International Council for the
Exploration of the Sea

ICES CM 1991/G:3
Demersal Fish Committee
Ref. Pelagic Fish Committee
Ref. Biological Oceanography Committee

MANUAL FOR THE ICES NORTH SEA STOMACH SAMPLING PROJECT IN 1991

Aberdeen, 8-10 January 1991

TABLE OF CONTENTS

1. TERMS OF REFERENCE AND PARTICIPATION

At the Council Meeting held in The Hague in 1989, the recommendation was adopted (C Res 1989/2:12) that:

The species coordinators of the Stomach Sampling Programme in 1991 will meet under the chairmanship of Dr J R G Hislop in early 1991 for four days at national expense to:

a) adopt the final strategies and tactics in relation to sampling and analysis;

b) prepare a new manual in order to ensure homogeneity in procedures among coordinators.

The meeting was held in Aberdeen from 8-10 January 1991.

Participation

A Aglen	Norway
P J Bromley	UK (England)
N Daan	The Netherlands
H J L Heessen	The Netherlands
J R G Hislop (Chairman)	UK (Scotland)
A P Robb	UK (Scotland)
H Sparholt	Denmark

2. INTRODUCTION

The large scale stomach-sampling programme undertaken in the North Sea in 1981 (Daan, 1989) provided high quality information on the diet of five predatory species (cod, whiting, haddock, saithe and mackerel) in a form suitable for the testing and development of multispecies assessment models by the ICES *ad hoc* Working Group on Multispecies Assessment Model Testing (later renamed the Multispecies Assessment Working Group (MSAWG)).

Although additional information on the stomach contents of cod, whiting, saithe and mackerel was obtained from smaller scale sampling projects that took place from 1982 to 1987, the multispecies virtual population analyses (MSVPA) made on a regular basis by the MSAWG still largely depend on one year of feeding data.

In 1988, the MSAWG recommended that another full-scale stomach sampling exercise should be executed in the North Sea in 1991 to extend the basis for multispecies assessment (Anon, 1988). This recommendation was endorsed by ICES (C Res 1988/2:12) and a Planning Group met in 1989

to define the requirements, priorities and logistics of the proposed programme and to submit a detailed proposal to the 1989 council meeting of the ICES. The Planning Group identified additional predators to be included in the programme and suggested a number of methodological changes, such as the adoption of additional sampling size strata, intended to enhance the quality of the data (Anon, 1989). A project coordinator was appointed (J R G Hislop, Scotland, UK) and species coordinators, each responsible for overseeing the stomach contents analysis for one or more species and carrying out primary data analysis, were appointed as follows:

Cod	H J L Heessen (The Netherlands)
Whiting	A P Robb (Scotland, UK)
Saithe	H Gislason (Denmark)
Mackerel	D Skagen (Norway)
Rays	H Sparholt (Denmark)
0-group gadoids	P J Bromley (England, UK)
Other species (gurnards, scad etc)	N Daan (The Netherlands)
Haddock	Coordinator not yet appointed

The recommendations of the Planning Group were endorsed by the ICES during the 1989 council meeting (C Res 1989/4:9, C Res 1989/2:12, C Res 1989/2:13).

One reason for the success of the 1981 exercise (and the subsequent smaller-scale exercises) was that, although the tasks of analysing the stomach contents and processing the data were shared by several individuals, each responsible for a single species, the basic methodology was agreed beforehand, thus ensuring a high degree of compatibility between the processed data provided by the respective species coordinators. The methodology, including sampling targets, criteria for selecting material, documentation, stomach analysis and primary data processing etc, was described in a manual (Anon, 1981), which proved to be an extremely useful reference document.

Because the programme planned for 1991 differs in a number of important aspects from the earlier exercises, it was decided that a revised manual should be prepared. The previous manual, prepared by the species coordinators during a meeting in IJmuiden in January 1981, was never submitted as a contribution to an ICES Council meeting. However, the coordinators of the 1991 project agreed that the revised manual should be formally presented at the 1991 council meeting.

3. GENERAL SAMPLING STRATEGY IN 1991

Most of the stomach sampling in 1991 will be done during the quarterly coordinated bottom trawl surveys listed in Table 1. In the first quarter all the research vessels listed are participants in the ICES International Young Fish Survey. In the other quarters each country will cover different parts of the North Sea (eg mainly southern or northern) or will fish a coarse or complementary coarse grid as outlined in Anon (1990).

In addition to stomachs sampled during these bottom trawl surveys, it is important to sample pelagic 0-group gadoids and their possible predators. *Clupea* (Scotland) is available from 7-25 June. Sample and map the distribution of pelagic 0-group gadoid in the northwestern North Sea. Some time will also be available from *Tridens* (Netherlands) in June and August to describe the distribution of pelagic 0-group gadoids off the coast of Jutland. Sampling of pelagic predators (mackerel, scad, saithe, whiting, spurdogs and hake) will be done in July during an international acoustic survey that covers most of the North Sea (Anon, 1991).

Earlier stomach sampling exercises have suggested that saithe and mackerel may be extremely significant fish predators and it is important to ensure that these species are adequately sampled in 1991. It is highly unlikely that the bottom trawl surveys will provide sufficient material and every effort should be made to acquire samples from other sources, including the commercial fishery.

Similarly, it is unlikely that many large cod will be caught during the research vessel surveys and additional material should be collected from commercial vessels.

4. COLLECTION AND PRESERVATION OF STOMACHS AT SEA

4.1 Size Classes and Sampling Intensity

The numbers of stomachs of each size class to be collected per species per haul are shown in Appendix I. Additional size classes have been introduced since 1981. These apply in particular to the smaller fish (<15 cm). These finer subdivisions will allow a better treatment of 0-group fish and make it possible to apply more precise ALKs than was possible in 1981.

Primary predators

It is intended to maintain sampling levels for cod, whiting, saithe and mackerel at, or above, those achieved in 1981. Haddock sampling has been reduced because the data collected in 1981 indicate that this species has less impact on exploited fish species than the other primary predators.

Secondary predators

Additional predators have been included for study in 1991. These species were chosen because it is believed that their biomasses in the North Sea are large and/or fish may form an important part of the diet of at least the larger individuals. However, it will not be necessary to sample the entire length range of these species. Priority should be given to gurnards, rays and scad but the other species listed should be sampled when the opportunity arises.

4.2 Selection of Stomachs at Sea

Collecting stomachs at sea is not just a matter of measuring fish, cutting them open and throwing their guts (or gut contents) into a jar. The material must be selected with care and properly documented.

The primary objective of the stomach sampling exercise is to provide information on the weight and species composition of the stomach contents of a typical member of the population. This is estimated by multiplying the average stomach contents of those fish that were still digesting a meal when captured (feeding fish) by the proportion of feeding fish in the sample. In order to calculate the proportion of feeding fish, it is necessary to record the numbers of non-feeding fish, ie those whose stomachs contain no food, or only indigestible skeletal remains.

Some fish have **EVERTED STOMACHS**. Since it is not known whether these were feeding or non-feeding individuals, such fish **MUST BE DISCARDED**.

FEEDING FISH fall into two categories:

a) Some may have **REGURGITATED** all or part of their stomach contents. Since the residual stomach contents (if any) of such fish will not provide useful information, **THESE MUST NOT BE COLLECTED FOR ANALYSIS**. However, the numbers of regurgitated stomachs encountered during the examination of a sample of fish must be recorded to ensure that the proportion of feeding animals in the sample is accurately defined. In practice, it is often difficult to tell whether regurgitation has taken place, but in situations where the stomach is flaccid or distended, but contains little food, experimental work by A P Robb (SOAFD Marine Laboratory, Aberdeen) indicates that the size and colour of the gall bladder is a useful practical indicator of the recent feeding history of the fish. In particular, a large, densely-coloured gall bladder indicates that a stomach has been empty for some time and has not recently lost its contents by regurgitation. Robb's criteria are summarised in Table 2, and should be applied when assessing whether a stomach should be classified as empty or regurgitated.

b) **THE STOMACHS OR STOMACH CONTENTS OF FEEDING FISH SHOWING NO EVIDENCE OF REGURGITATION SHOULD BE COLLECTED FOR ANALYSIS.** It should be noted that not all feeding fish have grossly distended stomachs; ie **FEEDING DOES NOT NECESSARILY MEAN FULL.**

NON-FEEDING fish also fall into two categories:

a) The stomach is completely empty.

b) The stomach contains only indigestible skeletal remains (polychaete bristles, mollusc shells and opercula, fish bones and otoliths etc).

When stomachs are opened at sea it is possible to distinguish between those which are truly empty and those containing small prey or indigestible remains. Accurate records can be kept and any indigestible material should be included in the material collected. However, when entire stomachs are collected at sea (see 4.3) their true state cannot be determined until they are opened in the laboratory and in this case the stomachs of apparently non-feeding fish should be collected.

THE MATERIAL COLLECTED AT SEA TO MEET THE SAMPLING TARGETS SHOULD THEREFORE ORIGINATE FROM FEEDING FISH SHOWING NO EVIDENCE OF REGURGITATION AND FROM NON-FEEDING FISH.

The following sampling strategy should be adopted:

a) For each predator species and size class, aim to collect the number of non-regurgitated stomachs indicated in Appendix I, taking care not to include material from fish showing evidence of regurgitation.

b) Record the numbers of stomachs: i) containing food; ii) regurgitated; iii) containing only skeletal remains; and iv) empty. *NB. Because data are subsequently processed on a sample (ie haul) basis there is no need to keep records in cases when all the fish in a size class consist of a mixture of individuals with empty stomachs and feeding fish that have regurgitated their stomach contents, since there is no way of making use of such information. However, cases when all the fish are found to have empty stomachs must be recorded because this information is usable.*

c) Preserve stomachs (stomach contents) in categories i), iii) and iv).

4.3 Stomachs or Stomach Contents?

In principle, the preservation of entire stomachs allows individual analysis in the laboratory, even when several have been preserved in the same container. Also, the analysis of stomachs containing large numbers of small organisms is facilitated. However, particularly in the case of large stomachs, this procedure results in poor preservation of the stomach contents. Furthermore, large preserved stomachs are difficult to handle in the laboratory because they become tough and inelastic. It was therefore agreed that **FOR MOST PREDATORS THE STOMACH CONTENTS SHOULD BE EMPTIED IN A JAR BUT THE ENTIRE STOMACHS OF WHITING, MACKEREL AND SCAD ARE REQUIRED.**

In the case of very small predators (<10 cm) the entire fish should be preserved. This eliminates the risk of losing a large part of the stomach contents when microsurgery is performaned to remove the stomach. The bellies of these fish should be slit to facilitate rapid preservation of the stomach contents.

4.4 Single Stomachs or Pooled Samples?

During the 1990 meeting of the Multispecies Assessment Working Group (Woods Hole, 4-14 December 1990) it was agreed that stomachs within a size stratum could be pooled if time is a limiting factor. However, individual participants are at liberty to collect and analyse individual stomachs, provided they are properly documented.

4.5 Preservation

Stomachs (stomach contents) are normally preserved in formaldehyde solution. For health and safety reasons, concentrations greater than 4% should not be used. **THE USE OF A BUFFERING AGENT IS STRONGLY RECOMMENDED** - this prevents the destruction of fish otoliths and bones, making the lives of the analysts much easier. A suitable recipe for 4% buffered formalin is:

2.5 litres 40% formaldehyde
22.5 litres sea water
100 grams sodium beta glycerophosphate

The volume of formalin in the jar should at least equal the volume of the material to be preserved.

Other methods of preservation, such as freezing, are permissible, even though this may increase the difficulty of exchanging material between laboratories.

4.6 Documentation of Samples

It is essential that each sample jar contains a label giving all the information listed in Appendix II. If a sample has to be stored in more than one jar, it should be unambiguously stated on the label of each jar that the contents represent only part of the total sample, and the number of jars comprising the sample must be indicated.

Because labels sometimes become illegible, duplicate records of the basic information should be kept, including a record of how many jars of samples have been collected from each size class of each predator in each haul (Appendix III). At the end of the cruise completed forms should be copied to the project Coordinator and to the species Coordinators, whilst the original form should be kept with the samples, and accompany them in transit.

DETAILS OF THE PROCEDURES TO BE FOLLOWED FOR COLLECTING AND PRESERVING STOMACHS ARE SUMMARISED IN TABLE 3.

5. EXCHANGE OF SAMPLES

In order to facilitate an efficient exchange of material, information on samples collected should be sent to the project Coordinator as soon as possible after the completion of a cruise, together with details of where the samples are located. He must also be informed when samples are transferred from one institute to another.

The Aberdeen laboratory is prepared to act as a clearing house for samples deposited by wandering research vessels.

6. ANALYSIS OF STOMACH CONTENTS

To achieve maximum internal consistency, all stomachs should be analysed under the direct supervision of the respective species Coordinators. However, the number of stomachs collected during a cruise will sometimes be small and individual institutes may prefer to analyse the stomachs of several of the species sampled during their surveys. This should be discussed and agreed beforehand with the species Coordinator. In such cases the basic data must be recorded in a standard manner, using a recording form similar to that in Appendix IV. Completed forms must be sent to the respective species Coordinators, who will be wholly responsible for constructing the stomach contents data bases.

Prey must be coded using either Latin names or the ten-digit NODC system. The recognised NODC codes for all fish species and for commercially important invertebrates are given in Appendix V. **IT SHOULD BE NOTED THAT IN THE PREVIOUS VERSION OF THIS MANUAL (ANON, 1981) SOME OF THE CODES FOR FISH, AND MANY OF THE CODES FOR INVERTEBRATES, WERE 'UNOFFICIAL' ONES, IMPROVISED TO FILL GAPS IN THE 1978 NODC LIST. THERE ARE SOME MAJOR DISCREPANCIES BETWEEN THESE CODES AND THOSE IN THE CURRENT (1985) NODC LIST (EG THE TRANSPOSITION OF THE CODES FOR WHITING AND TRISOPTERUS LUSCUS) AND THE CODES FOR FISH GIVEN IN THE OLD MANUAL SHOULD NO LONGER BE USED.** It should be borne in mind that some of the codes for invertebrates given in Appendix Vb may still differ from those on the official list.

Prey size groupings are given in Appendix VI. It will be seen that additional prey size classes have been included to conform with the additional predator size classes.

It should be noted that additional information is required *cf* 1981:

a) The numbers of stomachs containing only indigestible skeletal remains are to be recorded separately.

b) Digestion states of prey are required:
State 0: Intact prey
State 1: Partially digested prey
State 2: Skeletal material

The **ESSENTIAL DATA** to be recorded **FOR EACH SIZE CLASS OF EACH PREY TYPE** are: **TOTAL WET WEIGHT** and **NUMBER** of individuals. In the case of very fresh specimens of fish, *Nephrops*, *Crangon* and *Pandalus* the actual length (mm) of individual prey can be recorded in the "Remarks" section of the recording form (Appendix IV). Although it is sometimes difficult to measure prey items accurately it is usually possible to estimate the size class to which the animal belongs and such 'on the spot' estimates are usually more realistic than numbers generated by computer program during subsequent data processing.

The NODC code allows identification to all possible levels (class, order, family, genus, species). However, the **LEVEL TO WHICH PREY SPECIES SHOULD BE IDENTIFIED** depends very much on the prey type. The main aim of the project is to estimate the consumption of each size/age

class of each exploited species by each predator. Every effort should therefore be made to identify all fish prey as well as commercially important Crustacea such as *Nephrops*, *Pandalus* and *Crangon* to species level. For other prey, species identification is interesting but not so important, and broader categories (eg Crustacea, Mollusca, Echinodermata) can be used. However, the individual Coordinators are at liberty to make a more detailed analysis. Fish stomachs contain a great deal of information of interest to ecologists, who should be encouraged to participate in the analysis.

7. AUXILIARY REQUIREMENTS

Research vessel cruises using standard demersal trawls will be the main source of the information necessary to calculate regional diets of demersal species from local (ie statistical rectangle) samples and to convert size-based data to age-based data.

The data needed are the catch rates, age and length compositions of all predator species and age-length keys (for each Roundfish Sampling Area) for the principal prey species (sprat, herring, Norway pout and sandeels). These requirements are summarised in Appendix VII.

As soon as possible after the end of a cruise, a magtape containing basic haul information, length compositions, ALKs etc., should be prepared using the ICES International Young Fish Survey exchange tape format. In the case of the International Young Fish Survey the tape should, as usual, be sent to ICES. Tapes from other surveys should be sent to RIVO, IJmuiden. After processing, the appropriate data files will be passed to the species coordinators.

In the past it was sometimes impossible to get hold of regional, quarterly age/length keys for sandeels and sprats. Otoliths from these species should be collected whenever possible. Species coordinators should bear in mind the possibility of constructing age/length keys using otoliths taken from prey in good condition found in stomach contents.

8 COMPUTER ANALYSIS

The main objective of the project is to estimate the average food composition, by prey species age group, for each primary predator age group and for each size group of the secondary predators. The agreed procedures involve:

a) Sorting and combining samples by size class and statistical rectangle;

b) Sorting and combining the sample information by size class and Roundfish area, using the average catch rate of the predator size class by statistical rectangle according to survey data as a weighting factor (alternative options include giving samples equal weight or weighting by sample size);

c) Calculating stomach contents by predator age group using the average size-age distributions by Roundfish area from the surveys as the basis;

d) Calculating prey age composition on the basis of age-length keys by Roundfish areas;

e) Summing the information by Roundfish area over the total North Sea, using the density of the predator age group in each area and the number of rectangles in each area as multipliers.

In the case of secondary predators, there are no age-size distributions available and the associated steps have to be skipped.

Thus, in order to estimate the average prey age composition by predator age group, the auxiliary survey data required include catch rates of predator by size group by rectangle, catch rates of predator by age group by Roundfish area, age-size distributions of predator by area and age-length keys for all prey species by area. The software developed for the stomach sampling programme developed in IJmuiden is able to use the output from the International Young Fish Survey software directly and will, after some necessary amendments due to changes in the sampling procedures, be capable of producing all the required output, for both primary and secondary predators. Although the present program runs only on a VAX system and its use is therefore restricted to Scotland, Denmark, England and the Netherlands, there are plans to develop a version for a SUN work station.

As a secondary objective, it is envisaged that the data will be subjected to a thorough analysis of the factors responsible for variations in the stomach contents. Such analyses require a different approach. Therefore, an exchange tape format has been designed in order to allow transfer of basic data from one laboratory to another. All species coordinators must ensure that their data are made available in this format. In addition, this will allow homogeneity in the standard analysis, because the exchange tape information can be read by the available standard software.

The defined exchange tape format does not contain much auxiliary haul information. However, the station number should allow cross reference to the trawl list exchange tape format agreed for the ICES Young Fish Survey Data. Since detailed statistical analyses may require extensive haul

information (eg time hauled, depth, etc), all trawl lists related to surveys during which stomach samples have been collected should be made available in this format in connection with the stomach content data. It should be noted that the revised format is quite different from the one previously agreed (Daan, 1989, Appendix I). Particular attention is drawn to the sample no (positions 24-27), which must be an unique number within a quarterly data set to identify and separate grouped samples as well as individual stomachs in the set.

9. TIME SCHEDULE

The experience gained in 1981 makes possible a realistic estimate of the time needed to complete the project. A progress report will be presented to the 1992 council meeting of the ICES. Reports giving the final results for each species will be submitted to the 1993 council meeting by the respective species coordinators and the complete results should be available to the Multispecies Assessment Working Group in the autumn of 1993.

10. RECOMMENDATIONS

The Planning Group should meet in IJmuiden during the period 23-28 April 1992, under the Chairmanship of Dr J R G Hislop in order to:

a) Prepare a progress report on the 1992 Stomach Sampling Project.

b) Resolve logistical problems that may have emerged during the sampling, analysis and computerisation of the data.

c) Compile the auxiliary information on ALKs, survey data etc needed for preparing the stomach data for the MSVPA model.

11. REFERENCES

Anonymous. 1981. Draft manual for the stomach sampling project, prepared during the stomach sampling meeting in IJmuiden, 13-15 January 1981. (Available from RIVO, Postbox 68, 1970 AB IJmuiden, The Netherlands).

Anonymous. 1988. Report of the Multispecies Assessment Working Group. ICES, Doc. CM 1988/Assess:23.

Anonymous. 1989. Report of the Planning Group on the stomach sampling project for 1991. ICES Doc. CM 1989/G:41.

Anonymous. 1990. Report of the International North Sea, Skagerrak and Kattegat Bottom Trawl Survey Working Group. ICES Doc. CM 1990/H:3.

Anonymous. 1991. Report of the Planning Group on acoustic surveys in Sub-area IV and Division IIIa. ICES Doc. CM 1990/???.

Daan, N. (ed.). 1989. Data base report of the stomach sampling project 1981. ICES Coop. Res. Rep., 164: 144pp.

TABLE 1

Bottom trawl surveys in 1991

Quarter 1				
Denmark	*Dana*	06-02/27-02	IYFS)	
France	*Thalassa*	07-01/30-01	IYFS)	
Germany	*W Herwig*	23-01/15-02	IYFS)	
Netherlands*	*Tridens*	28-01/22-02	IYFS)	whole North Sea
	Isis	04-02/14-02	IYFS)	
Norway	*J Hjort*	11-01/15-02	IYFS)	
Scotland	*Scotia*	29-01/18-02	IYFS)	
Sweden	*Argos*	04-02/25-02	IYFS)	
Quarter 2				
Denmark	*Dana*	28-05/06-06	northern (saithe)	
England	*Cirolana*	10-05/10-06	coarse	
Germany	*W Herwig*	16-05/17-06	central	
Netherlands	*Tridens*	03-06/28-08	complementary (south & central)	
	Isis	27-05/07-06	and 24-06/28-06 southern	
Norway	*J Hjort*	05-06/30-06	northern (mackerel)	
Scotland*	*Scotia*	10-05/28-05	complementary	
Quarter 3				
England	*Cirolana*	08-08/06-09	coarse	
France	-	-	-	
Netherlands	*Tridens*	19-08/06-09	complementary (south & central)	
	Isis	05-08/16-08	southern	
Scotland	*Scotia*	09-08/29-08	northern	
Quarter 4				
Denmark	*Dana*	31-10/03-12	northern (*Pandalus*)	
England*	*Cirolana*	23-10/21-11	coarse	
Netherlands	*Tridens*	21-10/08-11	southern	
	Isis	28-10/15-11	southern	
Norway	*G O Sars*	14-10/07-11	northern	

*survey coordinator

TABLE 2

Condition of gall bladder, bile and hind gut, which can be used to differentiate between empty and regurgitated stomachs

Gall bladder	Bile colour	Hind gut	State
Shrunken, empty or with a small amount of bile	Pale	Contains large amounts of bile and digested food material	Feeding*
Elongate	Pale green to light emerald green	Contains some bile and digested food material	Feeding*
Elongate	Dark green	Empty or contains some food particles	Empty
Round	Dark blue	Empty	Empty

*NB If fish satisfying these criteria are found without food in their stomach they should be classified as regurgitated.

TABLE 3

Summary of stomach collection procedure

1. For each predator species and size class (Appendix I), aim to collect 5, 10 or 25 non-regurgitated stomachs (NEVER USE FISH WITH EVERTED STOMACHS).

2. Record the number of stomachs a) containing food, b) regurgitated, c) containing only skeletal remains, d) empty.

3. Preserve all the non-regurgitated stomachs in 4% buffered formalin or blast-freeze. For all species except whiting, mackerel and scad, empty out the stomach contents before preserving in formalin. The stomachs in each size class can be stored bulked (the usual procedure) or individually. Predators <10 cm long should be preserved whole.

4. a) Complete the label (Appendix II) and put it in the jar/bag. Use 1 of 2 etc if there is more than one container for a particular size class.

   b) Make sure the jar/bag can be identified from the outside.

   c) Keep separate records of the sample details on the check list (Appendix III).

APPENDIX I

NUMBERS OF NON-REGURGITATED STOMACHS TO BE COLLECTED PER SIZE CLASS PER HAUL

Size class (cm)	Species									
	Primary predators					Secondary predators				
	Cod	Whiting	Saithe	Mackerel	Haddock	Scad	Gurnards*	Rays*	LR dab	Other+
5-5.9	5	5	5	5	5					
6-6.9	5	5	5	5	5					
7-7.9	5	5	5	5	5					
8-9.9	5	5	5	5	5					
10-11.9	5	5	5	5	5					
12-14.9	5	5	5	5	5					
15-19.9	10	10	25	25	5	10	10	10		
20-24.9	10	10	25	25	5	10	10	10	10	
25-29.9	10	10	25	25	5	10	10	10	10	
30-34.9	10	10	25	25	5	10	10	10	10	
35-39.9	10	10	25	25	5	10	10	10		
40-49.9	10	10	25	25	5	10	10	10		
50-59.9	10	10	25		5			10		
60-69.9	25	10	25		5			10		
70-79.9	25		25		5			10		
80-99.9	25		25					10		
100-119.9	25		25					10		
>120	25		25					10		

* Each species of gurnard and ray should be sampled separately

\+ The following demersal species normally occur infrequently but should be sampled whenever possible (five stomachs per size class):

Tope	*Galeorhinus galeus*
Spurdog	*Squalus acanthias*
Spotted dogfish	*Scyliorhinus caniculus*
Conger	*Conger conger*
Pollack	*Pollachius pollachius*
Ling	*Molva molva*
Torsk	*Brosme brosme*
Hake	*Merluccius merluccius*
Angler fish	*Lophius piscatorius*
Turbot	*Scophthalmus maximus*
Brill	*S. rhombus*
Megrim	*Lepidorhombus whiffiagonis*
Halibut	*Hippoglossus hippoglossus*

In the case of pelagic 0-group gadoids and greater sandeel (*Hyperoplus*) a random sample of 50-100 individuals per haul is required.

APPENDIX II

SAMPLE IDENTIFICATION

A label carrying the following information should be inserted in each jar:

ICES Stomach Sampling Programme	
Ship Haul number Date Rectangle Species Size class N-food N-regurgitated N-skel rem N-empty	
Total number examined	

APPENDIX III

Sheet ________ of ________

SAMPLE CHECK LIST

ICES Stomach Sampling Project

Country: .... Ship: ....

Cruise: .... Dates: ....

Species: ....

Haul No	Statistical rectangle	Size class	N food	N reg	N skel rem	N empty	Total N examined	No of jars

APPENDIX IV

STOMACH ANALYSIS SHEET

Page [ ] of [ ]

Year [ ][ ][ ][ ] Quar [ ] Species [ ][ ][ ][ ] Size type code [ ] Country [ ][ ][ ] Ship [ ][ ][ ][ ] Method [ ][ ][ ]

Haul/Station [ ][ ][ ] Square [ ][ ][ ][ ] Month [ ][ ] Day [ ][ ] Temperature [ ][ ]

Size class [ ][ ][ ][ ] N sampled [ ][ ][ ] N food [ ][ ][ ] N regurg [ ][ ][ ] N skel rem [ ][ ][ ] N empty [ ][ ][ ]

N hour [ ][ ][ ][ ][ ][ ][ ]

Analysed by: Date:
Punched by: Date:
Verified by: Date:

	Prey		Size class	Weight (grams)	Number	D	Remarks
	Description	Code					
1				.			
2				.			
3				.			
4				.			
5				.			
6				.			
7				.			
8				.			
9				.			
10				.			
11				.			
12				.			
13				.			
14				.			
15				.			
16				.			
17				.			
18				.			
19				.			
20				.			
21				.			
22				.			
23				.			
24				.			
25				.			

APPENDIX Va

OFFICIAL NODC CODES FOR FISH (IN TAXONOMIC ORDER)

8705010000	CHLAMYDOSELACHIDAE		
8705010100	CHLAMYDOSELACHUS	8705010101	CHLAMYDOSELACHUS ANGUINEUS
8705020000	HEXANCHIDAE		
8705020100	HEXANCHUS	8705020101	HEXANCHUS GRISEUS
8707040000	LAMNIDAE		
8707040200	CETORHINUS	8707040201	CETORHINUS MAXIMUS
8707040300	LAMNA	8707040302	LAMNA NASUS
8707040400	ALOPIAS	8707040401	ALOPIAS VULPINUS
8707040500	ISURUS	8707040501	ISURUS OXYRHINCHUS
8708010000	SCYLIORHINIDAE		
8708010200	GALEUS	8708010203	GALEUS MELASTOMUS
8708010300	SCYLIORHINUS	8708010306	SCYLIORHINUS CANICULUS
		8708010307	SCYLIORHINUS STELLARIS
8708020000	CARCHARINIDAE		
8708020100	GALEORHINUS	8708020102	GALEORHINUS GALEUS
8708020400	MUSTELUS	8708020409	MUSTELUS MUSTELUS
8708020600	PRIONACE	8708020601	PRIONACE GLAUCA
8708030000	SPHYRNIDAE		
8708030100	SPHYRNA	8708030102	SPHYRNA ZYGAENA
8710010000	SQUALIDAE		
8710010100	SOMNIOSUS	8710010102	SOMNIOSUS MICROCEPHALUS
8710010200	SQUALUS	8710010201	SQUALUS ACANTHIAS
8710010400	DALATIAS	8710010401	DALATIAS LICHA
8710010500	ETMOPTERUS	8710010510	ETMOPTERUS SPINAX
8710011000	ECHINORHINUS	8710011001	ECHINORHINUS BRUCUS
8713030000	TORPEDINIDAE		
8713030100	TORPEDO	8713030102	TORPEDO NOBILIANA
		8713030105	TORPEDO MARMORATA
8713040000	RAJIDAE		
8713040100	RAJA	8713040134	RAJA RADIATA
		8713040138	RAJA BRACHYURA
		8713040140	RAJA MICROOCELLATA
		8713040141	RAJA MONTAGUI
		8713040143	RAJA BATIS
		8713040145	RAJA OXYRHYNCHUS
		8713040146	RAJA FULLONICA
		8713040147	RAJA CIRCULARIS
		8713040148	RAJA NAEVUS
		8713040151	RAJA ALBA
		8713040158	RAJA UNDULATA
		8713040159	RAJA CLAVATA
8713050000	DASYATIDAE		
8713050100	DASYATIS	8713050141	DASYATIS PASTINACUS
8713070000	MYLIOBATIDAE		
8713070200	MYLIOBATIS	8713070204	MYLIOBATIS AQUILA
8716020000	CHIMAERIDAE		
8716020200	CHIMAERA	8716020202	CHIMAERA MONSTROSA
8729010000	ACIPENSERIDAE		
8729010100	ACIPENSER	8729010107	ACIPENSER STURIO
8741010000	ANGUILLIDAE		
8741010100	ANGUILLLA	8741010102	ANGUILLLA ANGUILLA

8741050000	MURAENIDAE		
8741050500	MURAENA	8741050505	MURAENA HELENA
8741120000	CONGRIDAE		
8741120100	CONGER	8741120111	CONGER CONGER
8747010000	CLUPEIDAE		
8747010100	ALOSA	8747010107	ALOSA ALOSA
		8747010109	ALOSA FALLAX
8747010200	CLUPEA	8747010201	CLUPEA HARENGUS
8747011700	SPRATTUS	8747011701	SPRATTUS SPRATTUS
8747012200	SARDINA	8747012201	SARDINA PILCHARDUS
874702000	ENGRAULIDAE		
8747020100	ENGRAULIS	8747020104	ENGRAULIS ENCRASICOLUS
8755010000	SALMONIDAE		
8755010100	COREGONUS	8755010115	COREGONUS OXYRINCHUS
8755010300	SALMO	8755010305	SALMO SALAR
		8755010306	SALMO TRUTTA
8755030000	OSMERIDAE		
8755030200	MALLOTUS	8755030201	MALLOTUS VILLOSUS
8755030300	OSMERUS	8755030301	OSMERUS EPERLANUS
8756010000	ARGENTINIDAE		
8756010200	ARGENTINA	8756010203	ARGENTINA SILUS
		8756010237	ARGENTINA SPHYRAENA
8759010000	GONOSTOMATIDAE		
8759010500	MAUROLICUS	8759010501	MAUROLICUS MUELLERI
8759020000	STERNOPTYCHIDAE		
8759020100	ARGYROPELECUS	8759020107	ARGYROPELECUS OLFERSII
8762140000	MYCTOPHIDAE		
8784010000	GOBIESOCIDAE		
8784010600	LEPADOGASTER	8784010603	LEPADOGASTER LEPADOGASTER
8784010700	DIPLECOGASTER	8784010701	DIPLECOGASTER BIMACULATA
8786010000	LOPHIIDAE		
8786010100	LOPHIUS	8786010103	LOPHIUS PISCATORIUS
8791030000	GADIDAE		
8791030400	GADUS	8791030402	GADUS MORHUA
8791030800	LOTA	8791030801	LOTA LOTA
8791030900	POLLACHIUS	8791030901	POLLACHIUS VIRENS
		8791030902	POLLACHIUS POLLACHIUS
8791031100	BROSME	8791031101	BROSME BROSME
8791031300	MELANOGRAMMUS	8791031301	MELANOGRAMMUS AEGLEFINUS
8791031500	RHINONEMUS	8791031501	RHINONEMUS CIMBRIUS
8791031600	PHYCIS	8791031602	PHYCIS BLENNOIDES
8791031700	TRISOPTERUS	8791031701	TRISOPTERUS MINUTUS
		8791031702	TRISOPTERUS LUSCUS
		8791031703	TRISOPTERUS ESMARKI
8791031800	MERLANGIUS	8791031801	MERLANGIUS MERLANGUS
8791031900	MOLVA	8791031901	MOLVA MOLVA
		8791031902	MOLVA DIPTERYGIA
8791032000	GAIDROPSARUS	8791032001	GAIDROPSARUS VULGARIS
		8791032002	GAIDROPSARUS MEDITERRANEUS
8791032100	GADICULUS	8791032101	GADICULUS ARGENTEUS
8791032200	MICROMESISTIUS	8791032201	MICROMESISTIUS POUTASSOU
8791032300	RANICEPS	8791032301	RANICEPS RANINUS
8791032400	CILIATA	8791032401	CILIATA MUSTELA
		8791032402	CILIATA SEPTENTRIONALIS
8791040000	MERLUCCIDAE		
8791040100	MERLUCCIUS	8791040105	MERLUCCIUS MERLUCCIUS
8792020000	CARAPIDAE		
8792020200	ECHIODON	8792020202	ECHIODON DRUMMONDI

8793010000	ZOARCIDAE		
8793010700	LYCODES	8793010724	LYCODES VAHLII
8793012000	ZOARCES	8793012001	ZOARCES VIVIPARUS
8794010000	MACROURIDAE		
8794010600	MALACOCEPHALUS	8794010601	MALACOCEPHALUS LAEVIS
8794010100	CORYPHAENOIDES	8794010117	CORYPHAENOIDES RUPESTRIS
8794011500	TRACHYRHYNCHUS	8794011501	TRACHYRHYNCHUS TRACHYRHYNCHUS
8794011600	MACROURUS	8794011601	MACROURUS BERGLAX
8803020000	BELONIDAE		
8803020500	BELONE	8803020502	BELONE BELONE
8803030000	SCOMBERESOCIDAE		
8803030200	SCOMBERESOX	8803030201	SCOMBERESOX SAURUS
8805020000	ATHERINIDAE		
8805021000	ATHERINA	8805021003	ATHERINA PRESBYTER
8811030000	ZEIDAE		
8811030300	ZEUS	8811030301	ZEUS FABER
8811060000	CAPRODIAE		
8811060300	CAPROS	8811060301	CAPROS APER
8813010000	LAMPRIDAE		
8813010100	LAMPRIS	8813010102	LAMPRIS GUTTATUS
8815020000	TRACHIPTERIDAE		
8815020100	TRACHIPTERUS	8815020102	TRACHIPTERUS ARCTICUS
8815030000	REGALECIDAE		
8815030100	REGALECUS	8815030101	REGALECUS GLESNE
8818010000	GASTEROSTEIDAE		
8818010100	GASTEROSTEUS	8818010101	GASTEROSTEUS ACULEATUS
8818010500	SPINACHIA	8818010501	SPINACHIA SPINACHIA
8819030000	MACRORHAMPHOSIDAE		
8819030100	MACRORHAMPHOSUS	8819030101	MACRORHAMPHOSUS SCOLOPAX
8820020000	SYNGNATHIDAE		
8820020100	SYNGNATHUS	8820020119	SYNGNATHUS ROSTELLATUS
		8820020120	SYNGNATHUS ACUS
		8820020123	SYNGNATHUS TYPHLE
8820020200	HIPPOCAMPUS	8820020210	HIPPOCAMPUS RAMULOSUS
8820022100	ENTELURUS	8820022101	ENTELURUS AEQUOREUS
8820022200	NEROPHIS	8820022201	NEROPHIS LUMBRICIFORMIS
		8820022202	NEROPHIS OPHIDION
8826010000	SCORPAENIDAE		
8826010100	SEBASTES	8826010139	SEBASTES MARINUS
		8826010175	SEBASTES VIVIPARUS
8826010300	HELICOLENUS	8826010301	HELICOLENUS DACTYLOPTERUS
8826010600	SCORPAENA	8826010628	SCORPAENA SCROFA
8826020000	TRIGLIDAE		
8826020500	TRIGLA	8826020501	TRIGLA LUCERNA
		8826020503	TRIGLA LYRA
8826020600	EUTRIGLA	8826020601	EUTRIGLA GURNARDUS
8826020700	TRIGLOPORUS	8826020701	TRIGLOPORUS LASTOVIZA
8826020800	ASPITRIGLA	8826020801	ASPITRIGLA CUCULUS
8831010000	ICELIDAE		
8831010100	ICELUS	8831010101	ICELUS BICORNIS
8831020000	COTTIDAE		
8831022200	MYOXOCEPHALUS	8831022207	MYOXOCEPHALUS SCORPIUS
8831023800	TRIGLOPS	8831023807	TRIGLOPS MURRAYI
8831024600	TAURULUS	8831024601	TAURULUS BUBALIS
		8831024602	TAURULUS LILLJEBORGI
8831080000	AGONIDAE		
8831080800	AGONUS	8831080803	AGONUS CATAPHRACTUS

8831090000	CYCLOPTERIDAE		
8831090800	LIPARIS	8831090828	LIPARIS LIPARIS
		8831090860	LIPARIS MONTAGUI
8831091500	CYCLOPTERUS	8831091501	CYCLOPTERUS LUMPUS
8835020000	SERRANIDAE		
8835022800	POLYPRION	8835022801	POLYPRION AMERICANUM
8835280000	CARANGIDAE		
8835280100	TRACHURUS	8835280103	TRACHURUS TRACHURUS
8835430000	SPARIDAE		
8835430800	PAGELLUS	8835430801	PAGELLUS BOGARAVEO
		8835430804	PAGELLUS ERYTHRINUS
8835430900	BOOPS	8835430901	BOOPS BOOPS
8835431100	SPARUS	8835431101	SPARUS AURATA
8835431200	SPONDYLIOSOMA	8835431201	SPONDYLIOSOMA CANTHARUS
8835440000	SCIAENIDAE		
8835442700	ARGYROSOMUS	8835442701	ARGYROSOMUS REGIUM
8835450000	MULLIDAE		
8835450200	MULLUS	8835450202	MULLUS SURMULETUS
8835710000	BRAMIDAE		
8835710100	BRAMA	8835710102	BRAMA BRAMA
8835720000	DICENTRARCHIDAE		
8835720100	DICENTRARCHUS	8835720101	DICENTRARCHUS LABRAX
8836010000	MUGILIDAE		
8836010700	CRENIMUGIL	8836010704	CRENIMUGIL LABROSUS
8836010900	LIZA	8836010901	LIZA RAMADA
		8836010902	LIZA AURATUS
8839010000	LABRIDAE		
8839013300	CRENILABRUS	8839013301	CRENILABRUS MELOPS
8839013400	CENTROLABRUS	8839013401	CENTROLABRUS EXOLETUS
8839013500	CTENOLABRUS	8839013501	CTENOLABRUS RUPESTRIS
8839013600	LABRUS	8839013603	LABRUS BERGYLTA
		8839013605	LABRUS MIXTUS
8840060000	TRACHINIDAE		
8840060100	TRACHINUS	8840060101	TRACHINUS VIPERA
		8840060102	TRACHINUS DRACO
8842010000	BLENNIIDAE		
8842010100	BLENNIUS	8842010104	BLENNIUS OCELLARIS
		8842010110	BLENNIUS GATTORUGINE
		8842010115	BLENNIUS PHOLIS
8842020000	ANARHICHADIDAE		
8842020100	ANARHICHAS	8842020103	ANARHICHAS LUPUS
		8842020104	ANARHICHAS MINOR
8842120000	STICHAEIDAE		
8842120500	CHIROLOPHIS	8842120505	CHIROLOPHIS ASCANII
8842120900	LUMPENUS	8842120905	LUMPENUS LAMPRETAEFORMIS
8842121800	LEPTOCLINUS	8842121801	LEPTOCLINUS MACULATUS
8842130000	PHOLIDIDAE		
8842130200	PHOLIS	8842130209	PHOLIS GUNNELLUS
8845010000	AMMODYTIDAE		
8845010100	AMMODYTES	8845010105	AMMODYTES TOBIANUS
		8845010106	AMMODYTES MARINUS
8845010200	GYMNAMMODYTES	8845010201	GYMNAMMODYTES SEMISQUAMATUS
8845010300	HYPEROPLUS	8845010301	HYPEROPLUS LANCEOLATUS
		8845010302	HYPEROPLUS IMMACULATUS

8846010000	CALLIONYMIDAE		
8846010100	CALLIONYMUS	8846010106	CALLIONMYUS LYRA
		8846010107	CALLIONYMUS MACULATUS
		8846010120	CALLIONYMUS RETICULARTUS
8847010000	GOBIIDAE		
8847011300	GOBIUS	8847011316	GOBIUS GOBIUS NIGER
		8847011320	GOBIUS PAGANELLUS
8847014900	CRYSTALLOGOBIUS	8847014901	CRYSTALLOGOBIUS LINEARIS
8847015000	CHAPARRUDO	8847015001	CHAPARRUDO FLAVESCENS
8847015100	POMATOSCHISTUS	8847015101	POMATOSCHISTUS MINUTUS
		8847015102	POMATOSCHISTUS PICTUS
		8847015103	POMATOSCHISTUS MICROPS
		8847015104	POMATOSCHISTUS NORVEGICUS
8847016500	LEBETES	8847016501	LEBETES ORCA
8847016600	APHIA	8847016601	APHIA MINUTA
8847020000	LESUEURIGOBIIDAE		
8847026700	LESUEURIGOBIUS	8847026702	LESUEURIGOBIUS FRIESII
8850030000	SCOMBRIDAE		
8850030200	SARDA	8850030202	SARDA SARDA
8850030300	SCOMBER	8850030301	SCOMBER COLIAS
		8850030302	SCOMBER SCOMBRUS
8850030400	THUNNUS	8850030402	THUNNUS THYNNUS
8851010000	CENTROLOPHIDAE		
8851010300	CENTROLOPHUS	8851010301	CENTROLOPHUS NIGER
8857030000	BOTHIDAE		
8857030400	SCOPHTHALMUS	8857030402	SCOPHTHALMUS MAXIMUS
		8857030403	SCOPHTHALMUS RHOMBUS
8857031700	ARNOGLOSSUS	8857031702	ARNOGLOSSUS LATERNA
		8857031703	ARNOGLOSSUS IMPERIALIS
		8857031706	ARNOGLOSSUS THORI
8857032100	ZEUGOPTERUS	8857032101	ZEUGOPTERUS PUNCTATUS
8857032200	PHRYNORHOMBUS	8857032201	PHRYNORHOMBUS NORVEGICUS
		8857032202	PHRYNORHOMBUS REGIUS
8857032300	LEPIDORHOMBUS	8857032302	LEPIDORHOMBUS WHIFFIAGONIS
8857040000	PLEURONECTIDAE		
8857040500	GLYPTOCEPHALUS	8857040502	GLYPTOCEPHALUS CYNOGLOSSUS
8857040600	HIPPOGLOSSOIDES	8857040603	HIPPOGLOSSOIDES PLATESSOIDES
8857040900	LIMANDA	8857040904	LIMANDA LIMANDA
8857041200	MICROSTOMUS	8857041202	MICROSTOMUS KITT
8857041400	PLATICHTHYS	8857041402	PLATICHTHYS FLESUS
8857041500	PLEURONECTES	8857041502	PLEURONECTES PLATESSA
8857041800	REINHARDTIUS	8857041801	REINHARDTIUS HIPPOGLOSSOIDES
8857041900	HIPPOGLOSSUS	8857041902	HIPPOGLOSSUS HIPPOGLOSSUS
8858010000	SOLEIDAE		
8858010600	SOLEA	8858010601	SOLEA SOLEA
		8858010610	SOLEA LASCARIS
8858010800	BUGLOSSIDIUM	8858010801	BUGLOSSIDIUM LUTEUM
8858010900	MICROCHIRUS	8858010903	MICROCHIRUS VARIEGATUS
8860020000	BALISTIDAE		
8860020200	BALISTES	8860020205	BALISTES CAROLINENSIS
8861040000	MOLIDAE		
8861040100	MOLA	8861040101	MOLA MOLA

APPENDIX Vb

NODC CODES FOR INVERTEBRATE SPECIES (MANY OF THESE ARE UNOFFICIAL CODES)

1500000000	PHAEOPHYTA
1507000000	DICTYOTALES
1507010000	DICTYOTACEAE
1507010500	TAONIA
1510000000	PHAEOPHYCEAE FUCALES
1510010000	FUCACEAE
1510010100	ASCOPHYLLUM
1510010102	ASCOPHYLLUM NODOSUM
3600000000	PORIFERA
3601000000	CALCAREA
3630000000	HYALOSPONGIA
3660000000	DEMOSPONGIA
3700000000	CNIDARIA
3701000000	HYDROZOA
3717000000	PHYSOPHORINA
3717020000	PHYSOPHORIDAE
3717020100	PHYSOPHORA
3717020101	PHYSOPHORA HYDROST
3730000000	SCYPHOZOA
3734020100	CYANAEA
3740000000	ANTHOZOA
3744000000	OCTOCORALLIA
3747000000	ALCYONACEA
3747010000	XENIIDAE
3747020000	ALCYONIIDAE
3747030000	ASTROSPICULARIIDAE
3747040000	NEPHTHEIDAE
3747050000	SIPHONOGORGIIDAE
3760000000	THENARIA
3760010000	ACTINIIDAE
3760050000	SAGARTIIDAE
3760060000	METRIDIIDAE
3760080000	DIADUMENIDAE
3760100000	HALIPLANELLIDAE
3760120000	AIPTASIIDAE
3800000000	CTENOPHORA
3802000000	TENTACULATA CYDIPPIDA
3802010000	PLEUROBRACHIIDAE
3802010100	PLEUROBRACHIA
3802010101	PLEUROBRACHIA PILEUS
3802020000	MERTENSIIDAE
3901000000	TURBELLARIA
3930000000	CESTODA
4300000000	RHYNCHOCOELA
4302000000	PALEONEMERTEA
4302010000	TUBULANIDAE
4302020000	CARINOMIDAE
4302030000	CEPHALOTHRICIDAE
5000000000	ANNELLIDA
5001000000	POLYCHAETA
5001010000	APHRODITIDAE
5001010100	APHRODITE
5001010105	APHRODITE ACULEATA
5001020000	POLYNOIDAE
5001020800	HARMOTHIOE
5001020807	HARMOTHOE IMPAR
5001021000	LEPIDONOTUS
5001021106	LEPIDONOTUS CLAVA
5001021500	POLYNOE
5001021506	POLYNOE SCOLOPENDRINA
5001022000	HERMIONE
5001022501	HERMIONE HYSTRIX
5001130000	PHYLLODOCIDAE
5001130110	PHYLLODOCE LAMELLIGERA
5001130111	PHYLLODOCE PARETTI
5001130112	PHYLLODOCE MACULATA
5001200000	TOMOPTERIDAE
5001200100	TOMOPTERIS
5001200105	TOMOPTERIS HELGOLANDICA
5001210000	HESIONIDAE
5001230000	SYLLIDAE
5001230100	AUTOLYTUS
5001230111	AUTOLYTUS PICTUS
5001230300	SYLLIS
5001230307	SYLLIS PROLIFERA
5001240000	NEREIDAE
5001240400	NEREIS
5001240403	NEREIS PELAGICA
5001240410	NEREIS
5001240411	NEREIS DIVERSICOLOR
5001240412	NEREIS VERINS
5001240414	NEREIS FUCATA
5001241000	PERINEREIS
5001241101	PERINEREIS CULTRIFERA
5001250000	NEPHTYIDAE
5001250100	NEPHTYS
5001250103	NEPHTYS HOMBERGII
5001250110	NEPHTYS PARADOXA
5001250112	NEPHTYS CAECA
5001270000	GLYCERIDAE
5001270100	GLYCERA
5011270107	GLYCERA CONVOLUTA
5001300000	EUNICIDAE
5001300100	EUNICE
5001300107	EUNICE HARASSII
5001400000	ORGINIIDAE
5001400500	ORBINIA
5001400504	ORBINIA LATREILLI
5001430000	SPIONIDAE
5001430400	POLYDORA
5001430405	POLYDORA CILIATA
5001440000	MAGELONIDAE
5001440200	MAGELONA
5001440206	MAGELONA PAPILLICORNIS
5001490000	CHAETOPTERIDAE
5001490100	CHAETOPTERUS
5001490101	CHAETOPTERUS VARIOPEDATUS
5001500000	CIRRATULIDAE
5001500100	CIRRATULUS
5001500105	CIRRATULUS CIRRATUS
5001540000	FLABELLIGERIDAE
5001540200	FLABELLIGERA
5001540202	FLABELLIGERA AFFINIS
5001570101	SCALIBRAEGMA INFLATUM
5001580000	OPHELIIDAE
5001580300	OPHELIA
5001580303	OPHELIA BICORNIS
5001590000	STERNASPIDAE
5001590100	STERNASPIS

5001590101	STERNASPIS SCUTATA
5001600000	CAPITELLIDAE
5001600100	CAPITELLA
5001600101	CAPITELLA CAPITATA
5001600200	HETEROMASTUS
5001600201	HETEROMASTUS FILIFORMIS
5001620000	ARENICOLIDAE
5001620200	ARENICOLA
5001620203	ARENICOLA MARINA
5001630000	MALDANIDAE
5001630300	MALDANE
5001630301	MALDANE SARSI
5001640000	OWENIDAE
5001640100	OWENIA
5001640102	OWENIA FUSIFORMIS
5001650000	SABELLARIIDAE
5001650200	SABELLARIA
5001650204	SABELLARIA ALVEOLATA
5001670000	AMPHARETIDAE
5001671700	PECTINARIA
5001671701	PECTINARIA KORENI
5001680000	TEREBELLIDAE
5001680100	AMPHITRITE
5001680104	AMPHITRITE JOHNSTONI
5001680105	AMPHITRITE GRACILIS
5001682000	LANICE
5001682701	LANICE CONCHILEGA
5001700000	SABELLIDAE
5001730000	SERPULIDAE
5001731000	MERCIERELLA
5001731101	PROTULA TUBULARIA
5001731201	MERCIERELLA ENIGMATICA
5012000000	HIRUDINEA
5085000000	MOLLUSCA
5100000000	GASTROPODA
5102000000	ARCHAEOGASTROPODA
5102040000	FISSURELLIDAE
5102040400	DIODORA
5102040404	DIODORA APERTURA
5102050000	ACMAEIDAE
5102050100	ACMAEA
5102050109	ACMAEA VIRGINEA
5102060000	PATELLIDAE
5102060100	PATELLA
5102060101	PATELLA VULGATA
5102060102	PATELLA DEPRESSA
5102060103	PATELLA ATHLETICA
5102060200	HELCION
5102060201	HELCION PELLUCIDUM
5102100000	TROCHIDAE
5102100100	CALLIOSTOMA
5102100105	CALLIOSTOMA ZIZYPHINUM
5102100800	CANTHARIDUS
5102100801	CANTHARIDUS EXASPERATUS
5102100802	CANTHARIDAS STRIATUS
5102100900	GIBBULA
5102100901	GIBBULA MAGUS
5102100902	GIBBULA PENNANTI
5102100903	GIBBULA TUMIDA
5102100904	GIBBULA CINERARIA
5102100905	GIBBULA UMBILICALIS
5102120000	TURBINIDAE
5102120300	PHASIANELLA
5102120301	PHASIANELLA PULLUS
5103000000	MESOGASTROPODA
5103090000	LACUNIDAE
5103090300	LACUNA
5103090303	LACUNA CRASSIOR
5103090305	LACUNA VINCTA
5103090306	LACUNA PARVA
5103090307	LACUNA PALLIDULA
5103100000	LITTORINIDAE
5103100100	LITTORINA
5103100105	LITTORINA SAXATILIS
5103100108	LITTORINA LITTOREA
5103100109	LITTORINA OBTUSATA
5103100110	LITTORINA
5103100111	LITTORINA NERITOIDES
5103130000	HYDROBIIDAE
5103130100	HYDROBIA
5103130103	HYDROBIA STAGNORUM
5103130104	HYDROBIA ULVAE
5103140000	TRUNCATELLIDAE
5103140200	TRUNCATELLA
5103140201	TRUNCATELLA SUBCYLINDRICA
5103200000	RISSOIDAE
5103200100	ALVINIA
5103200117	ALVINIA LACTEA
5102300118	ALVINIA PUNCTURA
5103200300	CINGULA
5103200309	CINGULA PULCHERRIMA
5103200310	CINGULA SEMICOSTATA
5103200311	CINGULA SEMISTRIATA
5103200312	CINGULA CINGILLUS
5103200400	BAREEIA
5103200403	BAREEIA UNIFASCIATA
5103200700	RISSOA
5103200701	RISSOA INCONSPICUA
5103200702	RISSOA PARVA
5103200703	RISSOA GUERINI
5103200704	RISSOA MEMBRANACEA
5103200800	PSEUDOSETIA
5103200801	PSEUDOSETIA FULGIDA
5103210000	ASSIMINEIDAE
5103210100	ASSIMINEA
5103210101	ASSIMINEA GRAYANA
5103240000	SKENEOPSIDAE
5103240100	SKENEOPSIS
5103240102	SKENEOPSIS PLANORBIS
5103250000	OMALOGYRIDAE
5103250100	AMMONICERA
5103250101	AMMONICERA ROTA
5103270000	RISSOELLIDAE
5103270100	RISSOELLA
5103270101	RISSOELLA DIAPHANA
5103330000	TURRITELLIDAE
5103330400	TURRITELLA
5103330401	TURRITELLA COMMUNIS
5103360000	CAECIDAE
5103360300	CAECUM
5103360302	CAECUM GLABRUM
5103460000	CERITHIIDAE
5103460100	BITTIUM
5103460105	BITTIUM RETICULATUM
5103500000	EPITONIIDAE
5103500100	EPITONIUM
5103500112	EPITONIUM CLATHRUS
5103500113	EPITONIUM TURTONIS
5103500114	EPITONIUM CLATHRATUS
5103520000	ACLIDADAE
5103520200	GRAPHIS
5103520201	GRAPHIS ALBIDA
5103530000	EULIMIDAE

5103530400	BACIS
5103530401	BACIS ALBA
5103570000	APORRHAIDAE
5103570100	APORRHAIS
5103570102	APORRHAIS PESPELICANI
5103630000	CAPULIDAE
5103630100	CAPULUS
5103630101	CAPULUS UNGARICUS
5103640000	CALYPTRAEIDAE
5103640100	CALYPTRAEA
5103640102	CALPTRAEA CHINENSIS
5103640200	CREPIDULA
5103640204	CREPIDULA FORNICATA
5103660000	LAMELLARIIDAE
5103660100	LAMELLARIA
5103660102	LAMELLARIA PERSPICUA
5103660103	LAMELLARIA LATEUS
5103660400	VELUTINA
5103660401	VELUTINA VELUTINA
5103710000	CYPRAEIDAE
5103710100	TRIVIA
5103710101	TRIVIA MONACHA
5103710102	TRIVIA ARCTICA
5103760000	NATICIDAE
5103760200	NATICA
5103760206	NATICA ALDERI
5103760400	POLINICES
5103760411	POLINICES CATENA
5103760412	POLINICES POLIANUS
5103820000	TORNIDAE
5103820100	TORNUS
5103830101	TORNUS GRAYANA
5105000000	STEROGLOSSA
5105010000	MURICIDAE
5105010200	OCENEBRA
5105010207	OCENEBRA ERINACEUS
5105010800	THAIS
5105010802	THAIS LAPILLUS
5105011000	TROPHON
5105011001	TROPHON MURICATUS
5105040000	BUCCINIDAE
5105040100	BUCCINUM
5105040145	BUCCINUM UNDATUM
5105040400	CHAUVETIA
5105040401	CHAUVETIA BRUNNEA
5105050000	NEPUNEIDAE
5105050300	COLUS
5105050332	COLUS GRACILIS
5105050800	NEPTUNEA
5105050812	NEPTUNEA ANTIQUA
5105080000	NASSARIIDAE
5105080100	NASSARIUS
5105080105	NASSARIUS RETICULATUS
5105080106	NASSARIUS INCRASSATUS
5105080107	NASSARIUS PYGMAEUS
5106000000	TOXOGLOSSA
5106020000	TURRIDAE
5106020700	LORA
5106020731	LORA TURRICULA
5108000000	ENTOMOTAENIATA
5108010000	PYRAMIDELLIDAE
5108010100	ODOSTOMIA
5108010135	ODOSTOMIA NIVOSA
5108010136	ODOSTOMIA TRUNCATULA
5108010137	ODOSTOMIA PLICATA
5108010138	ODOSTOMIA UNIDENTATA
5108010200	TURBONILLA
5108010212	TURBONILLA ELEGANTISSIMA
5108010400	CHRYSALLIDA
5108010401	CHRYSALLIDA OBTUSA
5108010402	CHRYSALLIDA DECUSSATA
5108010403	CHRYSALLIDA SPIRALIS
5108010500	BRANCHYSTOMIA
5108010501	BRANCHYSTOMIA SCALARIS
5108010502	BRANCHYSTOMIA ALBELLA
5108010600	EULIMELLA
5108010601	EULIMELLA NITIDISSIMA
5110000000	CEPHALASPIDEA
5110010000	ACTEONIDAE
5110010100	ACTEON
5110010102	ACTEON TORNATILIS
5110040000	SCAPHANDRIDAE
5110040300	SCAPHANDER
5110040303	SCAPHANDER LIGNARIUS
5110050000	PHILINIDAE
5110050100	PHILINE
5110050106	PHILINE APERTA
5110050107	PHILINE ALATA
5110130000	RETUSIDAE
5110130100	RETUSA
5110130104	RETUSA ALBA
5113000000	THECOSOMATA
5113010000	LIMACINIDAE
5113010100	LIMACINA
5113010106	LIMACINA RETROVERSA
5113020000	CAVOLINIDAE
5113030000	PERACLIDIDAE
5113040000	PROCYMBULIIDAE
5113050000	CYMBULIIDAE
5113060000	DESMOPTERIDAE
5114000000	BASOMMATOPHORA
5114040000	ELLOBIIDAE
5114040100	PHYTIA
5114040101	PHYTIA MYOSOTIS
5114040400	LEUCOPHYTIA
5114040401	LEUCOPHYTIA BIDENTATA
5127000000	NUDIBRANCHIA
5130000000	CRYPTOBRANCHIA
5130020000	CHROMODORIDIDAE
5130030000	DORIDIDAE
5134000000	DENDRONOTOIDEA
5134060000	DENDRONOTIDAE
5142000000	CLEIOPROCTA
5142010000	FACELINIDAE
5142030000	AEOLIDIIDAE
5300000000	POLYPLACOPHORA
5302000000	LEPIDOPLEURINA
5302010000	LEPIDOPLEURIDAE
5302010200	LEPIDOPLEURUS
5302010202	LEPIDOPLEURUS ASELLUS
5303000000	ISCHNOCHITONINA
5303020000	ISCHNOCHITONIDDAE
5303020300	ISCHNOCHITON
5303020302	ISCHNOCHITON ALBUS
5303020400	LEPIDOCHITONA
5303020402	LEPIDOCHITONA CINEREUS
5303020600	TONICELLA
5303020604	TONICCELLA RUBRA
5303040000	CALLOCHITONIDAE
5303040100	CALLOCHITON
5303040101	CALLOCHITON ACHATINUS
5304000000	ACANTHOCHITONINA
5304010000	ACANTHOCHITONIDAE

5304010200	ACANTHOCHITONA
5304010201	ACANTHOCHITONA CRINATUS
5304010202	ACANTHOCHITON COMMUNIS
5500000000	BIVALVIA
5502000000	NUCULOIDA
5502020000	NUCULIDAE
5502020200	NUCULA
5502020207	NUCULA NUCLEUS
5502020208	NUCULA TUMIDULA
5506000000	ARCOIDA
5506010000	ARCIDAE
5506010400	ARCA
5506010401	ARCA LACTEA
5506060000	GLYCYMERIDAE
5506060100	GLYCYMERIS
5506060105	GLYCYMERIS GLYCYMERIS
5507000000	MYTILOIDA
5507010000	MYTILIDAE
5507010100	MYTILUS
5507010101	MYTILUS EDULIS
5507010102	MYTILUS GALLOPROVINCIALIS
5507010400	MUSCULUS
5507010402	MUSCULUS DISCORS
5507010407	MUSCULUS MARMORATUS
5507010410	MUSCULUS
5507010412	MUSCULUS COSTULATUS
5507010600	MODIOLUS
5507010601	MODIOLUS MODIOLUS
5507010604	MODIOLUS BARBATUS
5507010605	MODIOLUS PHASEOLINUS
5509000000	PTERIINA
5509050000	PECTINIDAE
5509050100	CHLAMYS
5509050108	CHLAMYS VARIA
5509050109	CHLAMYS DISTORTA
5509050110	CHLAMYS OPERCULARIS
5509050111	CHLAMYS TIGERINA
5509050400	PECTEN
5509050402	PECTEN MAXIMUS
5509090000	ANOMIIDAE
5509090200	ANOMIA
5509090203	ANOMIA SQUAMULA
5509090204	ANOMIA EPIHIPPIUM
5509090205	ANOMIA PATELLIFORMIS
5509090206	ANOMIA SQUAMA
5509100000	LIMIDAE
5509100100	LIMA
5509100104	LIMA LASCOMBI
5509100106	LIMA SULCATA
5510000000	OSTREINA
5510020000	OSTREIDAE
5510020100	CRASSOSTREA
5510020103	CRASSOSTREA ANGULATA
5510020200	OSTREA
5510020202	OSTREA EDULIS
5515000000	VENEROIDA
5515010000	LUCINIDAE
5515010400	PHACOIDEA
5515010401	PHACOIDEA BOREALIS
5515010500	DIVARICELLA
5515010501	DIVARICELLA DIVARICATA
5515070000	ERYCINIDAE
5515070100	LASAEA
5515070102	LASAEA RUBRA
5515080000	KELLIIDAE
5515080100	KELLIA
5515080102	KELLIA SUBORBICULARIS
5515100000	MONTACUTIDAE
5515100100	MYSELLA
5515100108	MYSELLA BIDENTATA
5515100400	MONTACUTA
5515100403	MONTACUTA FERRUGINOSA
5515190000	ASTARTIDAE
5515190100	ASTARTE CASTANEA
5515190103	ASTARTE MONTAGUI
5515190110	ASTARTE
5515190116	ASTARTE SULCATA
5515190117	ASTARTE TRIANGULARIS
5515220000	CARDIIDAE
5515220400	LAEVICARDIUM
5515220402	LAEVICARDIUM CRASSUM
5515220800	CARDIUM
5515220801	CARDIUM EDULE
5515220802	CARDIUM SCABRUM
5515220803	CARDIUM EXIGUUM
5515220804	CARDIUM ECHINATUM
5515220900	PARVICARIUM
5515220901	PARVICARDIUM MINIMUM
5515250000	MACTRIDAE
5515250100	SPISULA
5515250104	SPISULA SUBTRUNCATA
5515250105	SPISULA SOLIDA
5515250106	SPISULA ELLIPTICA
5515250500	MACTRA
5515250501	MACTRA CORALLINA
5515250600	LUTRARIA
5515250601	LUTRARIA LUTRARIA
5515250602	LUTRARIA MAGNA
5515290000	SOLENIDAE
5515290200	SOLEN
5515290203	SOLEN MARGINATUS
5515290300	ENSIS
5515290302	ENSIS ENSIS
5515290303	ENSIS ARCUATUS
5515290304	ENSIS SILIQUA
5515290400	CULTELLUS
5515290401	CULTELLUS PELLUCIDUS
5515310000	TELLINIDAE
5515310100	MACOMA
5515310116	MACOMA BALTHICA
5515310300	ARCOPAGIA
5515310301	ARCOPAGIA CRASSA
5515310400	ANGULUS
5515310401	ANGULUS PYGMAEUS
5515310402	ANGULA FABULA
5515310403	ANGULA DONACINUS
5515310404	ANGULA TENUIS
5515320000	DONACIDAE
5515320100	DONAX
5515320103	DONAX VITTATUS
5515330000	PSAMMOBIIDAE
5515330100	GARI
5515330102	GARI FERVENSIS
5515350000	SEMELIDAE
5515350200	ABRA
5515350202	ABRA TENUIS
5515350203	ABRA ALBA
5515350204	ABRA PRISMATICA
5515350300	SCROBICULARIA
5515350301	SCROBICULARIA PLANA
5515470000	VENERIDAE
5515470900	DOSINIA
5515470902	DOSINIA EXOLETA
5515470903	DOSINIA LUPINUS

5515471000	VENUS
5515741401	VENUS VERRUCOSA
5515471402	VENUS MERCENARIA
5515471403	VENUS OVATA
5515471404	VENUS GALLINA
5515471500	VENERUPIS
5515471501	VENERUPIS PULLASTRA
5515471502	VENERUPIS AUREA
5515471503	VENERUPIS RHOMBOIDES
5515480000	PETRICOLIDAE
5515480100	PETRICOLA
5515480102	PETRICOLA PHOLADIFORMIS
5515510000	CYPRINIDAE
5515510100	CYPRINA
5515510101	CYPRINA ISLANDICA
5517000000	MYINA
5517010000	MYIDAE
5517010200	MYA
5517010201	MYA ARENARIA
5517010203	MYA TRUNCATA
5517010400	SPHENIA
5517010401	SPHENIA BINGHAMI
5517020000	CORBULIDAE
5517020200	CORBULA
5517020202	CORBULA GIBBA
5517060000	HIATELLIDAE
5517060200	HIATELLA
5517060201	HIATELLA ARCTICA
5517060204	HIATELLA STRIATA
5517060500	SAXICAVELLA
5517060501	SAXICAVELLA JEFFREYSI
5518000000	PHOLADINA
5518010000	PHOLADIDAE
5518010100	ZIRRFAEA
5518010102	ZIRRFAEA CRISPATA
5518010400	BARNEA
5518010402	BARNEA CANDIDA
5518010403	BARNEA PARVA
5518010800	PHOLAS
5518010801	PHOLAS DDACTYLUS
5518020000	TEREDINIDAE
5518020200	TEREDO
5518020201	TEREDO NAVALIS
5518020202	TEREDO MEGOTARA
5518020203	TEREDO NORVEGICA
5520000000	PHOLADOMYIDAE
5520080000	THRACIIDAE
5520080210	THRACIA PHASEOLINA
5600000000	SCAPHOPODA
5600010000	DENTALIDAE
5600010100	DENTALIUM
5600010105	DENTALIUM ENTALE
5600010107	DENTALIUM VULGARE
5700000000	CEPHALOPODA
5704000000	SEPIIDA
5704020000	SEPIOLIDAE
5704020100	ROSSIA
5704020103	ROSSIA MACROSOMA
5704020300	SEPIOLA
5704020301	SEPIOLA ATLANTICA
5704020400	SEPIETTA
5704020401	SEPIETTA OWENIANA
5704030000	SEPIIDAE
5704030100	SEPIA
5704030101	SEPIA ELEGANS
5704030102	SEPIA ORBIGNYANA
5704030103	SEPIA OFFICINALIS
5706000000	MYOPSIDA
5706010000	LOLIGINIDAE
5706010100	LOLIGO
5706010102	LOLIGO VULGARIS
5706010103	LOLIGO FORBESI
5706010300	ALLOTEUTHIS
5706010301	ALLOTEUTHIS SUBULATA
5707000000	DEGOPSIDA
5707150000	OMMATOSTREPHIDAE
5707150300	OMMASTREPHES
5707150301	OMMASTREPHES SAGITTATUS
5708000000	OCTOPODIDA
5708010000	OCTOPODIDAE
5708010200	OCTOPUS
5708010202	OCTOPUS VULGARIS
5708010400	ELEDONE
5708010401	ELEDONE CIRROSA
6000000000	PYCNOGONIDA
6001000000	PANTOPODA
6001010000	NYMPHONIDAE
6001010100	NYMPHON
6001010108	NYMPHON GRACILE
6001080000	PYCNOGONIDAE
6001080100	PYCNOGONUM
6001080103	PYCNOGONUM LITTORALE
6100000000	CRUSTACEA
6100000000	CRUSTACEA DECAPODA
6109000000	CLADOCERA
6110000000	OSTRACODA
6111000000	MYODOCOPA
6112000000	CLADOCOPA
6113000000	PODOCOPA
6114000000	PLATYCOPA
6118000000	CALANOIDA
6118010000	CALANIDAE
6118040000	PARACALANIDAE
6118050000	PSEUDOCALANIDAE
6118200303	TEMORA LONGICORNIS
6118290000	ACARTIIDAE
6119000000	HARPACTICOIDA
6119100000	HARPACTICIDAE
6123010100	CALIGUS
6132000000	LEPADOMORPHA
6132050000	LEPADIDAE
6132050300	LEPAS
6132050301	LEPAS ANATIFERA
6134000000	BALANOMORPHA
6134020000	BALANIDAE
6145000000	LEPTOSTRACA
6145010000	NEBALIDAE
6153000000	MYSIDA
6153010000	MYSIDAE
6153011400	MYSIS
6153011500	NEOMYSIS
6153012700	GASTROSACCUS
6153012701	GASTROSACCUS SPINIFER
6154000000	CUMACEA
6154010000	LAMPROPIDAE
6154020000	CUMIDAE
6154030000	PLATYASPIDAE
6154040000	LEUCONIDAE
6154050000	DIASTYLIDAE
6154060000	PSEUDOCUMIDAE

6154060200	PSEUDOCUMA
6154060201	PSEUDOCUMA LONGICORNIS
6154070000	CAMPYLASPIDAE
6154080000	NANNASTACIDAE
6154090000	BODOTRIIDAE
6157000000	TANAIDACEA DIKONOPHORA
6157010000	TANAIDAE
6158000000	ISOPODA
6159000000	GNATHIIDEA
6160000000	ANTHURIDEA
6160010000	ANTHURIDAE
6160010700	ANTHURA
6161000000	FLABELLIFERA
6161010000	CIROLANIDAE
6161010100	CIROLANA
6161010108	CIROLANA BOREALIS
6161020000	SPHAEOMATIDAE
6161020700	SPHAEROMA
6161050000	LIMNORIDAE
6161050100	LIMNORIA
6162000000	VALVIFERA
6162010000	ARCTURIDAE
6162010400	ASTACILLA
6162020000	IDOTEIDAE
6162020300	IDOTEA
6163000000	ASELLOTA
6163060000	JANIRIDAE
6163060200	JAERA
6165000000	EPICARIDEA
6166000000	ONISCOIDEA
6166010000	LIGIIDAE
6166010100	LIGIA
6168000000	AMPHIPODA
6169000000	GAMMARIDEA
6169020301	HAPLOOPS
6169150000	COROPHIDAE
6169210000	GAMMARIDAE
6169210601	GAMARELLUS HOMARI
6169220000	HAUSTORIIDAE
6169340000	LYSIANASSIDAE
6170000000	HYPERIIDEA
6170010000	HYPERIIDAE
6170011000	PARATHEMISTO
6171000000	CAPRELLIDEA
6174000000	EUPHAUSIACEA
6174020000	EUPHAUSIIDAE
6174020100	EUPHAUSIA
6174020200	MEGANYCTIPHANES
6174020201	MEGANYCTIPHANES NORVEGICA
6174020501	NYCTIPHANES COUCHII
6174020900	THYSSANOESSA
6174020902	THYSSANOESSA INERMIS
6174020904	THYSSANOESSA LONGICAUDA
6174020906	THYSSANOESSA RASCHII
6177000000	PENAEIDEA
6177020000	SERGESTIDAE
6177020200	LUCIFER
6179000000	CARIDEA
6179110000	PALAEMONIDAE
6179110100	LEANDER
6179110102	LEANDER SERRATUS
6179110103	LEANDER SQUILLA
6179140000	ALPHEIDAE
6179140300	ATHANAS
6179140301	ATHANAS NITESCENS
6179160000	HIPPOLYTIDAE
6179160100	HIPPOLYTE
6179160104	HIPPOLYTE VARIANS
6179160200	SPIRONTOCARIS
6179160208	SPIRONTOCARIS LILJEBORGII
6179160210	SPIRONTOCARIS ARCUATA
6179160216	SPIRONTOCARIS SPINOSUS
6179160217	SPIRONTOCARIS GAIMARDI
6179160218	SPIRONTOCARIS CRANCHI
6179160219	SPIRONTOCARIS PUSIOLA
6179160800	CARIDION
6179160801	CARIDION GORDONI
6179170000	PROCESSIDAE
6179170100	PROCESSA
6179170101	PROCESSA CANALICULATA
6179180000	PANDALIDAE
6179180100	PANDALUS
6179180101	PANDALUS BOREALIS
6179180104	PANDALUS MONTAGUI
6179180110	PANDALUS BREVIROSTRIS
6179190108	PANDALUS PROPINQUIS
6179220000	CRANGONIDAE
6179220100	CRANGON
6179220110	CRANGON INTERMEDIA
6179220118	CRANGON CRANGON
6179220119	CRANGON ALLMANNI
6179220501	SABINEA SEPTEMCARINATA
6179220600	PONTOPHILUS
6179220602	PONTOPHILUS BISPINOSUS
6179220603	PONTOPHILUS TRISPINOSUS
6179220604	PONTOPHILUS SPINOSUS
6179220605	PONTOPHILUS FASCIATUS
6181000000	ASTACIDEA
6181010000	NEPHROPIDAE
6181010200	HOMARUS
6181010202	HOMARUS VULGARIS
6181010300	NEPHROPS
6181010301	NEPHROPS NORVEGICUS
6182010100	PALINURUS
6183000000	ANOMURA
6183020000	AXIIDAE
6183020200	CALOCARIS
6183020202	CALOCARIS MACANDREAE
6183040000	CALLIANASSIDAE
6183040100	UPOGEBIA
6183040103	UPOGEBIA STELLATA
6183040104	UPOGEBIA DELTAURA
6183040110	UPOGEBIA LITTORALIS
6183040200	CALLIANASSA
6183040202	CALLIANASSA SUBTERRANEA
6183040204	CALLIANASSA LATICAUDATA
6183040206	CALLIANASSA STEBBINGI
6183060000	PAGURIDAE
6183060200	PAGURUS
6183060228	PAGURUS BERNHARDUS
6183060230	PAGURUS LONGICARPUS
6183060234	PAGURUS PUBESCENS
6183061000	ANAPAGURUS
6183061101	ANAPAGURUS LAEVIS
6183080000	LITHODIDAE
6183080800	LITHODES
6183080803	LITHODES MAJA
6183100000	GALATHEIDAE
6183100100	MUNIDA
6183100104	MUNIDA RUGOSA
6183100300	GALATHEA
6183100301	GALATHEA INTERMEDIA
6183100302	GALATHEA DISPERSA
6183100303	GALATHEA SQUAMIFERA
6183100304	GALATHEA STRIGOSA
6183120000	PORCELLANIDAE

6183120500	PORCELLANA
6183120502	PORCELLANA LONGICORNIS
6184000000	BRACHYURA
6185000000	DROMIACEA
6185020000	DROMIDAE
6185020100	DROMIA
6185020101	DROMIA PERSONATA
6185040000	HOMOLIDAE
6185040200	PARAMOLA
6185040201	PARAMOLA CUVIERI
6186000000	OXYSTOMATA
6186030000	LEUCOSIIDAE
6186030300	EBALIA
6186030301	EBALIA TUBEROSA
6186030302	EBALIA TUMEFACTA
6186030303	EBALIA CRANCHII
6187000000	OXYRHYNCHA
6187010000	MAJIDAE
6187010200	HYAS
6187010202	HYAS COARCTATUS
6187010203	HYAS ARANEUS
6187011000	ROCHINIA
6187011403	ROCHINIA CARPENTERI
6187011500	INACHUS
6187011501	INACHUS DORSETTENSIS
6187011502	INACHUS PHALANGIUM
6187011503	INACHUS LEPTOCHIRUS
6187011600	DORHYNCHUS
6187011601	DORHYNCHUS THOMSONI
6187011700	ARCHAEUS
6187011701	ARCHAEUS CRANCHII
6187011800	MACROPODIA
6187011801	MACROPODIA ROSTRATA
6187011802	MACROPODIA TENUIROSTRIS
6187011900	PISA
6187011901	PISA ARMATA
6187012000	EURYNOME
6187012001	EURYNOME ASPERA
6187012002	EURYNOME SPINOSA
6187012100	MAJA
6187012101	MAJA SQUINADO
6188000000	CANCRIDAE
6188010000	CORYSTIDAE
6188010100	CORYSTES
6188010101	CORYSTES CASSIVELANUS
6188020000	ATELECYCLIDAE
6188020300	ATELECYCLUS
6188020301	ATELECYCLUS ROTUNDATUS
6188030000	CANCRIDAE
6188030100	CANCER
6188030109	CANCER PAGURUS
6188030110	CANCER BELLIANUS
6188040000	THIIDAE
6188040100	THIA
6188040101	THIA SENTELLATA
6188040102	THIA SCUTELLATA
6188050000	PIRIMELIDAE
6188050100	PIRIMELA
6188050101	PIRIMELA DENTICULATA
6189000000	BRACHYRHYNCHA
6189010000	PORTUNIDAE
6189010300	CALLINECTES
6189010301	CALLINECTES SAPIDUS
6189010700	CARCINUS
6189010701	CARCINUS MAENAS
6189010800	PORTUMNUS
6189010801	PORTUMNUS LATIPES
6189010900	MACROPIPUS
6189010901	MACROPIPUS PUBER
6189010902	MACROPIPUS ARENATUS
6189010903	MACROPIPUS PUSILLUS
6189010904	MACROPIPUS MARMOREUS
6189010905	MACROPIPUS HOLSATUS
6189010906	MACROPIPUS DEPURATOR
6189010907	MACROPIPUS TUBERCULATUS
6189020000	XANTHIDAE
6189020900	RITHROPANOPEUS
6189020901	RITHROPANOPEUS HARRISII
6189021000	PILUMNUS
6189021101	PILUMNUS HIRTELLUS
6189021102	PILUMNUS SPIRIFER
6189021200	XANTHO
6189021201	XANTHO PILIPES
6189050000	GONEPLACIDAE
6189050100	GERYON
6189050102	GERYON TRIDENS
6189050103	GERYON AFFINIS
6189050200	GONOPLAX
6189050201	GONOPLAX RHOMBOIDES
6189060000	PINNOTHERIDAE
6189060200	PINNOTHERES
6189060204	PINNOTHERES PISUM
6189070000	GRAPSIDAE
6189070400	PACHYGRAPSUS
6189070401	PACHYGRAPSUS TRANSVERSUS
6189070500	PLANES
6189070501	PLANES MINUTUS
6189070600	ERIOCHEIR
6189070601	ERIOCHEIR SINENSIS
6213000000	INSECTA PTERYGOTA
6291000000	APHIDOIDEA
7200000000	SIPUNCULA
7201000000	(SIPUNCULA)
7201010000	SIPUNCULIDAE
7300000000	ECHIURA
7301000000	ECHIUROINEA
7301020000	ECHIURIDAE
7301020200	ECHIURUS
7301020201	ECHIURUS ECHIURUS
7400000000	PRIAPULIDA
7400010000	PRIAPULIDAE
7400010100	PRIAPULUS
7400010101	PRIAPULUS CAUDATUS
7800000000	ECTOPROCTA
7801000000	GYMNOLAEMATA
7816000000	PHYLACTOLAEMATA
8000000000	BRACHIPODA
8100000000	ECHINODERMATA
8105000000	PLATYASTERIDA
8105010000	LUIDIIDAE
8105010100	LUIDIA
8105010103	LUIDIA CILIARIS
8105010104	LUIDIA SARSI
8106000000	DIPLOZONIA
8106010000	ASTEROPECTINIDAE
8106010500	ASTROPECTEN
8106010502	ASTROPECTEN IRREGULARIS
8106010503	ASTROPECTEN ARANCIACUS
8111000000	GRANULOSINA

8111040000	GONIASTERIDAE
8111040100	CERAMASTER
8111040107	CERAMASTER GRANULARIS
8111040108	CERAMASTER PLACENTA
8111060000	OPHIDIASTERIDAE
8111060100	OPHIDIASTER
8111060101	OPHIDIASTER OPHIDIANUS
8113000000	EUGNATHINA
8113010000	SOLASTERIDAE
8113010100	CROSSASTER
8113010103	CROSSASTER PAPPOSUS
8113010300	SOLASTER
8113010302	SOLASTER ENDECA
8114000000	LEPTOGNATHINA
8114010000	ASTERINIDAE
8114010100	ASTERINA
8114010102	ASTERINA GIBBOSA
8114030000	PORANIIDAE
8114030300	PORANIA
8114030302	PORANIA PULVILLUS
8114040000	ECHINASTERIDAE
8114040100	HENRICIA
8114040113	HENRICIA OCULATA
8114040300	ECHINASTER
8114040301	ECHINASTER SEPOSITUS
8117000000	ASTERIADINA
8117030000	ASTERIIDAE
8117030200	ASTERIAS
8117030205	ASTERIAS RUBENS
8117030400	LEPTASTERIAS
8117030415	LEPTASTERIAS MULLERI
8127000000	CHILOPHIURINA
8127010000	OPHIURIDAE
8127010600	OPHIURA
8127010612	OPHIURA TEXTURATA
8127010613	OPHIURA ALBIDA
8127030000	OPHIOCOMIDAE
8127030100	OPHIOCOMINA
8127030101	OPHIOCOMINA NIGRA
8127050000	OPHIODERMATIDAE
8127050100	OPHIODERMA
8127050102	OPHIODERMA LONGICAUDA
8129000000	GNATHOPHIURINA
8129030000	AMPHIURIDAE
8129030200	AMPHIPHOLIS
8129030202	AMPHIPHOLIS SQUAMATA
8129031000	AMPHIURA
8129031004	AMPHIURA CHIAJEI
8129031005	AMPHIURA FILIFORMIS
8129040000	OPHIOTHRICIDAE
8129040100	OPHIOTHRIX
8129040103	OPHIOTHRIX FRAGILIS
8138000000	CIDAROIDA
8138010000	CIDARIDAE
8138010100	CIDARIS
8138010101	CIDARIS CIDARIS
8138010200	STYLOCIDARIS
8138010201	STYLOCIDARIS AFFINIS
8147000000	ARBACIOIDA
8147010000	ARBACIIDAE
8147010100	ARBACIA
8147010102	ARBACIA LIXULA
8149000000	ECHINOIDA
8149010000	ECHINIDAE
8149010100	ECHINUS
8149010101	ECHINUS ESCULENTUS
8149010102	ECHINUS ACUTUS
8149010103	ECHINUS MELO
8149010200	PSAMMECHINUS
8149010201	PSAMMECHINUS MILIARIS
8149030000	STRONGULOCENTROTIDAE
8149030200	STRONGUL.
8149030201	STRONGUL. DROEBACHIENSI
8154000000	LAGANINA
8154010000	FIBULARIIDAE
8154010100	ECHINOCYAMUS
8154010101	ECHINOCYAMUS PUSILLUS
8163000000	MICRASTERINA
8163010000	BRISSIDAE
8163010100	BRISSUS
8163010101	BRISSUS UNICOLOR
8163010200	BRISSOPSIS
8163010201	PRISSOPSIS LYRIFERA
8163020000	SPATANGIDAE
8163020100	SPATANGUS
8163020101	SPATANGUS PURPUREUS
8163030000	LOVENIIDAE
8163030100	ECHINOCARDIUM
8163030101	ECHINOCARDIUM CORDATUM
8163030102	ECHINOCARD. PENNATIFIDUM
9163030103	ECHINOCARD. FLAVESCENS
8170000000	HOLOTHUROIDEA
8172000000	DENDROCHIROTIDA
8172060000	CUCUMARIIDAE
8172060100	CUCUMARIA
8172060116	CUCUMARIA NORMANI
8172060117	CUCUMARIA ELONGATA
8172060500	THYONE
8172060503	THYONE FUSUS
8175000000	ASPIDOCHIROTIDA
8175020000	STICHOPIDAE
8175020200	STICHOPUS
8175020202	STICHOPUS REGALIS
8178000000	APODIDA
8178010000	SYNAPTIDAE
8178010100	LABIDOPLAX
8178010102	LABIDOPLAX DIGITATA
8178010200	LEPTOSYNAPTA
8178010201	LEPTOSYNAPTA INHAERENS
8300000000	CHAETOGNATHA
8300000300	SAGITTA
8400000000	UROCHORDATA
8401000000	ASCIDIACEA
8403000000	APLOUROBRANCHIA
8404000000	PHLEBOBRANCHIATA
8406000000	STOLIDOBRANCHIATA
8407000000	THALIACEA
8408000000	PYROSOMIDA
8410000000	DOLIOLIDA
8411000000	SALPIDA
8413000000	LARVACEA
8413010000	OIKOPLEURIDAE
8413010100	OIKOPLEURA
8413010101	OIKOPLEURA DIOICA
8413020000	FRITILLARIIDAE
8413020100	FRITILLARIA
8413020101	FRITILLARIA BOREALIS
8500000000	CEPHALOCHORDATA
8500010000	BRANCHIOSTOMIDAE
8500010100	BRANCHIOSTOMA
8500010102	BRANCHIOSTOMA LANCEOLATA

APPENDIX VI

SIZE GROUPING CODES AND ASSOCIATED SIZE CLASS CODE OF PREDATORS AND PREY

Size class code	Years applied				
	1966-72 Size grouping code C	1981 Size grouping code A	1985-87 Size grouping code B	**1991 Size grouping code D**	Optional Size grouping code Z
-1	Nauplii	Nauplii	Nauplii	**Nauplii**	Nauplii
0	Eggs	Eggs	Eggs	**Eggs**	Eggs
1		1 mm	1 mm	**1 mm**	1 mm
2		2 mm	2 mm	**2 mm**	2 mm
3		3 mm	3 mm	**3 mm**	3 mm
4		4 mm	4 mm	**4 mm**	4 mm
5		5-6 mm	5 mm	**5 mm**	5 mm
6			6 mm	**6 mm**	6 mm
7		7-10 mm	7 mm	**7 mm**	7 mm
8			8-9 mm	**8-9 mm**	8 mm
9					9 mm
10		1.0-1.4 cm	1.0-1.4 cm	**1.0-1.2 cm**	1 cm
12				**1.2-1.4 cm**	
15		1.5-1.9 cm	1.5-1.9 cm	**1.5-1.9 cm**	
20		2.0-2.4 cm	2.0-2.4 cm	**2.0-2.4 cm**	2 cm
25		2.5-2.9 cm	2.5-2.9 cm	**2.5-2.9 cm**	
30		3 cm	3.0-3.4 cm	**3.0-3.4 cm**	3 cm
35			3.5-3.9 cm	**3.5-3.9 cm**	
40		4 cm	4 cm	**4 cm**	4 cm
50	5-9 cm	5-6 cm	5 cm	**5 cm**	5 cm
60			6 cm	**6 cm**	6 cm
70		7-9 cm	7 cm	**7 cm**	7 cm
80			8-9 cm	**8-9 cm**	8 cm
90					9 cm
100	10-19 cm	10-14 cm	10-14 cm	**10-11 cm**	10 cm
120				**12-14 cm**	etc
150		15-19 cm	15-19 cm	**15-19 cm**	(cm classes)
200	20-29 cm	20-24 cm	20-24 cm	**20-24 cm**	
250		25-29 cm	25-29 cm	**25-29 cm**	
300	30-39 cm	30-39 cm	30-34 cm	**30-34 cm**	
350			35-39 cm	**35-39 cm**	
400	40-49 cm	40-49 cm	40-49 cm	**40-49 cm**	
500	50-59 cm	50-69 cm	50-59 cm	**50-59 cm**	
600	60-69 cm		60-69 cm	**60-69 cm**	
700	70-79 cm	70-99 cm	70-79 cm	**70-79 cm**	
800	80-89 cm		80-99 cm	**80-99 cm**	
900	90-99 cm				
1000	≥100 cm	≥100 cm	≥100 cm	**100-120 cm**	
1200				**≥120 cm**	
9999	Unknown	Unknown	Unknown	**Unknown**	Unknown

APPENDIX VII

AUXILIARY INFORMATION REQUIRED FROM BOTTOM TRAWL SURVEYS

Species	Catch rate	Length composition	Age/length key* (Roundfish Sampling Area)
Cod	√	√	√
Haddock	√	√	√
Whiting	√	√	√
Saithe	√	√	√
Mackerel	√	√	√
Other predator species	√	√	
Herring			√
Sprat			√
Sandeel			√
Norway pout			√

* Lower limits for sampling otoliths (in cm)

	Quarter 1	Quarters 2-4
Herring	no limit	no limit
Sprat	5	5
Mackerel	15	15
Cod	20	15
Haddock	15	15
Whiting	15	15
Norway pout	10	10
Sandeel	7	7

APPENDIX VIII

SPECIFICATION OF EXCHANGE TAPE FORMAT

Record type 4 - stomach content data

Position	Name	Type[1]	m/o[2]	Range	Comments
1-2	Record type	2A	m		Fixed value SS
3	Quarter	1N	m	1-4	
4-6	Country	3A	m		ICES alpha code, default XXX
7-10	Ship	4A	m		ICES alpha code, default XXXX
11-13	Method	3A	m		See Appendix IX
14-17	Square	4AN	m		ICES statistical rectangle
18-23	Station/haul number	6AN	o		National system; no data; space filled
24-27	Sample no	4N	m	1-9999	Sequential numbering from 1 onwards by quarter
28-29	Temperature	2N	o	-2-25,99	°C, not known 99
30-31	Year	2N	m	65-99	
32-33	Month	2N	m	1-12	
34-35	Day	2N	o	1-28/31	Not known 99
36-45	Predator code	10N	m		NODC 10 digit code
46	Size grouping code	1A	m	A-D,Z	See Appendix VI
47-50	Predator size class code	4N	m	-1 to 9999	See Appendix VI
52-58	Number per hour fishing	7N	o	1-9999999	Default: I
59-61	Number with food	3N	m		
62-64	Number regurgitated	3N	m		
65-67	Number with skeletal remains	3N	m		
68-70	Number empty	3N	m		
71-80	Prey species code	10N	m		NODC 10 digit code
81-84	Prey size class code	4N	m		See Appendix VI
85-92	Prey weight	8N	m		In mg
93-98	Prey number	6N	m		
99	Stage of digestion	1N	o	0 to 2	See text
100	Padding field				

[1] All numeric field (N) right justified, zero filled; all alpha (A) and mixed alpha/numeric field (AN) left justified, space filled

[2] m - mandatory: o - optional

APPENDIX IX

FISHING METHOD CODES

DEM	Demersally caught by trawling or seining gears
PEL	Pelagically caught by trawling or seining gears
DHL	Demersal hook and line
PHL	Pelagic hook and line
DGN	Demersal gill nets
PGN	Pelagic gill nets