - Required and achieved sampling**

Belgium has no recreational fisheries for salmon and bluefin tuna, and therefore obtained derogation for this part of the DCR.

### **7.8 MP - Recreational - Deviations from aim**

Not applicable (see previous section).

### **7.9 Action taken to remedy shortfalls**

#### **❖ Landings**

Since there were no shortfalls under Module E - Landings, the data gathering system with regards to landings will remain unchanged in the years to come.

## ❖ Discards

### *Nephrops fishery - ICES Sub-area IVbc, Nephrops FU 5*

Since the beginning of the 1990s, the Belgian *Nephrops* directed fishery in the southern North Sea (Botney Gut - Silver Pit area) has constantly been on the decline, and landings have dropped to an all-times low of  $\approx 125$  t in 2005 (Figure 7.1). With the disappearance of the only full-time *Nephrops* trawler left in September 2005 (also see Section 7.6), landings are expected to fall even further, below 100 t annually from 2006 onwards. In the light of these developments, there are no plans to resume discard sampling in the Belgian *Nephrops* fishery in 2006.

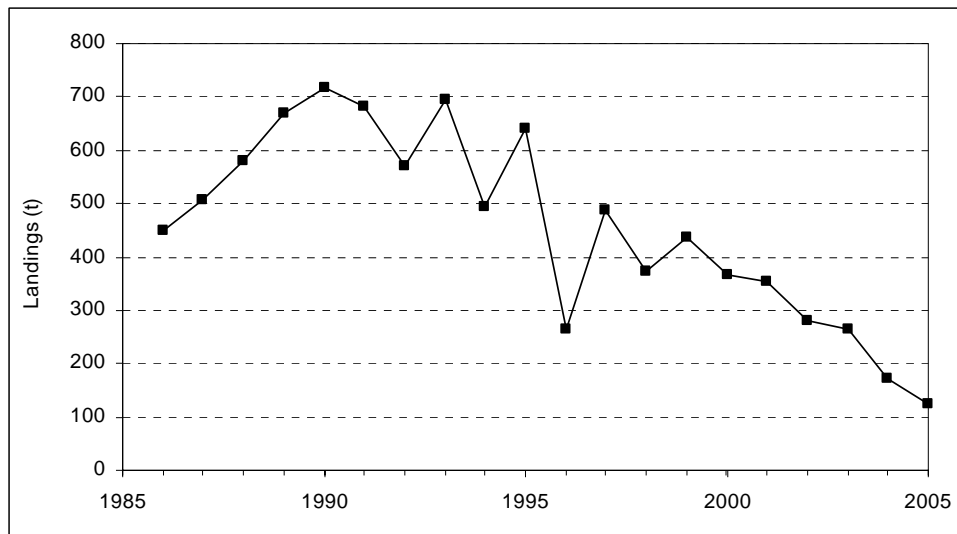


Figure 7.1 - Long-term trend (1986-2005) in the Belgian *Nephrops* landings from FU 5.

### *Beam trawl fisheries - All areas*

The current discard sampling programme for the flatfish directed beam trawl fisheries is considered to be generally workable and there is no reason to change its *modus operandi*. However, extra efforts will be made in the years to come (i) to increase coverage of the North Sea beam trawl fishery, and (ii) to better meet the target numbers of observer trips in the other areas.

## **8 Module F - Catches per unit effort**

### **8.1 MP - Required and achieved sampling**

All catch per unit effort data were collected as required. A summary of the CPUE data gathered under the MP is given in Table 8.1.

### **8.2 MP - Deviations from aim**

There were no deviations from the objective.

### **8.3 EP - Required and achieved sampling**

All catch per unit effort data were collected as required. A summary of the CPUE data gathered under the EP is given in Table 8.1.

### **8.4 EP - Deviations from aim**

There were no deviations from the objective.

### **8.5 Action taken to remedy shortfalls**

Since there were no shortfalls under Module F, the data gathering system will remain unchanged in the years to come. However, in view of the ongoing decline of the Belgian *Nephrops* fishery and the small number of *Nephrops* trawlers left in the Belgian fleet, it is very unlikely that the CPUE data series for FU 5 *Nephrops* will be used any further for stock evaluation purposes.

## 9 Module G - Scientific evaluation surveys

### 9.1 MP - Required and achieved Priority 1 surveys

#### ❖ Demersal Young Fish Survey (DYFS)

As part of the international Demersal Young Fish (and Brown Shrimp) Survey, an annual autumn sampling survey was carried out in the Belgian coastal waters, to collect data on the abundance of juvenile flatfish (primarily plaice, *Pleuronectes platessa*, dab, *Limanda limanda*, and sole, *Solea solea*) and brown shrimp (*Crangon crangon*). The vessel used was the training and research vessel O.29 'Broodwinner' (LOA 27.2 m; engine power 221 kW). The location of the sampling area matches with the main flatfish nursery grounds along the Belgian coast. The planned and achieved numbers of days at sea, and the planned and achieved sampling stations are summarized in Table 9.1. All 33 sampling stations were fished as planned (Figure 9.1).

#### *Methodology*

All DYFS sampling stations are fished for approx. 15 min, with a standard shrimp beam trawl (beam length 6 m; codend mesh size 22 mm). Commercial fish are hand-picked from the catches, sorted by species and measured to the cm below.

Brown shrimp are first graded into 'small' and 'large' by means of a rotating shrimp riddle (of the type that is also used on commercial shrimpers). From these two fractions, samples are taken of 1-2 litre each (depending on the proportions of shrimp and other organisms in the catch fractions). Samples are further sub-sampled in the lab (by weight) to an equivalent of approx. 250 shrimps, which are then measured in 5 mm size classes.

All data are stored in Excel spreadsheets at ILVO-Fisheries, but will soon be entered in the sea surveys module of the Belsamp Database (the main national depository for NDGP data – also see Section 14.1).

#### ❖ Beam Trawl Survey (BTS)

In August 2005, the adult flatfish stocks (primarily plaice and sole) in the south-western part of the North Sea were sampled with the RV 'Belgica' (LOA 50 m). Samples were taken on 59 out of 62 fixed stations (Table 9.1 and Figure 9.2). Essentially, the position of the sampling stations and the methodology used to collect and analyse the samples were the same as in previous surveys.

#### *Methodology*

All stations are fished for 20-30 min (depending on quantities to be expected and the likely presence of potentially damaging obstructions such as rocks, boulders, etc.) with a 4 m beam trawl. All commercial fish are hand-picked from the catches, sorted by species and measured to the cm below. For plaice and sole, otoliths are taken from 5 fish per cm class per BTS sub-area, to establish species- and area-specific age-length keys (ALKs).

In addition, semi-quantitative data are collected on the abundance of the most important by-catch species (both invertebrates and fish), and on the size composition of the *Cancer pagurus* by-catches.

All data on commercial fish are stored in Excel spreadsheets at ILVO-Fisheries, but will soon be entered in the Belsamp Database (also see Section 14.1). For the time being, the semi-quantitative data on the by-catch species are kept on paper.

## 9.2 MP - Deviations from aim

There were no major deviations from the objective.

## 9.3 EP - Required and achieved Priority 2 surveys

Belgium did not apply for an EP under this Module of the DCR.

## 9.4 EP - Deviations from aim

Not applicable (see previous section).

## 9.5 Action taken to remedy shortfalls

Since there were no major shortfalls under Module G, the surveys will mostly remain unchanged in the years to come.

However, with respect to the North Sea BTS survey, Belgium is forced to make some changes to the positions of five fishing stations, where adequate sampling has become too dangerous, too difficult, or simply impossible, because of the presence of mega-ripples, oil rigs, mussel beds, etc. The table below shows the stations for which Belgium proposes a change in location, the underlying reason for the change, and the new position of the sampling station relative to the initial one. Except for one station (station 73), all proposed changes are within 5 nm of the initial sampling location. The modifications will become effective on the next North Sea BTS, in August 2006.

Old station no.	New station no.	Reason for change	New position relative to initial one
19	19b	Oil rig	Approx. 4 nm to NNW
62	62b	Mega-ripples	Approx. 3 nm to NNW
73	73b	Mega-ripples	Approx. 7 nm to NW
60	60b	Cables	Approx. 3 nm
107c	107d	Mussel beds	Approx. 3 nm to NNE

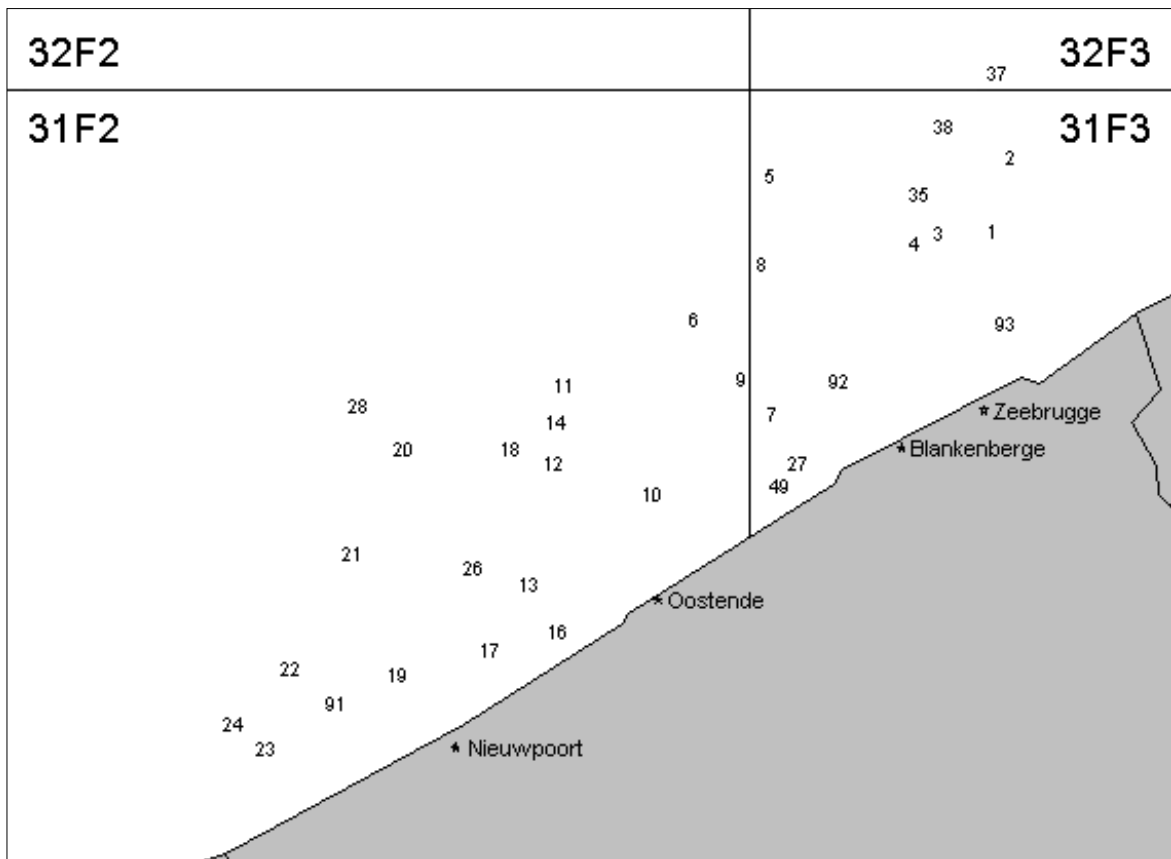


Figure 9.1 - Sampling stations fished in the Belgian coastal waters during the annual autumn DYFS survey in September 2005.



## 10 Module H - Length and age sampling

### 10.1 MP - Landings - Required and achieved sampling

Table 10.1 gives an overview of the required, planned and achieved length and age sampling on the Belgian fish and shellfish landings.

### 10.2 MP - Landings - Deviations from aim

According to SGRN's Guidelines, the achieved numbers for length and age should be compared to *what was planned by the MS* for the stocks that (i) were sampled so as to reach particular precision levels, (ii) are under an EC Recovery Plan, and/or (iii) for which the data series are used for tuning purposes; and to *what is required by the DCR* for all other stocks. To facilitate the evaluation process, the relevant numbers and percentages achieved are highlighted in grey in Table 10.1.

Following the recommendations of SGRN, achieved sampling was considered as 'deviating from the objective' when it was > 10 % below or > 50 % above the target.

For species and stocks that are primarily sampled during discard trips, it is difficult to define the number of measurements in advance, and the achieved numbers for length and age often exceed the numbers required or planned. In principle, the sea-going observers take length measurements every other haul of *all* the retained and discarded fish, and collect otoliths of 5 fish (at the most) per cm class, irrespective of the total number of length and age measurements already made. This explains the apparent and sometimes considerable 'over-shooting' of the targets (particularly for length) for stocks such as *Gadus morhua*, *Pleuronectes platessa* and *Solea solea* (Table 10.1).

#### ❖ Length sampling

##### *Nephrops norvegicus* - ICES Sub-area IVbc, *Nephrops* FU 5

For *Nephrops*, the sampling programme fell short of the national targets by almost 50 % for the Belgian landings and by 17 % for the landings by Dutch vessels (Table 10.1).

As already mentioned in Sections 7.6 and 7.9, the Belgian *Nephrops* fishery in the southern North Sea (FU 5) has constantly been on the decline since the beginning of the 1990s, and landings have dropped to an all-times low of  $\approx 125$  t in 2005. Under these circumstances, it appeared impossible to maintain the intended sampling regime of one sampling per month in January-April and two samplings per month in May-December. In November and December 2005, e.g., there were no *Nephrops* landings at all by Belgian vessels for first sale in Belgium (there were a few into the Netherlands), the consequence being that only one sample of the intended six could be taken in the 4<sup>th</sup> quarter of 2005.

For the *Nephrops* landings by Dutch vessels into Belgium, the sampling regime was set at one sampling per month, in all months when such landings take place (see National Programme Proposal, pages 25-26), and this sampling scheme was closely adhered to.

### ***Other species - All areas***

Most fish stocks turned out to have been sampled well in excess of what was planned or required, but this is mostly because the length samples taken during observer trips were also included in the figures, on top of the numbers sampled in the auctions. As mentioned before, the sea-going observers take length measurements every other haul, irrespective of the sampling levels already achieved. This causes no extra costs, since the observers are on board anyhow. In addition, the extra measurements are essential to make comparisons between the discarded and retained catch fractions, and to calculate how many fish are being discarded for each retained fish.

Excess sampling (at national expense) also occurred for a number of stocks that are not routinely sampled for length during the observer trips. This applied to lemon sole (*Microstomus kitt*), rays (*Rajidae*), turbot (*Psetta maxima*) and brill (*Scophthalmus rhombus*). In these cases however, sampling in excess of the DCR was a deliberate choice, as the required sampling levels (see Table 10.1) were considered to be too low to yield reliable length composition data.

#### **❖ Age sampling**

### ***Pleuronectes platessa and Solea solea - ICES Sub-areas VIIId and VIIfg***

The plaice and sole stocks in the Eastern English Channel (VIIId), and the sole stock in the Celtic Sea (VIIfg) were sampled less than required or planned. Sampling of these stocks turned out to be difficult, with ship owners refusing to have their landings sampled, and with vessels fishing in several ICES Sub-areas during the same trip and landing 'blended' catches. The first is an old sore, and ILVO-Fisheries is constantly trying to convince vessel owners to better co-operate. So far however, this has not resulted in a lasting solution. The second is mainly due to quota or effort restrictions, which force the skippers to fish in more than one ICES Sub-area during the same trip. Fish from such voyages is landed as a 'blend' from different areas, and such 'blended' landings are unusable in an area-oriented sampling system.

In addition, the fishing grounds for sole and plaice in the Celtic Sea were closed in January and February 2005 (Council Regulation 27/2005, Annex III, Part A.12.b), within the framework of a local recovery plan for cod. Given (i) the timing of the closure, and (ii) the fact that the Belgian beam trawlers predominantly operate in the Celtic Sea from January to April, the main fishing season in the area was considerably shortened. This also had an adverse effect on the sampling opportunities for the Celtic Sea stocks.

### ***Psetta maxima and Scophthalmus rhombus - ICES Sub-area IV***

Age sampling of turbot (*Psetta maxima*) and brill (*Scophthalmus rhombus*) was in excess of the required sampling levels, again because the required number of age measurements (50 for each species) was considered to be too low to derive good quality age distributions of the landings. As for length, the 'excess sampling' was at national expense.

### **10.3 EP - Landings - Required and achieved sampling**

Belgium did not apply for an EP under this Module of the DCR.

### **10.4 EP - Landings - Deviations from aim**

Not applicable (see previous section).

### **10.5 MP & EP - Discards - Required and achieved sampling**

A summary of the planned and achieved discard sampling (numbers of sea-going observer trips in the case of the beam trawl fisheries, and number of sampling operations in the case of the *Nephrops* fishery) is given in Table 7.1. The achieved length and age measurements on the retained and discarded catch fractions are shown in Table 10.3.

Note that in the *Nephrops* fishery, the discard samples were not taken and measured by sea-going observers. Instead, unsorted samples of the discards were provided once a month by a contracted vessel for subsequent analysis and measurement by the technical staff of the Sea Fisheries Department (i.e. self-sampling with on-land length measurements).

### **10.6 MP & EP - Discards - Deviations from aim**

See Section 7.6.

### **10.7 Action taken to remedy shortfalls**

#### **❖ Landings**

Over the past years, ILVO-Fisheries has attempted several alternative approaches to resolve the shortfalls in length and age sampling of the landings.

The first was that of special self-sampling agreements with co-operative ship owners and skippers. The basic idea of these agreements was that the ship's crew would tag unsorted boxes of their retained plaice and sole catches, so that they could be traced back to the ICES Sub-area from which they originated. The fish in these boxes could then be sampled for length and/or age upon arrival in port, before they got 'blended' in the auction's grading machines. The system however, showed some major drawbacks with regards to its practical organization, and therefore had to be given up again.

Instead, ILVO-Fisheries has decided to put much more emphasis on the sea-going observer trips as a data source for length and age. Apart from making direct length measurements on the retained catch fractions while at sea, the sea-going observers now also collect plaice and sole samples for subsequent length and age measurement by the technical staff of ILVO-Fisheries. To that aim, the observers tag several boxes with fish of known origin, which are then bought from the vessel owner by ILVO-Fisheries and analysed in

the premises of ILVO-Fisheries. This approach has proven to be very efficient and will from now on be applied every time sampling levels risk falling below targets.

❖ **Discards**

See Section 7.9.

## 11 Module I - Other biological sampling

### 11.1 MP - Required and achieved sampling

Table 11.1 gives an overview of the long-term planning of sampling activities for 'Other biological parameters', while Tables 11.2 and 11.3 summarize the sampling levels achieved in 2005.

#### *Nephrops norvegicus - ICES Sub-area IVbc, Nephrops FU 5*

*Sex ratio* data are routinely collected during all market and discard sampling programmes on *Nephrops* (Table 11.2). Length data by sex are a prerequisite to the *Nephrops* stock assessments, since these are usually done for males and females separately. In addition, record is also kept of the condition of the females (non-ovigerous, ovigerous or recently hatched). This gives an idea of reproductive success (percentage of berried females vs. total number of females, in the critical period of time before the berried females start hiding in their burrows – typically late summer or early autumn – and thus disappear from the fishable stock).

In 2004, the first six-yearly update of *sexual maturity* in *Nephrops* was undertaken. The data were presented at the last meeting of WKNEPH (January 2006) and the female data will be included in a pan-European overview that is to be elaborated in the course of 2006 under the umbrella of WKNEPH.

#### *Pleuronectes platessa and Solea solea - ICES Sub-areas VIIa, VIIId and VIIIfg*

At present, *all biological parameters* for plaice and sole (except fecundity, which is not mandatory for these species) are gathered on a yearly basis. This will continue to be the case, since all necessary data are collected as part of the ongoing market and discard sampling programmes (also see Section 11.5).

#### *Rajidae - ICES Sub-areas IV and VII (except VIIId)*

The estimation of *growth* requires either direct ageing or tagging experiments, to establish the relationship between length and age. So far however, there is no generally approved method for age determination in rays, while tagging is expensive (and not eligible under the DCR). Therefore, no growth studies on rays have been included in the Belgian NDGP.

*Sex ratios* for the ray stocks in ICES Sub-areas IV and VII (except VIIId) are collected as part of the routine market sampling programmes.

*Sexual maturity* data for rays in Sub-area IV were collected during the BTS survey in August 2005. ILVO-Fisheries has no surveys in Sub-area VII, and therefore is not in a position to undertake maturity studies in this area (also see Section 9).

### 11.2 MP - Deviations from aim

There were no major deviations from the objectives.

### **11.3 EP - Required and achieved sampling**

Belgium did not apply for an EP under this Module of the DCR.

### **11.4 EP - Deviations from aim**

Not applicable (see previous section).

### **11.5 Action taken to remedy shortfalls**

Since there were no major shortfalls under Module I, the data gathering system will mostly remain unchanged. However, Belgium understands that it is the RCMs' intention to promote international co-operation on the data collection for 'Other biological parameters' with a view to (i) improve the overall quality of the estimates, and (ii) optimise the cost-benefit relationship of the supporting sampling programmes. Initiatives along these lines are likely to be undertaken by the RCM North Sea & East Arctic and the RCM North-East Atlantic (the two RCMs in which Belgium is involved) in the years to come and to have an impact on the planning of the data collection programmes for 'Other biological parameters' in 2007 and beyond.

## 12 Module J - Economic data by group of vessels

### 12.1 MP - Required and achieved sampling

#### ❖ What data are being collected?

Table 12.1 summarizes the economic data by group of vessels that were collected under the MP. These parameters correspond to the list in Appendix XVII of the DCR. How the parameters are defined and calculated is set out in the text table below (with the exception of parameters with straightforward definitions):

Parameter	Definition / comment
Revenue	Total income from fisheries activities alone.
Costs	Under 'Other costs' are included: insurance, auction levies, nets, ice and salt, rent of equipment and unspecified other costs.
Fixed costs	Calculated (per vessel) as the sum of depreciation and interest.
Depreciation	Calculated as depreciation rate (4 %) * book value.
Interest	Interest rate (% of 10-year govt bond) * book value. In 2003, the 10-year govt bond rate was estimated to be 4 %.
Employment	Based on actual crew size per vessel.
Vessel	Some of the parameters mentioned here look bizarre, such as number and used gear type (what is the relevance of an average number of vessels?).
Effort	Already dealt with under Module D (see Section 6).

#### ❖ Who are the data collected from and how are the data collected?

Information on economic data is obtained through questionnaires, which are filled in by the ship owners on a voluntary basis. In practice, this is done by accounting firms. Since they have the possibility to send the information until September of the following year, there is a one-year time lag in the data collecting system. Data are thus available for the year 2004 (for 69 vessels out of 126, i.e.  $\approx 55$  % of the fleet). As for the segments defined in Module D, the number of data is sufficient only for the beam trawlers (see Table 12.1). For demersal trawlers (5 vessels in total) and fixed gear (3 vessels in total), only one response was received.

Revenues per fleet segment and per species, and auction prices per species and per quarter were routinely collected throughout the year 2005, as part of the existing landings and effort recording system.

### 12.2 MP - Deviations from aim

In the past, the questionnaires had no provisions to also fill in data on assets, financial position, investments or employment. For the collection of the 2004 data, a major overhaul

of the questionnaire has been undertaken, to bring it in line with the requirements of Appendix XVII of the Regulation.

### **12.3 EP - Required and achieved sampling**

Belgium did not apply for an EP under this Module of the DCR.

### **12.4 EP - Deviations from aim**

Not applicable (see previous section).

### **12.5 Action taken to remedy shortfalls**

Since there were no major shortfalls under Module J, the data gathering system will remain unchanged in the years to come.

## **13 Module K - Data concerning the fish processing industry**

### **13.1 MP - Required and achieved sampling**

Belgium did not apply for this Module of the DCR in 2005.

### **13.2 MP - Deviations from aim**

Not applicable (see previous section).

### **13.3 EP - Required and achieved sampling**

Belgium did not apply for an EP under this Module of the DCR.

### **13.4 EP - Deviations from aim**

Not applicable (see previous section).

### **13.5 Action taken to remedy shortfalls**

Belgium will gather data concerning the fish processing industry in 2006, when this Module of the DCR becomes mandatory. More details can be found in the Belgian national programme proposal for 2006.

## 14 Databases

### 14.1 Database development and data management

#### ❖ ILVO-Fisheries

In April 2003, ILVO-Fisheries started with the development of a central depository for NDGP-data (the so-called Belsamp database), in co-operation with a sub-contracted software developer. The Belsamp database has a modular structure, with (i) separate modules for the quality control, storage, partial treatment and retrieval of fisheries statistics, data from market and discard samplings, survey data, etc., and (ii) peripheral modules with vessel registers, taxonomic information on the most important fish and shellfish species, area and stock descriptions (in terms of statistical rectangles), etc.

The database is developed in such a way that it is:

- Error-proof, in the sense that it has all the necessary internal validation routines and redundancy checks to make sure that the quality of the data is guaranteed.
- Flexible, so that it can easily be appended with user-defined new modules (e.g. for new surveys).
- Transferable to portable computers, so that it can be taken to meetings outside the institute.
- Compatible with other applications, in the sense that is able to produce outputs that can easily be imported into other applications in a Windows environment.
- Easy to maintain, so that it can easily be maintained by the institute's staff, without costly, long-lasting support contracts with third parties.
- Compatible with the Commission's requirements on data communication and data exchange formats.

So far, the general framework of the Belsamp database has been elaborated (in close co-operation between the scientists in charge and the software developer) and several modules have been completed or are close to completion.

The Belsamp database is conceived in such a way that it can generate outputs at virtually any level of aggregation and in many different formats. Species-wise outputs, e.g., can be produced by scientific, Dutch or English name, by numerical or 3-letter ICES or FAO code, etc., and this in different Windows compatible data formats (Excel files, csv-files and txt-files). Similarly, vessel-wise data can be generated by vessel name or number, vessel class, gear type or métier. At all levels, data retrieval can be done either by pre-set or by user-defined groupings of species, vessels, gears, areas, time-periods, etc. Currently, the possibilities of using XML for data transmission to e.g. the Commission or other MS are also being explored.

## 15 National and international co-ordination

### 15.1 National co-ordination

National co-ordination between the Sea Fisheries Service and ILVO-Fisheries – the only two institutes having been involved in the Belgian NDGP so far – takes place on a regular and informal basis (usually by phone or e-mail). Each year in April-May, there is a co-ordination meeting in Oostende, to agree on the contents and task-allocation of the NDGP, and to make arrangements for writing the previous year's technical report and the following year's programme proposal.

### 15.2 International co-ordination

A full list of international co-ordination meetings attended by Belgium is given in Table 15.1. Both eligible and non-eligible meetings and workshops are included (marked with 'Yes' and 'No' respectively in the column 'Eligible under DCR').

### 15.3 RCM recommendations

#### ❖ RCM North Sea - First Meeting - September/October 2004

##### *On the métier-based approach of the DCR*

**RCM recommendation:** RCM North Sea recommends that the DCR should move to métier based sampling. Further, it suggests that, rather than establish a complete list of national métiers which could take a considerable time to be agreed, SGRN should be requested to endorse the definition of a 'métier' based on the work of expert groups such as SGDFE, as part of the upcoming revision of the Regulation. This definition should be used by MS to determine their métier list which can be reviewed in future by the Commission.

**Responsive action taken:** In response to the initiatives taken by the Commission, STECF and SGRN on the issue and in anticipation to the upcoming revision of the DCR, Belgium has participated in all relevant meetings on the definition of fisheries and métiers. In 2005, there was one dedicated workshop on the subject, viz. the Workshop on Fleet Based Sampling Design (Nantes, May 2005).

##### *On sampling of foreign flag vessels*

**RCM recommendation:** RCM North Sea recommends that MS start bilateral talks as soon as possible, with a view to establishing bilateral agreements on the issue of foreign flag vessel sampling.

**Responsive action taken:** ILVO-Fisheries has signed a formal bilateral agreement with CEFAS (Lowestoft, England) on the sampling of Belgian and UK vessels landing their catches for transshipment or first sale in each other's country, and has an informal

agreement with RIVO (IJmuiden, the Netherlands) on the sampling of Belgian and Dutch vessels. A formal bilateral agreement with Ifremer (France) is in preparation.

#### ***On regional databases***

***RCM recommendation:*** RCM North Sea recommends that data for the North Sea cod stock should be entered into the sampling status spreadsheet covering the data collected during 2005, which will be hosted on the website of DIFRES. [...]

***Responsive action taken:*** Belgium has very few sampling data on North Sea cod and did not participate in this exercise. It did however actively participate in the initiatives taken by the 2005 RCM North Sea on the exploratory use of FishFrame as a regional database for the North Sea area, with cod as a test-species.

***RCM recommendation:*** The RCM North Sea agreed that the FishFrame database should be used on an exploratory basis to input raw level data from 2004 from both EU and non-EU countries. Countries should upload data in time to be used by the stock co-ordinators of the WGNSK by May 2005. [...]

***Responsive action taken:*** See previous comment.

#### ***On precision levels***

***RCM recommendation:*** RCM North Sea recommends that MS carry out a precision analysis on at least one selected stock from within the RCM North Sea region, using the guidelines and protocols suggested at the Precision Workshop held in Nantes 2004. The results of this analysis should be reported back to the RCM North Sea in time to be considered at its next meeting.

***Responsive action taken:*** The recommended precision analysis was carried out (not on one but on several stocks) and the results were reported in the 2004 Technical Report.

#### ***On maturity updates***

***RCM recommendation:*** RCM North Sea agreed that a preliminary analysis of the level of maturity sampling and sampling coverage by area and time should be carried out and presented to the next meeting of the RCM with a view of establishing task sharing agreements from 2007 onwards. It was agreed that Belgium would take on responsibility for the demersal species and the Netherlands would describe the situation in relation to pelagic species.

***Responsive action taken:*** The Sea Fisheries Department undertook the recommended compilation of maturity data for demersal species, and the results were presented at the 2005 meeting of RCM North Sea in Bergen, Norway (also see Table 4.1).

#### ***On the linkage between biological and economic data***

***RCM recommendation:*** RCM North Sea recommends that further work be done on how to link biological and economic data. In this context, the possible implications on the collection of economic data also need to be further explored. In anticipation of result from

such work, RCM North Sea recommends that MS should be encouraged to collect economic data in a way that makes it possible to do regional economic analysis.

**Responsive action taken:** In 2005, the Sea Fisheries Department employed a PhD student on fisheries economics whose task it is, amongst others, to define fisheries and métiers from an economic point of view and, in co-operation with the biologists in charge of the Belgian NPGP, to ensure the linkage between the biological and economic data collection systems.

#### ❖ **RCM North Sea - Second Meeting - September 2005**

##### ***On small scale fisheries***

RCM North Sea made several recommendations on small scale fisheries (i.e. fisheries by vessels < 12 m). None of these however, is of relevance to the Belgian situation, since Belgium has no registered fishing vessels < 12 m.

##### ***On sampling of foreign flag vessels***

**RCM recommendation:** RCM North Sea reiterates its 2004 recommendation on the conclusion of formal bilateral agreements on the sampling of foreign flag vessels, and on the inclusion of these agreements in the MS' national program proposals. However, RCM North Sea understands that certain countries/institutes may have legal objections against signing formal bilateral agreements of the type described above. In such cases, RCM North Sea insists that agreement be reached between the countries/institutes concerned on the sampling of each other's flag vessels, and that the commitments made are clearly spelled out in the national program proposals.

**Responsive action taken:** See above under RCM North Sea - First Meeting, On sampling of foreign flag vessels.

##### ***On the commitment by MS to RCM recommendations and initiatives***

**RCM recommendation:** RCM North Sea considers that a MS's agreement with the recommendations of a RCM or with its initiatives to set up concerted actions implies that the MS will take the necessary steps to implement these recommendations and to participate in the proposed actions.

**Responsive action taken:** Belgium agrees with the RCM's point of view and intends to take the necessary steps to follow up all relevant RCM recommendations and initiatives. The present overview of responsive actions taken is a testimony of this disposition.

#### ❖ **RCM North East Atlantic - First Meeting - September 2004**

##### ***On the métier-based approach of the DCR***

**RCM recommendation:** RCM NEA recommends that all MS continue to work on defining their fleet métiers in line with the protocols outlined in the 2003 ICES Report of SGDFP.

**Responsive action taken:** See above under RCM North Sea - First Meeting, On the métier based approach of the DCR.

### ***On sampling of foreign flag vessels***

***RCM recommendation:*** RCM NEA recommends that MS start bilateral talks as soon as possible, with a view to establishing bilateral agreements on the issue of foreign flag vessel sampling. RCM NEA encourages MS to include copies of these agreements in their National Program submissions for the year 2006. [...] The agreements should include the following elements:

- Who will sample what and where?
- Which National Programme budgets will cover the associated costs?
- In case of sampling outside flag country, who will hold the data?

***Responsive action taken:*** See above under RCM North Sea - First Meeting, On sampling of foreign flag vessels.

### ***On the linkage between biological and economic data***

***RCM recommendation:*** RCM recommends that the new métiers defined for biological sampling are consistent with the métiers defined for economic data collection.

***Responsive action taken:*** See above under RCM North Sea - First Meeting, On the linkage between biological and economic data.

## **❖ RCM North East Atlantic - Second Meeting - October 2005**

### ***On effort data by métier***

***RCM recommendation:*** RCM NEA recommends that all MS attempt to fill in the matrix [i.e. the data matrix of fisheries and métiers agreed by the RCM NEA] with readily available effort data (by default expressed in days at sea and otherwise to be specified), with a view to defining the final version of the matrix for the revision of the DCR, i.e. before January 2006.

***Responsive action taken:*** Effort data on the Belgian fleets operating in the North-East Atlantic area were compiled as requested and transmitted to the Chair of RCM NEA in December 2005 (also see Table 4.1).

## 16 List of acronyms and abbreviations

Ab or Ab5	5 <sup>th</sup> Abdominal segment (standard measure for <i>Nephrops</i> tails)
ALK	Age-length-key
BTS	North Sea Beam Trawl Survey
CEFAS	Centre for Environment, Fisheries and Aquaculture Science (England)
CL	Carapace length (standard measure for whole <i>Nephrops</i> )
CLO	Centre for Agricultural Research (Belgium) (since January 2006, CLO is called Institute for Agriculture and Fisheries Research, ILVO)
CLO-DvZ	Centre for Agricultural Research - Sea Fisheries Department (Belgium)
CPUE	Catch per unit effort
DYFS	Demersal Young Fish and Brown Shrimp Survey
EC	European Commission
EP	Extended Programme under the requirements of the DCR
FU	Functional Unit (geographical definition of <i>Nephrops</i> stocks)
ICES	International Council for the Exploration of the Sea (Denmark)
ILVO	Institute for Agriculture and Fisheries Research (Belgium) (successor of Centre for Agricultural Research, CLO)
LOA	Length over all
LPUE	Landings per unit effort
MP	Minimum Programme under the requirements of the DCR
MS	EU Member State(s)
NDGP	National Data Gathering Programme
PGCCDBS	ICES Planning Group on Commercial Catch, Discards and Biological Sampling
RAC	Regional Advisory Council
RCM	Regional Co-ordination Meeting
RCM NEA	Regional Co-ordination Meeting for the North-East Atlantic
RCM NS&EA	Regional Co-ordination Meeting for the North Sea & the East Arctic
RIVO	Nederlands Instituut voor Visserij Onderzoek (Netherlands)
SGMix	STECF Sub-group on Mixed Fisheries
SGRN	STECF Sub-group on Research Needs
WGBEAM	ICES Working Group on Beam Trawl Surveys
WGCRAN	ICES Working Group on the Life History, Population Biology and Assessment of <i>Crangon</i> Stocks
WGEF	ICES Working Group on Elasmobranch Fishes
WGHMM	ICES Working Group on the Assessment of Southern Shelf Stocks of Hake, Megrim and Monk
WGNEPH	ICES Working Group on the Assessment of <i>Nephrops</i> Stocks
WGNEW	ICES Working Group on New MoU Species

WGNSDS	ICES Working Group on the Assessment of Northern Shelf Demersal Stocks
WGSSK	ICES Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak
WGSSDS	ICES Working Group on the Assessment of Southern Shelf Demersal Stocks
WKNEPH	ICES Workshop on <i>Nephrops</i> Stocks (successor of WGNEPH)
WKSCMFD	Workshop on Sampling and Calculation Methodology for Fisheries Data