CCAMLR

COMM CIRC 08/76
SC CIRC 08/30

Viernes, 6 Junio 2008

Evaluaciones preliminares de los efectos conocidos y previstos de las actividades de pesca de fondo propuestas en los ecosistemas marinos vulnerables

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COMMISSION POUR LA CONSERVATION DE LA FAUNE ET LA FLORE MARINES DE L'ANTARCTIQUE
КОМИССИЯ ПО СОХРАНЕНИЮ МОРСКИХ ЖИВЫХ РЕСУРСОВ АНТАРКТИКИ
COMISIÓN PARA LA CONSERVACIÓN DE LOS RECURSOS VIVOS MARINOS ANTÁRTICOS

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A TODOS LOS MIEMBROS DE LA COMISIÓN Y DEL COMITÉ CIENTÍFICO

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Evaluaciones preliminares de los efectos conocidos y previstos de las actividades de pesca de fondo propuestas en los ecosistemas marinos vulnerables

Con relación a la COMM CIRC 08/61 y SC CIRC 08/22, la Secretaría ha realizado el análisis preliminar adjunto para asistir a las Partes contratantes en la preparación de posibles evaluaciones preliminares o en la presentación de información sobre el impacto de la pesca de fondo en los ecosistemas marinos vulnerables. La base de datos agregados utilizados en este análisis preliminar está a la disposición de las Partes contratantes previa solicitud, y su utilización estará sujeta a las "Normas de acceso y utilización de los datos de la CCRVMA".

Dr. D. G. M. Miller
Secretario Ejecutivo

Adj.

Secretariat Preliminary Report on By-catch Data of Species Associated with Vulnerable Marine Ecosystems from Bottom Fishing Relevant to the Application of Conservation Measure 22-06

May 2008

1. Introduction

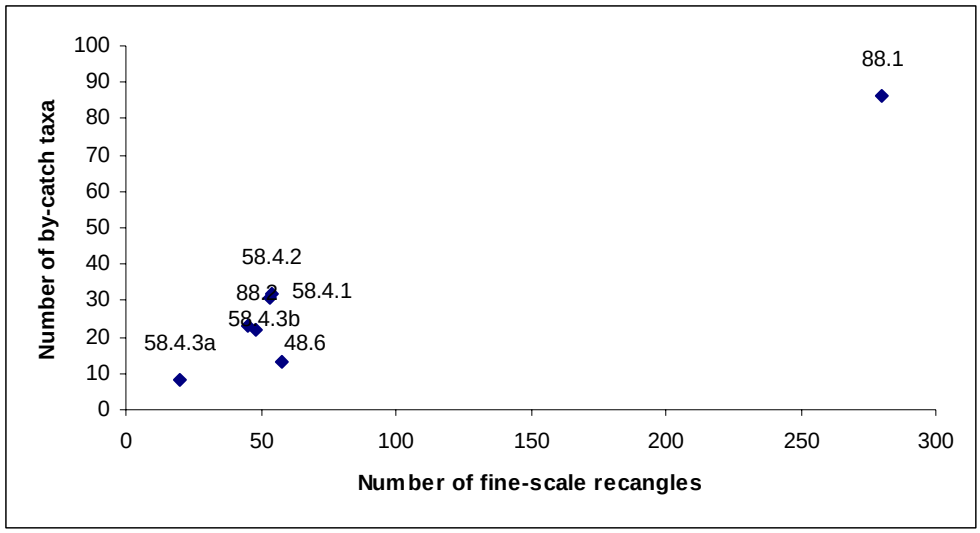
1. At the 2007 Commission meeting, New Zealand, supported by the UK, proposed that the Commission request that the Secretariat prepare a report on all by-catch of species associated with vulnerable marine ecosystems (VMEs) from bottom fishing relevant to application of Conservation Measure 22-06 (CCAMLR-XXVI, paragraph 13.45). The Secretariat has prepared the following preliminary report to be circulated prior to the deadline for the submission of information and possible preliminary assessments of bottom fishing impacts on VMEs (Conservation Measure 22-06, paragraph 7.(i)). It is hoped that the information provided will assist Contracting Parties in preparing their assessments and will assist the work of the Scientific Committee.

2. Recognising that whilst an operational definition of 'species associated with VMEs' has yet to be agreed, this report considers by-catch data from all taxa reported in fisheries relevant to CM 22-06 (see Appendix 1 for fine-scale C2 data and Appendix 2 for Scientific Observer data). Such fisheries comprise exploratory longline fisheries for *Dissostichus* spp. in Subarea 4.86, Divisions 58.4.1, 58.4.2, 58.4.3a and 58.4.3b, and Subareas 88.1 and 88.2. The first part of the report describes the available data, while the second part considers the level of taxonomic detail currently recorded for by-catch taxa.

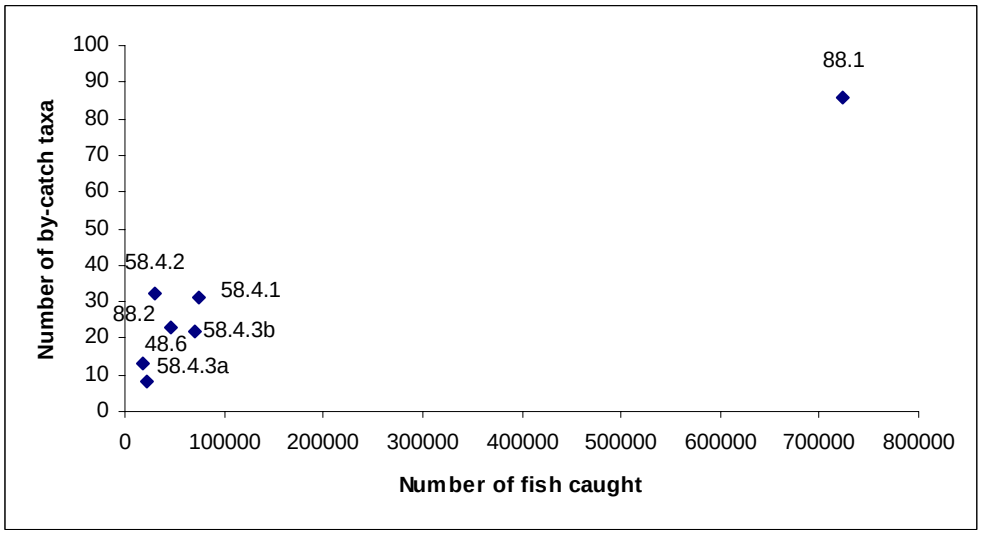
2. Data Availability and Quality for Identifying Vulnerable Marine Ecosystems.

2.1 Number of By-Catch Taxa and Level of Fisheries.

3. A positive relationship is evident for the number of by-catch taxa in relation to the spatial extent and total catch of a particular fishery; the values for all these parameters are much higher in Subarea 88.1 (Fig 1). The number of by-catch taxa in Subarea 48.6 was relatively low in relation to the spatial extent of the fishery (Fig 1a), however, such a distinction is not apparent for the relationship with fishing effort (Fig 1b).



a.



b.

Figure 1. Relationship between the number of by-catch taxa reported in C2 data and: (a). Spatial extent of each fishery, and (b). Total number of target species fish caught.

2.2 Identification of By-Catch Taxa

4. The majority of records for by-catch taxa are of fish species. Of these, the majority are identified to genus or species level (Table 1). The next most numerous by-catch groups comprise crabs and cephalopods, where identification is mostly at the family level or below.

Table 1. Level of Identification for Major By-Catch groups in C2 data from Exploratory Fisheries for Dissostichus spp.

Group	Phylum	Class	Order	Family	Genus	Species
Fish	2	0	1615	6177	11502	17116
Cephalopods	0	13	8	124	0	17
Crabs	0	0	0	265	27	42

5. In the case of other by-catch taxa, including benthic organisms potentially associated with VMEs, identification is generally at the level of Phylum, Order or Class (Table 2). The most numerous taxa were Asteroidea (starfish) and invertebrates; although recording of the latter at Phylum level provides relatively limited information. There were no taxa other than fish and crabs recorded as by-catch in the fine-scale data from Subarea 48.6.

Table 2. Level of Identification for Major By-Catch Taxa in Each Exploratory Fishery for Dissostichus spp. from C2 and Observer data (in brackets).

Taxon	Level	Subarea or Division						
		48.6	58.4.1	58.4.2	58.4.3a	58.4.3b	88.1	88.2
Invertebrates	Super-phylum		12 (13)	26 (28)		6 (0)	101 (96)	0 (10)
Ascidians	Family						9 (48)	1 (1)
Cnidaria	Phylum		2 (3)	0 (4)		0 (4)	67 (90)	7 (15)
Actiniaria	Order	0 (1)	0 (2)				17 (28)	2 (4)
Anthozoa	Class			1 (1)			3 (3)	
Sclerectina	Order	0 (1)					4 (42)	0 (10)
Gorgonacea	Order						0 (15)	0 (4)
Echinodermata	Phylum			1 (1)			0 (37)	
Asteroidea	Class	0 (3)	11 (20)	25 (26)	5 (8)	0 (76)	682 (808)	9 (28)
Crinoids	Class			0 (2)			1 (3)	1 (1)
Holothurians	Class	0 (6)	0 (2)	0 (1)			24 (55)	
Ophiuridae	Class		2 (9)	1 (2)		0 (13)	34 (66)	3 (3)
Gastropods	Class						1 (7)	0 (1)
Isopods	Order						1 (2)	
Mytilidae	Species						1 (0)	
Porifera	Phylum			0 (4)			16 (66)	7 (9)
Polychaetes	Class							
Amphipods	Order					0 (1)	0 (2)	
Pycnogonids	Class						14 (15)	

3. Discussion

6. This analysis of by-catch data has been addressed in two parts. The first part has shown what data are available (addressing the Commission's request in paragraph 1 above); the second part of the analysis considered the limitations of the data particularly with respect to the identification of non-fish by-catch.

7. In respect to the first part of this analysis, it is clear that while CCAMLR holds detailed data on by-catch, the vast majority of these data relate to fish species alone and it is cosmopolitan species, such as the Macrourids, that account for most of the records. It is also apparent that in respect of taxa that may possess characteristics likely to make them VME indicators, data are not only sparse but the taxonomic detail of sample identification is rather low. Notwithstanding such data limitations, examining the distributional characteristics of sessile benthic species it may still be possible to use by-catch data to identify regions, within fished areas, that exhibit a particular species composition which may be indicative of a VME. However, any such analysis must take account of confounding factors such as fishing effort as well as observer effort and level of expertise in species identification.

8. In terms of developing proposals for new and exploratory fisheries, it is apparent that an increased level of taxonomic specificity in the identification of non-fish by-catch would be advantageous. This is acknowledged to be difficult, indeed recent scientific research continues to reveal a growing number of taxa which inhabit deep waters surrounding Antarctica (see http://www.caml.aq). Therefore, in order to provide higher order and more detailed identification of non-fish by-catch, it may be necessary to direct samples (or photographs) to relevant taxonomic experts.

9. The Secretariat would welcome feedback any from Members on this preliminary report especially with advice on potential future analyses of by-catch data.

Appendix 1

Summary of fish and invertebrate by-catch caught in CCAMLR's exploratory longline fisheries for Dissostichus spp. Count is the number of individuals reported, occurrence is the number of occasions a taxon was recorded and distribution is the number of fine-scale rectangles in which each taxon was reported. Source: C2 data, all seasons.

Fishery	Scientific Name	Code	Catch(kg)	Count	Occurrence	Distribution
TOT486	Bathyraja eatonii	BEA	47	8	4	1
	Muraenolepis marmoratus	MVC	18	17	6	1
	Muraenolepis spp	MRL	115	111	64	18
	Antimora rostrata	ANT	4123	3628	345	45
	Macrourus whitsoni	WGR	221	166	18	8
	Macrourus spp	GRV	28613	27091	585	54
	Notothenia kempi	NOK	67	108	21	4
	Chionobathyscus dewitti	CHW	12	14	3	1
	Chaenocephalus aceratus	SSI	46	34	5	2
	Channichthyidae	ICX	316	435	4	2
	Lithodes murrayi	KCM	7	10	7	5
	Lithodidae	KCX	192	252	118	28
	Paralomis spp	PAI	1	1	1	1
TOT5841	Bathyraja eatonii	BEA	100	12	6	3
	Bathyraja spp	BHY	8	2	1	1
	Rajiformes	SRX	63	15	4	4
	Muraenolepis microps	MOY	15	64	17	3
	Muraenolepis spp	MRL	279	302	89	23
	Antimora rostrata	ANT	70	58	37	15
	Macrourus whitsoni	WGR	816	953	25	5
	Macrourus spp	GRV	72353	62656	831	46
	Lampris immaculatus	LAI	33	1	1	1
	Pogonophryne permitini	PGR	34	84	42	15
	Notothenia rossii	NOR	40	25	1	1
	Nototheniidae	NOX	136	338	10	7
	Dacodraco hunteri	DAH	24	55	10	2
	Chaenocephalus aceratus	SSI	1774	2350	129	25
	Pseudochaenichthys georgianus	SGI	2	6	1	1
	Channichthyidae	ICX	1242	2181	383	35
	Pogonophryne spp	POG	2	4	3	2
	Artedidraco spp	ART	25	51	9	3
	Lycodichthys antarcticus	LCN	0	1	1	1
	Careproctus spp	CWS	1	1	1	1
	Liparididae	LIZ	1	2	1	1
	Octopodidae	OCT	14	12	12	10
	Asteroidea	STF	10	75	11	6
	Ophiuroidea	OWP	0	11	2	2
	Invertebrata	INV	27	327	12	7
	Cnidaria	CNI	0	5	2	1
TOT5842	Raja georgiana	SRR	2	1	3	3
	Bathyraja eatonii	BEA	1451	265	49	10
	Bathyraja spp	BHY	216	41	15	9
	Raja spp	RAJ	42	14	3	2
	Rajiformes	SRX	1779	355	35	15

	Muraenolepis microps	MOY	4	3	3	2
	Muraenolepis marmoratus	MVC	147	150	37	14
	Muraenolepis spp	MRL	1490	1667	177	28
	Antimora rostrata	ANT	646	363	54	19
	Macrourus whitsoni	WGR	2627	1951	108	16
	Macrourus spp	GRV	49846	32077	384	40
	Lampris immaculatus	LAI	89	3	3	3
	Pogonophryne permitini	PGR	8	22	10	6
	Notothenia squamifrons	NOS	22	31	4	3
	Notothenia kempi	NOK	2	1	1	1
	Nototheniidae	NOX	159	260	33	12
	Chionobathyscus dewitti	CHW	134	205	34	13
	Cryodraco antarcticus	FIC	1	2	1	1
	Chaenocephalus aceratus	SSI	358	802	75	14
	Chionodraco myersi	MIC	17	44	9	2
	Channichthyidae	ICX	981	2266	167	28
	Pogonophryne spp	POG	3	7	1	1
	Artedidraco spp	ART	51	104	17	4
	Artedidraconidae	PLF	12	18	9	5
	Cephalopoda	CEP	9	12	6	5
	Octopodidae	OCT	5	18	4	2
	Loliginidae, Ommastrephidae	SQU	15	1	1	1
	Anthozoa	AJH	2	50	1	1
	Echinodermata	ECH	2	60	1	1
	Asteroidea	STF	29	95	25	11
	Ophiuroidea	OWP	0	12	1	1
	Invertebrata	INV	46	1108	26	9
TOT5843a	Raja taaf	RFA	357	131	20	4
	Raja georgiana	SRR	15066	4466	26	9
	Rajiformes	SRX	8421	3906	256	18
	Antimora rostrata	ANT	4121	3677	266	19
	Macrourus whitsoni	WGR	432	486	29	9
	Macrourus spp	GRV	2598	3563	246	20
	Lithodidae	KCX	32	24	10	6
	Asteroidea	STF	26	209	5	3
TOT5843b	Somniosus microcephalus	GSK	300	1	1	1
	Raja georgiana	SRR	4328	1273	78	12
	Bathyraja maccaini	BAM	810	204	16	3
	Bathyraja spp	BHY	1395	391	47	11
	Raja spp	RAJ	42	14	3	2
	Rajiformes	SRX	3137	1599	179	25
	Muraenolepis spp	MRL	73	152	75	14
	Antimora rostrata	ANT	793	611	129	24
	Salilota australis	SAO	35	44	9	3
	Macrourus whitsoni	WGR	8383	11511	191	17
	Macrourus spp	GRV	23126	35991	430	38
	Lampris immaculatus	LAI	15	1	1	1
	Notothenia squamifrons	NOS	251	514	42	2
	Channichthyidae	ICX	6	9	4	3
	Lithodes spp	KCZ	13		23	9
	Lithodidae	KCX	33	37	22	9
	Octopodidae	OCT	1	1	1	1

	Invertebrata	INV	17	157	6	3
TOT881	Porifera	PFR	103	14	16	9
	Unknown	UNK	15	30	11	8
	Raja taaf	RFA	55	5	3	2
	Raja georgiana	SRR	148105	20832	2511	104
	Bathyraja eatonii	BEA	9921	1180	600	80
	Bathyraja maccaini	BAM	138	22	12	9
	Bathyraja murrayi	BMU	18	3	2	2
	Bathyraja irrasa	BYR	2005	277	40	14
	Bathyraja meridionalis	BYE	3	2	2	1
	Bathyraja spp	BHY	6185	830	136	24
	Raja spp	RAJ	51505	6386	305	44
	Rajiformes	SRX	47247	8309	939	81
	Histiobranchus bathybius	HIB	595	1374	56	14
	Muraenolepis microps	MOY	12160	15720	860	76
	Muraenolepis marmoratus	MVC	155	239	34	14
	Muraenolepis microcephalus	MWS	1	2	2	2
	Muraenolepis orangiensis	MWO	130	152	33	13
	Muraenolepis spp	MRL	51955	88075	2867	123
	Lepidion spp	LEV	146	22	14	8
	Antimora rostrata	ANT	42748	27020	2710	140
	Moridae	MOR	66	3	2	2
	Macrourus whitsoni	WGR	741946	572512	3859	175
	Macrourus carinatus	MCC	85280	39244	612	52
	Macrourus holotrachys	MCH	77	102	24	7
	Macrourus spp	GRV	751669	617604	3186	151
	Coryphaenoides armatus	CKH	2	2	1	1
	Coryphaenoides spp	CVY	218	109	5	5
	Caelorynchus marinii	CEH	124	61	19	6
	Lampris immaculatus	LAI	131	6	6	6
	Pogonophryne permitini	PGR	117	236	159	64
	Notothenia squamifrons	NOS	17	62	9	5
	Notothenia kempi	NOK	563	1788	21	7
	Trematomus spp	TRT	249	794	41	7
	Nototheniidae	NOX	2583	7093	533	98
	Chionobathyscus dewitti	CHW	1925	5823	272	52
	Cryodraco antarcticus	FIC	123	99	6	4
	Cryodraco spp	YDB	421	614	27	5
	Dacodraco hunteri	DAH	0	2	2	2
	Pagetopsis macropterus	PMA	1	1	1	1
	Chaenocephalus aceratus	SSI	24	59	10	8
	Champsocephalus gunnari	ANI	126	258	18	5
	Pseudochaenichthys georgianus	SGI	135	132	14	10
	Chionodraco hamatus	TIC	1	1	1	1
	Chionodraco myersi	MIC	499	945	30	7
	Chaenodraco wilsoni	WIC	11	23	5	2
	Channichthyidae	ICX	33425	98621	3189	126
	Pogonophryne spp	POG	35	81	50	25
	Artedidraco mirus	AZT	8	10	10	6
	Artedidraco spp	ART	6	12	8	7
	Artedidraconidae	PLF	5	12	8	3
	Pachycara brachycephalum	PHB	0	4	3	3

	Liparididae	LIZ	0	1	1	1
	Bothidae	LEF	16	2	2	2
	Osteichthyes	MZZ	8	4	2	2
	Isopoda	ISH	0	6	1	1
	Lithodes murrayi	KCM	12	25	13	8
	Lithodes spp	KCZ	1	4	4	3
	Paralomis aculeata	KCU	4	9	7	6
	Paralomis formosa	KCF	1	4	1	1
	Lithodidae	KCX	55	122	65	24
	Paralomis spinosissima	KCV	1	2	2	1
	Paralomis anamerae	KDD	1	2	2	2
	Paralomis spp	PAI	0	2	1	1
	Crustacea	FCX	23	45	9	9
	Gastropoda	GAS	0	1	1	1
	Mytilus chilensis	MYC	2	2	1	1
	Cephalopoda	CEP	28	8	7	7
	Ommastrephes, Illex	SQX	19	2	2	2
	Pareledone turqueti	TWT	5	20	16	4
	Octopodidae	OCT	143	138	94	49
	Teuthoidea	SQQ	450	1	1	1
	Loliginidae, Ommastrephidae	SQU	10	1	1	1
	Scleractinia	CSS	1	4	4	3
	Anthozoa	AJH	0	3	3	3
	Actiniaria	ATX	58	22	17	9
	Pycnogonida	PWJ	7	229	14	2
	Asteroidea	STF	3992	23612	682	112
	Ophiuroidea	OWP	80	252	34	13
	Holothurioidea	CUX	116	20	24	14
	Crinoidea	CWD	3		1	1
	Ascidiacea	SSX	51	3	9	6
	Invertebrata	INV	2664	7488	101	36
	Cnidaria	CNI	535	817	67	27
TOT882	Porifera	PFR	4		7	2
	Raja georgiana	SRR	392	50	29	13
	Bathyraja eatonii	BEA	15	12	5	4
	Bathyraja maccaini	BAM	86	16	14	5
	Raja spp	RAJ	129	15	8	5
	Rajiformes	SRX			31	8
	Muraenolepis microps	MOY	73	107	51	14
	Muraenolepis spp	MRL	2392	3837	428	29
	Antimora rostrata	ANT	23717	18385	793	36
	Macrourus whitsoni	WGR	99329	102364	499	35
	Macrourus spp	GRV	125643	133019	430	28
	Nototheniidae	NOX	164	442	26	10
	Chionobathyscus dewitti	CHW	760	1161	40	13
	Channichthyidae	ICX	17460	30832	691	29
	Pogonophryne spp	POG	0	1	1	1
	Lithodes murrayi	KCM	0	2	2	2
	Lithodidae	KCX	11	15	17	5
	Octopodidae	OCT	2	7	6	3
	Asteroidea	STF	1	6	9	4
	Cnidaria	CNI	2		7	2

Appendix 2

Summary of fish and invertebrate by-catch caught in CCAMLR's exploratory longline fisheries for Dissostichus spp. Occurrence is the number of occasions a taxon was observed and distribution is the number of fine-scale rectangles in which each taxon was observed. Note that there is no overall Count data. Source: Observer data, all seasons.

Fishery	Scientific Name	Code	Occurrence	Distribution
TOT486	Bathyraja eatonii	BEA	1	1
	Muraenolepis spp	MRL	104	19
	Antimora rostrata	ANT	351	49
	Macrourus whitsoni	WGR	6	3
	Macrourus spp	GRV	608	56
	Notothenia kempi	NOK	33	5
	Chaenocephalus aceratus	SSI	5	2
	Channichthyidae	ICX	8	4
	Lithodidae	KCX	143	29
	Scleractinia	CSS	1	1
	Actiniaria	ATX	1	1
	Asteroidea	STF	3	3
	Holothurioidea	CUX	6	4
TOT5841	Unknown	UNK	2	1
	Bathyraja spp	BHY	1	1
	Rajiformes	SRX	5	5
	Muraenolepis microps	MOY	1	1
	Muraenolepis spp	MRL	73	20
	Antimora rostrata	ANT	25	13
	Salilota australis	SAO	5	2
	Macrourus whitsoni	WGR	45	8
	Macrourus spp	GRV	707	44
	Pogonophryne permitini	PGR	29	15
	Notothenia rossii	NOR	1	1
	Notothenia kempi	NOK	1	1
	Nototheniidae	NOX	14	10
	Dacodraco hunteri	DAH	10	2
	Chaenocephalus aceratus	SSI	98	19
	Channichthyidae	ICX	364	35
	Pogonophryne spp	POG	5	3
	Artedidraco spp	ART	9	3
	Artedidraconidae	PLF	4	2
	Lycodichthys antarcticus	LCN	1	1
	Careproctus spp	CWS	1	1
	Cephalopoda	CEP	2	2
	Octopodidae	OCT	3	3
	Actiniaria	ATX	2	2
	Asteroidea	STF	20	11
	Ophiuroidea	OWP	9	6
	Echinoidea	URX	1	1
	Holothurioidea	CUX	2	2
	Invertebrata	INV	13	6
	Cnidaria	CNI	3	3
TOT5842	Porifera	PFR	4	3
	Bathyraja eatonii	BEA	37	9
	Bathyraja maccaini	BAM	13	9
	Bathyraja irrasa	BYR	1	1

	Bathyraja spp	BHY	5	3
	Rajiformes	SRX	13	10
	Muraenolepis microps	MOY	2	2
	Muraenolepis marmoratus	MVC	98	18
	Muraenolepis orangiensis	MWO	2	2
	Muraenolepis spp	MRL	90	17
	Antimora rostrata	ANT	42	16
	Macrourus whitsoni	WGR	232	25
	Macrourus carinatus	MCC	54	13
	Macrourus spp	GRV	170	20
	Lampris immaculatus	LAI	3	3
	Pogonophryne permitini	PGR	6	5
	Notothenia squamifrons	NOS	16	9
	Notothenia kempi	NOK	11	6
	Trematomus spp	TRT	2	2
	Nototheniidae	NOX	13	9
	Bathydraconidae	BTI	1	1
	Chionobathyscus dewitti	CHW	7	7
	Cryodraco antarcticus	FIC	1	1
	Chaenocephalus aceratus	SSI	42	6
	Chionodraco myersi	MIC	65	13
	Channichthyidae	ICX	140	22
	Pogonophryne spp	POG	1	1
	Artedidraco spp	ART	25	6
	Artedidraconidae	PLF	13	7
	Liparididae	LIZ	5	3
	Cephalopoda	CEP	4	3
	Octopodidae	OCT	11	5
	Loliginidae, Ommastrephidae	SQU	1	1
	Anthozoa	AJH	1	1
	Echinodermata	ECH	1	1
	Asteroidea	STF	26	13
	Ophiuroidea	OWP	2	2
	Holothurioidea	CUX	1	1
	Crinoidea	CWD	2	2
	Invertebrata	INV	28	9
	Cnidaria	CNI	4	2
TOT5843a	Raja taaf	RFA	143	17
	Raja georgiana	SRR	8	4
	Rajiformes	SRX	178	19
	Antimora rostrata	ANT	271	19
	Macrourus whitsoni	WGR	127	18
	Macrourus spp	GRV	143	19
	Lampris immaculatus	LAI	1	1
	Lithodes spp	KCZ	24	11
	Paralomis aculeata	KCU	1	1
	Lithodidae	KCX	8	7
	Asteroidea	STF	8	4
TOT5843b	Unknown	UNK	2	2
	Somniosus microcephalus	GSK	3	3
	Raja taaf	RFA	16	5
	Raja georgiana	SRR	41	8
	Bathyraja maccaini	BAM	16	3
	Bathyraja murrayi	BMU	4	3
	Bathyraja spp	BHY	47	11
	Raja spp	RAJ	3	2

	Rajiformes	SRX	258	33
	Muraenolepis microcephalus	MWS	32	6
	Muraenolepis spp	MRL	10	6
	Antimora rostrata	ANT	133	26
	Salilota australis	SAO	9	3
	Macrourus whitsoni	WGR	209	18
	Macrourus spp	GRV	434	37
	Lampris immaculatus	LAI	1	1
	Notothenia squamifrons	NOS	26	2
	Bathydraconidae	BTI	2	1
	Amphioda	AQM	1	1
	Lithodes murrayi	KCM	1	1
	Lithodes spp	KCZ	23	9
	Paralomis aculeata	KCU	9	4
	Lithodidae	KCX	21	8
	Neolithodes diomedeae	NDW	2	2
	Paralomis spinosissima	KCV	2	1
	Paralomis spp	PAI	1	1
	Cephalopoda	CEP	3	2
	Asteroidea	STF	76	12
	Ophiuroidea	OWP	13	5
	Cnidaria	CNI	4	2
TOT881	Porifera	PFR	66	27
	Unknown	UNK	38	24
	Raja taaf	RFA	3	2
	Raja georgiana	SRR	1987	101
	Bathyraja eatonii	BEA	563	82
	Bathyraja maccaini	BAM	12	9
	Bathyraja murrayi	BMU	7	6
	Bathyraja irrasa	BYR	40	15
	Bathyraja meridionalis	BYE	2	1
	Bathyraja spp	BHY	140	24
	Raja spp	RAJ	342	50
	Rajiformes	SRX	871	83
	Lampanyctus achirus	LAC	1	1
	Histiobranchus bathybius	HIB	61	18
	Muraenolepis microps	MOY	1102	82
	Muraenolepis marmoratus	MVC	14	7
	Muraenolepis microcephalus	MWS	2	2
	Muraenolepis orangiensis	MWO	35	12
	Muraenolepis spp	MRL	2946	135
	Halargyreus johnsonii	MHJ	1	1
	Lepidion spp	LEV	16	8
	Antimora rostrata	ANT	2797	145
	Moridae	MOR	1	1
	Macrourus whitsoni	WGR	3962	174
	Macrourus carinatus	MCC	626	52
	Macrourus holotrachys	MCH	16	12
	Macrourus spp	GRV	2873	149
	Coryphaenoides spp	CVY	5	5
	Lampris immaculatus	LAI	13	10
	Pogonophryne permitini	PGR	166	67
	Notothenia rossii	NOR	2	2
	Notothenia squamifrons	NOS	7	3
	Notothenia kempi	NOK	41	12
	Trematomus spp	TRT	45	6

	Pagothenia hansoni	TRH	11	4
	Nototheniidae	NOX	556	104
	Chionobathyscus dewitti	CHW	461	61
	Cryodraco antarcticus	FIC	2	1
	Cryodraco spp	YDB	23	5
	Pagetopsis macropterus	PMA	1	1
	Chaenocephalus aceratus	SSI	72	20
	Pseudochaenichthys georgianus	SGI	15	10
	Chionodraco hamatus	TIC	1	1
	Chionodraco myersi	MIC	22	5
	Chaenodraco wilsoni	WIC	5	2
	Channichthyidae	ICX	3141	136
	Pogonophryne spp	POG	63	33
	Artedidraco mirus	AZT	15	8
	Artedidraco spp	ART	8	7
	Artedidraconidae	PLF	3	3
	Zoarcidae	ELZ	3	3
	Melanostigma spp	MEL	1	1
	Pachycara brachycephalum	PHB	2	2
	Centrolophidae	CEN	1	1
	Liparididae	LIZ	1	1
	Osteichthyes	MZZ	3	3
	Isopoda	ISH	2	2
	Amphioda	AQM	2	2
	Lithodes murrayi	KCM	15	8
	Lithodes spp	KCZ	10	9
	Paralomis aculeata	KCU	26	15
	Paralomis formosa	KCF	2	2
	Lithodidae	KCX	89	35
	Paralomis spinosissima	KCV	2	2
	Paralomis anamerae	KDD	1	1
	Paralomis spp	PAI	6	4
	Crustacea	FCX	2	2
	Gastropoda	GAS	7	3
	Cephalopoda	CEP	12	12
	Pareledone turqueti	TWT	13	2
	Adelieledone polymorpha	TWP	3	2
	Octopodidae	OCT	119	48
	Gorgoniidae	GGW	15	3
	Scleractinia	CSS	42	12
	Anthozoa	AJH	3	3
	Actiniaria	ATX	28	17
	Pycnogonida	PWJ	15	3
	Echinodermata	ECH	37	13
	Asteroidea	STF	808	139
	Ophiuroidea	OWP	66	28
	Echinoidea	URX	9	7
	Holothurioidea	CUX	55	29
	Crinoidea	CWD	3	3
	Ascidiacea	SSX	48	18
	Invertebrata	INV	96	32
	Cnidaria	CNI	90	38
TOT882	Porifera	PFR	9	4
	Unknown	UNK	8	6
	Raja georgiana	SRR	26	13
	Bathyraja eatonii	BEA	4	3

Bathyraja maccaini	BAM	14	5
Rajiformes	SRX	4	2
Muraenolepis microps	MOY	19	6
Muraenolepis spp	MRL	445	31
Antimora rostrata	ANT	784	38
Macrourus whitsoni	WGR	421	35
Macrourus spp	GRV	429	28
Nototheniidae	NOX	29	11
Chionobathyscus dewitti	CHW	40	13
Chaenocephalus aceratus	SSI	54	7
Chionodraco myersi	MIC	79	11
Channichthyidae	ICX	565	32
Pogonophryne spp	POG	2	2
Lithodes murrayi	KCM	2	2
Lithodidae	KCX	9	7
Neolithodes diomedeae	NDW	1	1
Paralomis spp	PAI	7	3
Gastropoda	GAS	1	1
Octopodidae	OCT	6	3
Loliginidae, Ommastrephidae	SQU	1	1
Gorgoniidae	GGW	4	2
Scleractinia	CSS	10	3
Actiniaria	ATX	4	2
Asteroidea	STF	28	13
Ophiuroidea	OWP	3	1
Crinoidea	CWD	1	1
Ascidiacea	SSX	1	1
Invertebrata	INV	10	2
Cnidaria	CNI	15	3