Species identification workshop:
fish and macro-zoobenthos

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Contents

Summary

On 13 January 2010 a species identification workshop focused on fish species and macro-zoobenthos as caught in fishing nets, was organized for IMARES employees. The workshop was organized for quality assurance of species identification. Projects influenced by the quality of species identification are the seagoing statutory task surveys (6 projects), statutory task discard projects (3 projects), PMR Vis, ZKOWAD.

The workshop was done by identifying material collected during IMARES surveys which had been stored in the freezer. Results are presented by expertise level of the employees. The expertise level was based on expertise and responsibilities during surveys and discard sampling.

From the workshop, the main problematic groups appeared to be: skates/rays and rocklings. For those groups, it is recommended to organise dedicated workshops in order to study the species thoroughly and generate agreed identification criteria.

1   Introduction

On 13 January 2010 a species identification workshop was organized for IMARES employees. The workshop focused on fish species and macro-zoobenthos as caught in fishing nets, and was compulsory for employees joining fish surveys on board of research vessels or commercial fishing vessels at sea and for employees working on sorting catches collected in the discards self-sampling project. Employees not involved in those projects, were allowed to join the workshop on a voluntary basis.

The workshop was organized for quality assurance of species identification. Projects influenced by the quality of species identification are the seagoing statutory task surveys (6 projects), statutory task discard projects (3 projects), PMR Vis and ZKOWAD.

2 Materials and Methods

2.1 Materials used

During the international bottom trawl survey (IBTS) in 2009 and the beam trawl survey (BTS) in 2009, for a great variety of species about five specimens per species were collected and stored in the freezer in separate plastic bags per species. The day before the workshop, the samples were put to unfreeze. The selection of the species to use for the workshop was done by Henk Heessen and Ingeborg de Boois.

2.2 Workshop setup

The workshop was split in two parts:
(1)   Testing (morning)
(2)   Feedback (afternoon)

During the workshop 25 fish species and 16 frequently found benthos species were identified. The species were put on two tables and numbered. For the testing, all participants filled out a form (Annex 1) with the species identified. During the testing it was not allowed to use any reference material for species identification. Participants were encouraged to mention on their forms some main identification criteria when being in doubt between two species. Since the workshop was without identification reference material, putting the main identification criteria shows if employees look at the right characteristic. In a field work situation it can be expected that in those cases employees check reference material available on board. The species list is in Annex 2.

Figure 2.2.1 Identification workshop at IMARES

36 IMARES employees joined the identification test. 11 employees declined the invitation due to other obligations. After the testing, the identification was discussed and species names were given. Since this was on a voluntary basis, less people (approx. 10) joined this meeting.

During the workshop, the participants were observed by Ingeborg de Boois.

2.3 Expertise levels

The participants were divided in three categories, based on experience and responsibilities:
1=no experience and no need to develop species identification
2=some experience
3=experienced or experience needed for quality assurance of the activities carried out in projects
In Annex 3 the expertise level for each participant is listed.

2.4 Data processing

The completed forms were entered in and Excel spreadsheet. One day after the workshop, all participants received an e-mail containing the proper species list, the individual result and the average result for the category. In the Excel sheet, the number of empty fields is also registered since this might give a measure for the awareness of knowledge gaps of the employee.

When species were identified correctly to the lowest taxonomic level, 1 point was assigned. Wrong identification or empty fields were scored as 0. When the main identification criteria for two similar species was put on the list, this was scored as 0.5. For A10, herring as well as pilchard were scored as 1, since there were accidentally two species under one number.

3 Results

3.1 Results by expertise level

Table 3.1.1 contains the minimum, average and maximum score by expertise level. The maximum possible score was 40 (the number of species to identify). The pattern of the scores is clear: the less experienced employees have lower scores.

Table 3.1.1 Results per expertise level

Expertise level	Number of participants	Minimum score	Average score	Maximum score
1	14	6	12	23
2	10	17	24	32
3	12	24.5	32	38

3.2 Results by species

To identify gaps in knowledge and species that need extra attention, table 3.2.1 lists the percentage of correct identification. At the top, mackerel as the easiest species to identify, scored by 35 of 36 participants and all scored right. At the bottom, the most difficult species, *Laevicardium crassum*, only scored by 22 of the 36 participants with 2 proper identifications only. Since there were many unexperienced participants joining the workshop, in table 3.2.2 the results are listed only for the experienced level. The results per expertise level for levels 1 and 2 are in Annex 4.

Table 3.2.1 Results per species, all expertise levels

Dutch species name	Scientific species name	Sum of scores	Times filled in	%
Makreel	*Scomber scombrus*	35	35	100
haring (3) en pelser (1)	*C. harengus/S. pilchardus*	33.5	35	96
P. bernhardus	*Pagurus bernhardus*	29	31	94
Zeeduivel	*Lophius piscatorius*	33	36	92
Zeemuis	*Aphrodita aculeata*	31	34	91
Kabeljauw	*Gadus morhua*	30	33	91
hondshaai	*Scyliorhinus canicula*	31	35	89
noorse kreeft	*Nephrops norvegicus*	31	35	89
helmkrab	*Corystes cassivelaunus*	29	33	88
sprot	*Sprattus sprattus*	28	33	85
schar	*Limanda limanda*	27	32	84
wulk	*Buccinum undatum*	27	32	84
gewone zwemkrab	*Liocarcinus holsatus*	27	33	82
bot	*Platichthys flesus*	28	35	80
dwergtong	*Buglossidium luteum*	25	33	76
zeekat	*Sepia officinalis*	24	32	75
botervis	*Pholis gunellus*	21	28	75
horsmakreel	*Trachurus trachurus*	23	31	74
gewone zeedonderpad	*Myoxocephalus scorpius*	25	35	71
wijting	*Merlangius merlangus*	20	29	69
tongschar	*Microstomus kitt*	23	34	68
kamster	*Astropecten irregularis*	23	34	68
schelvis	*Melanogrammus aeglefinus*	20	33	61

fluwelen zwemkrab	*Necora puber*	17	32	53
dwergbolk	*Trisopterus minutus*	13	25	52
lange schar	*Hippoglossoides platessoides*	16	35	46
koekoeksrog	*Leucoraja naevus*	15	35	43
dwergbot	*Zeugopterus norvegicus*	12	28	43
vijfdradige meun	*Ciliata mustela*	12	28	43
noordhoorn	*Neptunea antiqua*	11	31	35
dikrugtong	*Microchirus variegatus*	12	34	35
wijde mantel	*Aequipecten opercularis*	11	32	34
blonde rog	*Raja brachyura*	9	31	29
goneplax	*Goneplax rhomboides*	7	25	28
engelse poon	*Aspitrigla cuculus*	8	35	23
sterrog	*Amblyraja radiata*	8	35	23
vierdradige meun	*Rhinonemus cimbrius*	5	27	19
Eledone	*Eledone cirrhosa*	5	31	16
gevlekte pitvis	*Callionymus maculatus*	4	28	14
blauwpootzwemkrab	*Liocarcinus depurator*	4.5	33	14
noorse hartschelp	*Laevicardium crassum*	2	22	9

The results for the 12 experienced participants show 100% scores for the commonly caught fish and benthos species in the non-pelagic sampling. Lowest identification score is for *Laevicardium crassum*.

Table 3.2.2 Results per species, experienced employees

Dutch species name	Scientific species name	Sum of scores	Times filled in	%
bot	*Platichthys flesus*	12	12	100
botervis	*Pholis gunellus*	12	12	100
dwergtong	*Buglossidium luteum*	12	12	100
gewone zeedonderpad	*Myoxocephalus scorpius*	12	12	100
gewone zwemkrab	*Liocarcinus holsatus*	12	12	100
haring (3) en pelser (1)	*C. harengus/S. pilchardus*	12	12	100
helmkrab	*Corystes cassivelaunus*	12	12	100
horsmakreel	*Trachurus trachurus*	12	12	100
kabeljauw	*Gadus morhua*	12	12	100
makreel	*Scomber scombrus*	12	12	100
noorse kreeft	*Nephrops norvegicus*	12	12	100
P. bernhardus	*Pagurus bernhardus*	12	12	100
schar	*Limanda limanda*	12	12	100
schelvis	*Melanogrammus aeglefinus*	12	12	100
sprot	*Sprattus sprattus*	12	12	100
tongschar	*Microstomus kitt*	12	12	100
zeemuis	*Aphrhodita aculeata*	12	12	100
kamster	*Astropecten irregularis*	11	11	100
hondshaai	*Scyliorhinus canicula*	11	12	91
lange schar	*Hippoglossoides platessoides*	11	12	91
wulk	*Buccinum undatum*	11	12	91
zeeduivel	*Lophius piscatorius*	11	12	91
dwergbolk	*Trisopterus minutus*	10	12	83
zeekat	*Sepia officinalis*	10	12	83

blonde rog	*Raja brachyura*	7	9	77
dikrugtong	*Microchirus variegatus*	9	12	75
fluwelen zwemkrab	*Necora puber*	9	12	75
wijting	*Merlangius merlangus*	9	12	75
dwergbot	*Zeugopterus norvegicus*	7	10	70
koekoeksrog	*Leucoraja naevus*	8	12	66
vijfdradige meun	*Ciliata mustela*	8	12	66
sterrog	*Amblyraja radiata*	7	12	58
wijde mantel	*Aequipecten opercularis*	7	12	58
noordhoorn	*Neptunea antiqua*	6	12	50
Goneplax	*Goneplax rhomboides*	4	9	44
vierdradige meun	*Rhinonemus cimbrius*	5	12	41
engelse poon	*Aspitrigla cuculus*	4	12	33
Eledone	*Eledone cirrhosa*	3	10	30
Blauwpootzwemkrab	*Liocarcinus depurator*	3.5	12	29
gevlekte pitvis	*Callionymus maculatus*	3	12	25
noorse hartschelp	*Laevicardium crassum*	1	9	11

4 Discussion

4.1 Expertise level

When organising an identification workshop, it is important to decide the set of species. The expertise level should be based on the set of species. It might be that a participant is very experienced in identifying pelagic species but not in demersal ones. The results in table 3.1.1 confirms the expectation that scores of experienced employees are higher than scores of unexperienced employees. From this, the conclusion can be drawn that the expertise level was estimated properly for this workshop.

4.2 Material used

It is important to note that the quality of the material used was lower than if fresh material would have been available. This mainly influenced the identification of *Liocarcinus depurator*, where people did have a look at the coloration of the last leg but did not see any blue, and the identification of *Merlangius merlangus*, which was atypical due to the freezing.

4.3 Sources of misidentification

In this chapter, only the results of the highest expertise level will be taken into account. Less experienced employees will always be joined by an experienced employee when joining a survey or sorting samples in the lab. The experienced employees, however, are responsible for final identification and need to have the skills and knowledge to put the right names to the species.

Basically, identification can be done in two ways:
1. active identification: knowing the main identification criteria for the species
2. passive identification: using your reference framework of species to identify the species

Method 1 will be used when not having any experience in the field or when obvious unknown species are present in the catch. In this case, reference material will be used to identify the species. This method will also be used when similar species are often present in the sample. Mostly the identifier knows by heart the criteria to look at although it might be necessary to use references to decide which criteria matches which particular species. This applies for *Callionymus* species. Misidentification for those species will (and did) occur in this workshop but will be less when reference material is available, as it usually is on board and in the lab when sorting samples. Active identification will also increase the number of times a species is filled in on the list, since people are aware that they do not know the species.

Method 2 will be used by everyone who has to do the first selection when seeing a species. This identification is mainly based on *habitus* of the species and also on the geographical area. When seeing an less familiar species, one will start to exclude a number of species and if there is a species left in the reference framework which basically matches the criteria of the species in the sample, it will be identified as such. This happened e.g. for *Microchirus variegatus*, a sole species, misidentified as *Pegusa lascaris* by employees mainly sampling in the southeastern North Sea: it's no sole, it's no solenette, so it has to be …… Information on the catch location will decrease the error, but not exclude the possibility of misidentification. Additionally, being in the field will result in more than one occurrence of the 'reference species' (in this case *Pegusa lascaris*) and increase the chances to identify other -unknown- species as 'something else'. However, even then, there has to be awareness on the possibility to catch similar species outside the known distribution range of the species. It is assumed that the misidentification of *Aspitrigla cuculus* originates from the same source.

4.4   Problematic species

Most pregnant are the problems in identifying rays and skates. The maximum score for the 12 experts was 8 proper identifications. It is clear that people tend to know which species they are dealing with, but are not completely sure. Good reference pictures are available and will perhaps improve identification, but there is a general need for a workshop on rays and skates (perhaps combined with sharks and dogfish in an Elasmobranch workshop), to study the species thoroughly and generate agreed identification criteria.

The identification of rocklings (in this case *Ciliata mustela* and *Rhinonemus cimbrius*) is internationally known to be problematic (ICES, 2007, 2009a, 2009b). To improve identification quality, a workshop has to be organised to study the species thoroughly and generate agreed identification criteria.

Misidentification of *Neptunea antiqua* (mixing with *Buccinum undatum*) and *Aequipecten opercularis* (mixing up with *Pecten maximus*) is mainly a matter of awareness for all employees that there are more than one species looking alike, and to put the right name to the species. It will need discipline to look up the species and to learn the identification criteria by heart, but this should not be difficult.

The misidentification of *Eledone cirrhosa* is mainly caused by differences in naming: in all misidentified cases, it was noted as 'Octopus'. Since there is no other *Octopus* species in the demersal sampled area, it is a matter of discipline for all employees to put the right name to the species. This problem is known by data-managers and is checked on in the regular data quality check.

Zeugopterus norvegicus and *Goneplax rhomboides* are both very characteristic species for which the risk of misidentification is low when reference material is available.

Laevicardium crassum is often taken home from discard sampling trips or surveys. It is clear that people know 'it is something different' but do not know the name.

Normally, a cruise leader takes home specimens where identification problems occur. When sorting samples in the lab, there is always someone available to have a second look at a species. However, not all species are easy to take home, so priority to increase identification quality has to be given to identification problems in the larger species.

5   Conclusions

The identification workshop for fish species and macro-zoobenthos was a success. All participants were eager to identify the species according to their knowledge. Participants wanted to have a better score than their colleagues and really put an effort in identifying the species.

From the workshop, a number of problematic species occurred. For skates/rays (maybe in combination with other elasmobranch species) and for rocklings it is highly recommended to collect material during the coming surveys and organise a workshop on the specific group of species to generate agreed identification criteria and to discuss the species.

The workshop results show that for the experienced employees, most species are identified to the correct lowest taxonomic level.

6   Quality Assurance

IMARES utilises an ISO 9001:2000 certified quality management system (certificate number: 08602-2004-AQ-ROT-RvA). This certificate is valid until 15 March 2010. The organisation has been certified since 27 February 2001. The certification was issued by DNV Certification B.V. Furthermore, the chemical laboratory of the Environmental Division has NEN-AND-ISO/IEC 17025:2005 accreditation for test laboratories with number L097. This accreditation is valid until 27 March 2013 and was first issued on 27 March 1997. Accreditation was granted by the Council for Accreditation.

References

ICES. 2007. Report of the Workshop on Taxonomic Quality Issues in the DATRAS Database (WKTQD), 23-25 January 2007, ICES, Copenhagen. ICES CM 2007/RMC:10. 45 pp.

ICES. 2009a. Report of the International Bottom Trawl Survey Working Group (IBTSWG), 30 March—3 April 2009, Bergen, Norway. ICES CM 2009/RMC:04. 241 pp.

ICES. 2009b. Report of the Working Group on Beam Trawl Surveys (WGBEAM), 9–12 June 2009, La Rochelle, France. ICES CM 2009/LRC:04. 196 pp.

Annex 1. Workshop form

Determinatie vis- en benthossoorten 13 januari 2010
Fish and benthos species identification 13 January 2010
Tafel/table A

Naam/name…………………………………………………………………..

Nummer Number	Soort Species	Evt. onderscheidend kenmerk tov andere soort(en)
A1		
A2		
A3		
A4		
A5		
A6		
A7		
A8		
A9		
A10		
A11		
A12		
A13		
A14		
A15		
A16		
A17		
A18		
A19		
A20		
A21		

Determinatie vis- en benthossoorten 13 januari 2010
Fish and benthos species identification 13 January 2010
Tafel/table B

Naam/name………………………………………………………………..

Nummer Number	Soort Species	Evt. onderscheidend kenmerk tov andere soort(en)
B1		
B2		
B3		
B4		
B5		
B6		
B7		
B8		
B9		
B10		
B11		
B12		
B13		
B14		
B15		
B16		
B17		
B18		
B19		
B20		

Annex 2. Species list

Number	Dutch species name	Scientific species name
A01	schar	*Limanda limanda*
A02	tongschar	*Microstomus kitt*
A03	dwergtong	*Buglossidium luteum*
A04	botervis	*Pholis gunellus*
A05	dwergbolk	*Trisopterus minutus*
A06	schelvis	*Melanogrammus aeglefinus*
A07	gevlekte pitvis	*Callionymus maculatus*
A08	engelse poon	*Aspitrigla cuculus*
A09	zeeduivel	*Lophius piscatorius*
A10	haring (3) en pelser (1)	*C. harengus/S. pilchardus*
A11	horsmakreel	*Trachurus trachurus*
A12	hondshaai	*Scyliorhinus canicula*
A13	koekoeksrog	*Leucoraja naevus*
A14	wulk	*Buccinum undatum*
A15	kamster	*Astropecten irregularis*
A16	helmkrab	*Corystes cassivelaunus*
A17	blauwpootzwemkrab	*Liocarcinus depurator*
A18	noorse hartschelp	*Laevicardium crassum*
A19	fluwelen zwemkrab	*Necora puber*
A20	P. bernhardus	*Pagurus bernhardus*
A21	zeekat	*Sepia officinalis*
B01	lange schar	*Hippoglossoides platessoides*
B02	bot	*Platichthys flesus*
B03	dikrugtong	*Microchirus variegatus*
B04	dwergbot	*Zeugopterus norvegicus*
B05	wijting	*Merlangius merlangus*
B06	kabeljauw	*Gadus morhua*
B07	vijfdradige meun	*Ciliata mustela*
B08	gewone zeedonderpad	*Myoxocephalus scorpius*
B09	sprot	*Sprattus sprattus*
B10	makreel	*Scomber scombrus*
B11	sterrog	*Amblyraja radiata*
B12	blonde rog	*Raja brachyura*
B13	noordhoorn	*Neptunea antiqua*
B14	gewone zwemkrab	*Liocarcinus holsatus*
B15	goneplax	*Goneplax rhomboides*
B16	wijde mantel	*Aequipecten opercularis*
B17	zeemuis	*Aprhrodita aculeata*
B18	noorse kreeft	*Nephrops norvegicus*
B19	Eledone	*Eledone cirrhosa*
B20	vierdradige meun	*Rhinonemus cimbrius*

Annex 3. Participants and expertise level

Name		Category
Daniel	Benden	1
Doug	Beare	1
Erwin	Winter	1
Esther	van den Braak	1
Harriet	van Overzee	1
Ineke	Pennock-Vos	1
Marieke	Keller	1
Michiel	Kotterman	1
Niels	hintzen	1
Peter	van der Kamp	1
Rian	Schelvis-Smit	1
Silja	Tribuhl	1
Stijn	Bierman	1
Tobias	van Kooten	1
Adriaan	Rijnsdorp	2
Bram	Couperus	2
Edwin	van Helmond	2
Gerrit	Hoornsman	2
Hanz	Wiegerinck	2
Jakob	Asjes	2
Jan	van Willigen	2
Lorna	Fässler-Teal	2
Oscar	Bos	2
Tim	Huijer	2
André	Dijman Dulkes	3
Betty	van Os-Koomen	3
Cindy	van Damme	3
Frans	van Beek	3
Gerrit	Rink	3
Kees	Groeneveld	3
Peter	Groot	3
Ralf	van Hal	3
Remment	ter Hofstede	3
Ronald	Bol	3
Sieto	Verver	3
Twan	Leijzer	3

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Annex 4. Results per species by expertise level, for expertise levels 1 and 2

Annex 4.1 Results per species by expertise level for level 1.

Dutch species name	Scientific species name	Sum of scores	Times filled in	%
makreel	*Scomber scombrus*	13	13	100
haring (3) en pelser (1)	*C. harengus/S. pilchardus*	13.5	14	96
zeeduivel	*Lophius piscatorius*	12	14	85
wulk	*Buccinum undatum*	9	11	81
P. bernhardus	*Pagurus bernhardus*	8	10	80
hondshaai	*Scyliorhinus canicula*	10	13	76
noorse kreeft	*Nephrops norvegicus*	10	13	76
zeemuis	*Aprhrodita aculeata*	9	12	75
helmkrab	*Corystes cassivelaunus*	8	11	72
kabeljauw	*Gadus morhua*	8	11	72
bot	*Platichthys flesus*	9	13	69
sprot	*Sprattus sprattus*	7	11	63
zeekat	*Sepia officinalis*	8	13	61
schar	*Limanda limanda*	6	10	60
wijting	*Merlangius merlangus*	5	9	55
gewone zwemkrab	*Liocarcinus holsatus*	5	11	45
botervis	*Pholis gunellus*	3	8	37
gewone zeedonderpad	*Myoxocephalus scorpius*	4	13	30
kamster	*Astropecten irregularis*	4	13	30
fluwelen zwemkrab	*Necora puber*	3	10	30
dwergtong	*Buglossidium luteum*	3	11	27
horsmakreel	*Trachurus trachurus*	2	10	20
schelvis	*Melanogrammus aeglefinus*	2	11	18
wijde mantel	*Aequipecten opercularis*	2	11	18
blonde rog	*Raja brachyura*	2	12	16
tongschar	*Microstomus kitt*	2	12	16
goneplax	*Goneplax rhomboides*	1	9	11
noordhoorn	*Neptunea antiqua*	1	9	11
dwergbot	*Zeugopterus norvegicus*	1	10	10
lange schar	*Hippoglossoides platessoides*	1	13	7
koekoeksrog	*Leucoraja naevus*	0	13	0
engelse poon	*Aspitrigla cuculus*	0	13	0
sterrog	*Amblyraja radiata*	0	13	0
Eledone	*Eledone cirrhosa*	0	12	0
dikrugtong	*Microchirus variegatus*	0	12	0
blauwpootzwemkrab	*Liocarcinus depurator*	0	11	0
gevlekte pitvis	*Callionymus maculatus*	0	7	0
vierdradige meun	*Rhinonemus cimbrius*	0	7	0
vijfdradige meun	*Ciliata mustela*	0	7	0
dwergbolk	*Trisopterus minutus*	0	6	0
noorse hartschelp	*Laevicardium crassum*	0	6	0

Annex 4.2 Results per species by expertise level for level 2.

Dutch species name	Scientific species name	Sum of scores	Times filled in	%
dwergtong	*Buglossidium luteum*	10	10	100
Gewone zwemkrab	*Liocarcinus holsatus*	10	10	100
hondshaai	*Scyliorhinus canicula*	10	10	100
kabeljauw	*Gadus morhua*	10	10	100
Makreel	*Scomber scombrus*	10	10	100
zeeduivel	*Lophius piscatorius*	10	10	100
Zeemuis	*Aphrodita aculeata*	10	10	100
P. bernhardus	*Pagurus bernhardus*	9	9	100
horsmakreel	*Trachurus trachurus*	9	9	100
Gewone zeedonderpad	*Myoxocephalus scorpius*	9	10	90
helmkrab	*Corystes cassivelaunus*	9	10	90
noorse kreeft	*Nephrops norvegicus*	9	10	90
Schar	*Limanda limanda*	9	10	90
Sprot	*Sprattus sprattus*	9	10	90
tongschar	*Microstomus kitt*	9	10	90
haring (3) en pelser (1)	*C. harengus/S. pilchardus*	8	9	88
Zeekat	*Sepia officinalis*	6	7	85
Kamster	*Astropecten irregularis*	8	10	80
Wulk	*Buccinum undatum*	7	9	77
Botervis	*Pholis gunellus*	6	8	75
Wijting	*Merlangius merlangus*	6	8	75
Bot	*Platichthys flesus*	7	10	70
koekoeksrog	*Leucoraja naevus*	7	10	70
schelvis	*Melanogrammus aeglefinus*	6	10	60
fluwelen zwemkrab	*Necora puber*	5	10	50
dwergbot	*Zeugopterus norvegicus*	4	8	50
vijfdradige meun	*Ciliata mustela*	4	9	44
dwergbolk	*Trisopterus minutus*	3	7	42
engelse poon	*Aspitrigla cuculus*	4	10	40
lange schar	*Hippoglossoides platessoides*	4	10	40
noordhoorn	*Neptunea antiqua*	4	10	40
dikrugtong	*Microchirus variegatus*	3	10	30
goneplax	*Goneplax rhomboides*	2	7	28
Eledone	*Eledone cirrhosa*	2	9	22
wijde mantel	*Aequipecten opercularis*	2	9	22
noorse hartschelp	*Laevicardium crassum*	1	7	14
gevlekte pitvis	*Callionymus maculatus*	1	9	11
blauwpootzwemkrab	*Liocarcinus depurator*	1	10	10
sterrog	*Amblyraja radiata*	1	10	10
blonde rog	*Raja brachyura*	0	10	0
vierdradige meun	*Rhinonemus cimbrius*	0	8	0