



New Zealand National Report on Fishing and Research Activities in the SPRFMO Area during 2010

1. Description of Fisheries

1.1 Pelagic Fisheries

New Zealand conducted no pelagic fishing in the SPRFMO Area during 2010.

1.2 Bottom Fisheries

The New Zealand high seas bottom trawl and line fisheries are described in detail in the impact assessment 'New Zealand Bottom Fishing Activities by New Zealand Vessels Fishing in the High Seas in the SPRFMO Area during 2008 and 2009' (New Zealand Ministry of Fisheries 2008b) available at <http://www.southpacificrfmo.org/benthic-impact-assessments/>. Bottom fishing activities conducted during 2010 continued as described in that document, and were conducted in accordance with the impact assessment and management measures described in the assessment.

New Zealand vessels have been bottom fishing in the SPRFMO Area since before 1990. Specific high seas fishing permits for the SPRFMO Area were implemented in 2007-08 following adoption of the SPRFMO interim measures in May 2007. The total number of New Zealand vessels permitted to fish in the SPRFMO Area and with the capability for bottom fishing and the numbers of vessels which actually bottom fished in the Area since 2002 are shown in Table 1¹. The vessel size distribution (length overall) of the permitted vessels from 2006-07 to 2009-10 are shown in Table 2. The main areas fished by New Zealand vessels are shown in Figure 1.

Table 1. Summary of the number of New Zealand vessels permitted to bottom fish in the SPRFMO Area and with the capability for bottom fishing, and the number of vessels which actually fished in the Area per year with either bottom trawl or line, since 2001-02.

Registration Year (May-Apr)	No. Vessels Permitted to Fish SPRFMO Area	No. Vessels Actively Bottom Fished in the SPRFMO Area	Bottom Trawling	Bottom Lining
2001-02	41*	23	23	
2002-03	55*	22	19	3
2003-04	66*	24	17	7
2004-05	60*	28	17	11
2005-06	58*	22	12	10
2006-07	38	12	8	4
2007-08	25	7	4	3
2008-09	21	10	6	5
2009-10	24	9	7	2

(* There were no specific high seas permits for the SPRFMO Area prior to 2007. These were the numbers of New Zealand vessels issued with general high-seas permits, and that indicated that they had the capability to bottom trawl.)

Bottom trawl fishing effort (active vessels) declined from 23 vessels in 2001-02 to 4 vessels in 2007-08, and has since increased to 7 vessels actively fishing in the SPRFMO Area in 2009-10. Bottom line effort increased from zero in 2001-02 to 11 active vessels in 2004-05 but has since declined to 2 active vessels in 2009-10 (Table 1). The size of vessels has remained unchanged (Table 2).

¹ Vessel information is reported in Tables 1 and 2 for the New Zealand high seas fishing permit year of May – April. All other information on catch and effort is reported by calendar year, January – December.

Table 2. Distribution of vessel size (length overall, m) for New Zealand vessels permitted to bottom fish in the SPRFMO Area for the permit years 2006-07 to 2009-10.

Length Overall (m)	Fishing Permit Year (May - April)			
	2006 - 07	2007 - 08	2008 - 09	2009 - 10
<= 11.9				
12 - 17.9	1	1	1	1
18 - 23.9	6	4	2	3
24 - 29.9	8	3	1	1
30 - 35.9	3	3	3	5
36 - 44.9	8	8	5	6
45 - 59.9	2			
60 - 74.9	8	4	7	6
>= 75	2	2	2	2
Total	38	25	21	24

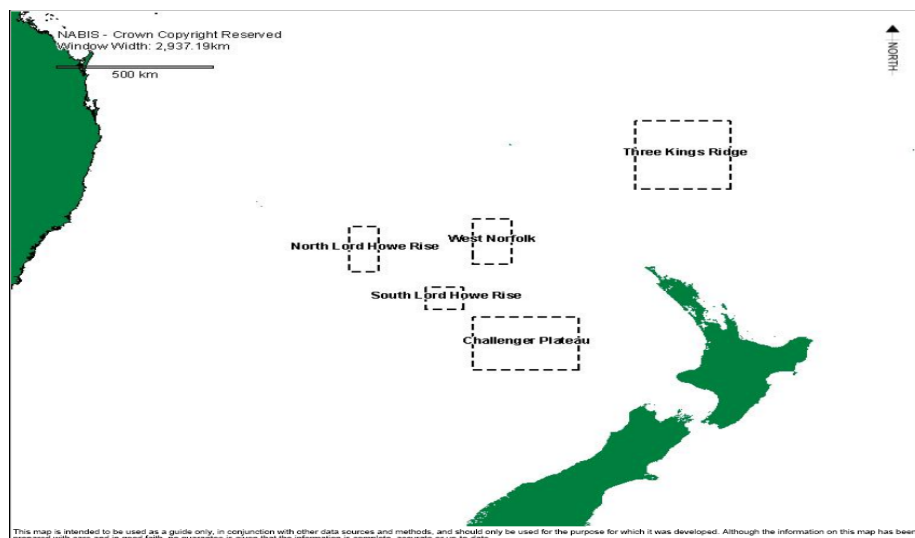


Figure 1. The main areas bottom fished by New Zealand vessels in the SPRFMO Area in 2010 (from the National Aquatic Biodiversity Information System - <http://www.nabis.govt.nz>).

2. Catch, Effort and CPUE Summaries

2.1 Bottom Trawl Fishery

The annual fishing effort (number of active vessels and bottom trawl tows which recorded a catch) and landed catch of the main bottom trawl target and bycatch species is summarised in Table 3. The number of tows has followed the trend in number of vessels, declining from 2,944 tows in 2002 to a minimum of 208 tows in 2008, and subsequently increasing to 1170 tows in 2010.

Table 3. Annual fishing effort (number of vessels) and catch (t) of the main target and bycatch species by New Zealand vessels bottom trawling in the SPRFMO Area from 2002 – 2010. (See Appendix 1 for list of species codes and names)

Year	No. Vessels	ORY	BOE	EPI	ALF	SSO	RIB	RTX	SCK	All Species
2002	23	2,578	121	159	17	50	43	61	37	3,180
2003	19	1,973	62	226	94	25	92	84	56	2,937
2004	17	1,697	90	42	85	91	46	34	8	2,188
2005	17	1,597	268	189	26	75	63	67	5	2,395
2006	12	1,415	57	21	28	6	33	27	15	1,652
2007	8	866	151	<1	2	22	9	5	1	1,076
2008	4	837		1	2	<1	3	<1	1	846
2009	6	928		16	5	<1	7	<1	2	958
2010	7	1,474	12	22	244	10	15	6	13	1,864

(Note: Number of tows reported here is the number of tows which recorded a fish catch, and prior to 2010 excludes tows which made no catch.)

Orange roughy (*Hoplostethus atlanticus*) continues to be the main bottom trawl target species, contributing an increasing proportion of total bottom trawl catch from 67% in 2005 to 99% in 2008, and subsequently decreasing to 97% in 2009 and 79% in 2010. Other species making minor contributions to catches include oreos, cardinalfish and alfonsino. There was an increase in alfonsino catch to 244t in 2010, the highest catch of this species since 2002.

Table 4. Distribution of total annual fishing effort (number of tows) between the main areas fished by New Zealand bottom trawl vessels fishing in the SPRFMO Area from 2002 - 2010.

Year	Challenger	West Norfolk	Lord Howe	Louisville	Other	All Areas
2002	2,152	298	181	890	10	3,531
2003	2,072	88	470	774	95	3,499
2004	853	110	449	1,340	14	2,766
2005	1,039	323	256	838	41	2,497
2006	411	264	139	588	18	1,420
2007	76	176	37	126		415
2008	26	104	78			208
2009	156	252	229		11	648
2010	409	58	388	303	12	1,170

Trends in fishing effort (number of tows) in the different fishing areas are summarised in Table 4. The decline in orange roughy catch from 2002 to 2009 was associated with declines in fishing effort in the main historical fishing areas of the NW Challenger Plateau and Louisville Ridge, and a shift in effort to the West Norfolk Ridge. In 2008 there was very little fishing in the Challenger area, and half the bottom trawl effort was expended on the West Norfolk Ridge area.

Since then there has been an increase in fishing on the Northwest Challenger Plateau, with 35% of the total number of tows being conducted there in 2010. There was a substantial decline in fishing on the West Norfolk Ridge, and a return to fishing the Lord Howe Rise and Louisville Ridge, these two areas supporting 33% and 26% of the 2010 fishing effort respectively.

Trends in orange roughy catch from 2002 - 2010 in the main fishing areas are summarised in Table 5 and shown in Figure 2.

Table 5. Distribution of total annual catch (t) of orange roughy between the main areas fished by New Zealand bottom trawl vessels fishing in the SPRFMO Area from 2002 - 2010.

Year	Challenger	West Norfolk	Lord Howe	Louisville	Other	All Areas
2002	1,460	432	96	568	22	2,578
2003	868	25	218	859	3	1,973
2004	347	106	132	1,106	5	1,697
2005	425	327	190	623	33	1,597
2006	202	670	29	493	22	1,415
2007	36	515	34	280		866
2008	31	426	380			837
2009	261	233	403		31	928
2010	420	79	385	584	6	1,474

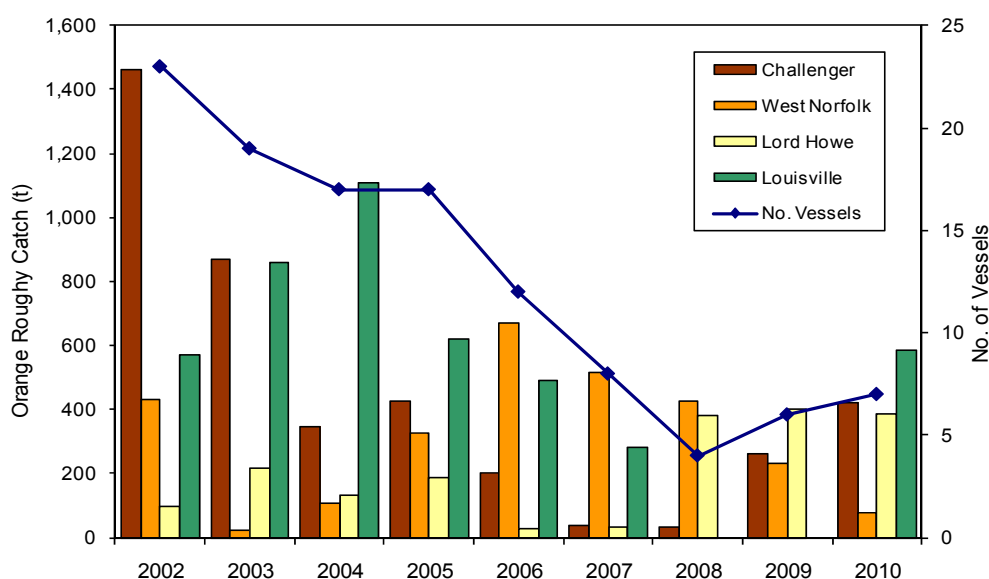


Figure 2. Trends in annual number of actively fishing bottom trawl vessels and total landed orange roughy catch in the four main areas fished by New Zealand bottom trawl vessels in the SPRFMO Area from 2002 - 2010.

The trends in orange roughy catch by fishing area mirror the trends in fishing effort, with catches decreasing sharply on the West Norfolk Ridge, and increasing in 2010 to 29% on the NW Challenger Plateau and 26% on the Lord Howe Rise. The shift of fishing effort to the Louisville Ridge resulted in that area contributing 40% of the orange roughy catch in 2010 (Table 5, Figure 2).

2.2 Bottom Line Fishery

The annual fishing effort (number of vessels and hooks fished) and landed catch of the main bottom line target and bycatch species is summarised in Table 6. Ninety-six percent of the effort in 2007 was bottom longline, with some dahn line effort. All bottom line effort since 2008 has been bottom longline. The number of active line vessels increased from 3 in 2002 to a maximum of 11 in 2005, and has since declined to 2 vessels in 2010.

Table 6. Annual fishing effort (number of vessels and hooks fished) and catch (t) of the main target and bycatch species by New Zealand vessels bottom lining in the SPRFMO Area from 2002 – 2010. (See Appendix 1 for a list of species codes and names)

Year	No. Vessels	No. Hooks	BWA	HAU	DGS	MOW	RXX	YTC	ROK	TOP	All Species
2002											
2003	3	53,438	6	7	1	1				1	17
2004	7	268,809	116	24		6	2	1		3	154
2005	11	384,031	102	31	13	10	2	3	1		163
2006	10	501,810	271	95	6	6	2	2	2		385
2007	4	423,420	144	31	4	5	3	3	1		202
2008	3	302,310	67	43	1	2	<1	1	8		123
2009	5	236,146	58	23	7	1	<1		<1		89
2010	2	48,180	15	24		1	<1	<1	<1		45

There has been a parallel decline in hooks fished, with the number of hooks in 2010 being only 10% of the peak effort in 2006. The catch of bluenose (*Hyperoglyphe antarctica*) declined substantially in 2010 to 33% of the total catch, having contributed 67% of the total catch since 2003. Catches of wreckfish (*Polyprion oxygeneios*, *P. americanus*) continued to increase, becoming the main target species in 2010, for the first time since 2003, contributing 53% of the total catch. Other species making minor contributions to bottom line catches include spiny dogfish and king tarakihi.

Trends in bottom line bluenose catch by fishing area since 2002 are summarised in Table 7 and shown in Figure 3. Catch trends parallel the effort trends, increasing from 2003 to 2006, and subsequently decreasing in all areas to 2010. Bluenose catches decreased to only 2t on the NW Challenger and 13t on the West Norfolk Ridge in 2010, with a steady increase in proportional contribution from the West Norfolk Ridge area from 11% in 2004 to 90% in 2010.

Table 7. Distribution of total annual catch of bluenose between the main areas fished by New Zealand bottom line vessels fishing in the SPRFMO Area from 2002 – 2010.

Year	Challenger	West Norfolk	Three Kings	Louisville	Other	All Areas
2002						
2003			5	1		6
2004	103	12			1	116
2005	38	27	24		14	102
2006	91	114	48		19	271
2007	59	47	39			144
2008	24	33	8		2	67
2009	13	29	16			58
2010	2	13				15

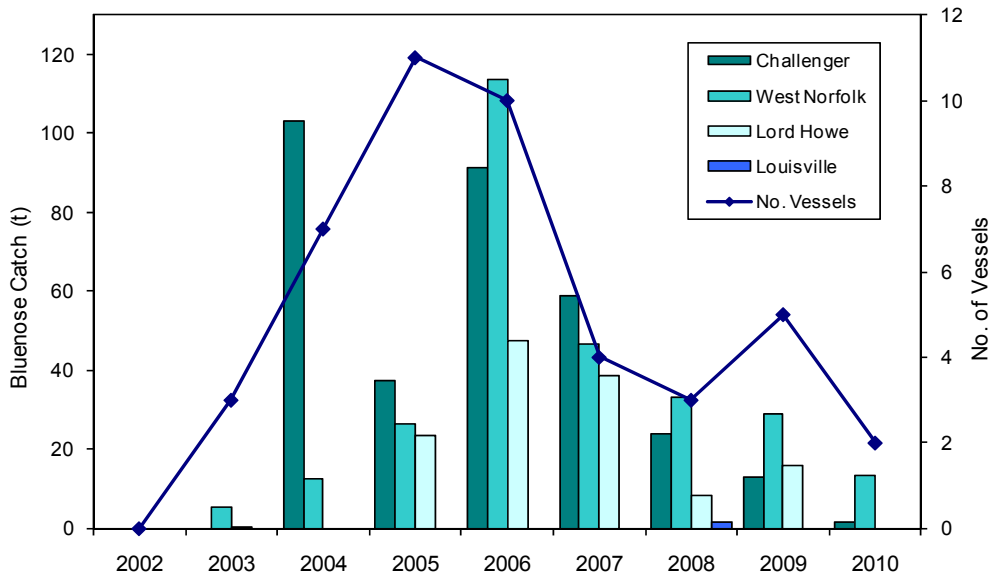


Figure 3. Trends in number of bottom line vessels and total landed bluenose catch in the four main areas fished by New Zealand bottom line vessels in the SPRFMO Area from 2002 - 2010.

3. Fisheries Data Collection and Research Activities

3.1 Fisheries Catch & Effort Data Collection Systems

The data collection systems implemented on New Zealand high seas bottom trawl and line fishing vessels is described in detail in Ministry of Fisheries (2008b). Detailed tow-by-tow catch and effort data for all high seas fishing operations was collected for all fishing activities during using the at-sea catch and effort logbooks and landings recording forms described therein.

In addition to the vulnerable marine ecosystem (VME) evidence forms used by observers in the move-on areas, detailed observer Benthic Materials forms have been completed on all observed bottom trawls to record all benthic bycatches to lowest possible taxonomic level.

3.2 Challenger Plateau Orange Roughy Trawl and Acoustic Surveys

Due to stock sustainability concerns, the fishery on straddling orange roughy stock in the extreme southern part of the Challenger Plateau area was closed in 2000. Since 2005 a programme of trawl and acoustic surveys has been conducted to re-assess the status of this stock.

The biomass in 2009 was conservatively estimated from trawl and acoustic surveys conducted in 2009 and 2010 to have increased to 22,700 t, which is approximately 25% of B_0 . This is above the soft limit reference point of 20% B_0 established in the New Zealand Harvest Strategy Standard for re-opening of the fishery (Ministry of Fisheries 2008a). The fishery was re-opened on 1 October 2010 with a total allowable catch (TAC) limit of 525 tonnes (see Section 6). A trawl and acoustic survey was also conducted in 2011 and copies of the final research reports will be provided to the SPRFMO SWG as they become available.

3.3 Geospatial Prediction and Mapping of Fishing Effort and VMEs

New Zealand continues to develop geospatial data files on seabed bathymetry, fishing footprints and VME distribution for provision to the SPRFMO Secretariat and inclusion in the SPRFMO Geospatial Database. In preparation for development of a quantitative risk assessment for the New Zealand high seas bottom trawl fishery, substantial effort was put into grooming and mapping high seas bottom trawl effort data for the period 1990 – 2006. A methods paper describing and recommending approaches to mapping of high seas bottom fishing effort data has been submitted to the SWG Deepwater Sub-Group (Penney 2011, SWG-09-DW-02).

Following publication of the high-resolution global habitat suitability models for scleractinian corals (Davies & Guinotte 2011) the Ministry of Fisheries has contracted Phase 1 of the New Zealand component of a collaborative New Zealand / USA research project on *Predictive modelling of the distribution of vulnerable marine ecosystems in the South Pacific Ocean region*. This project will develop high-resolution, regionally tailored VME species habitat suitability prediction model for the SW Pacific region, for use in quantitative risk assessment and spatial planning approaches for the area.

4. Biological Sampling and Length / Age Composition of Catches

A summary of the length-frequency sampling conducted in 2010 is provided in Table 8. There was a substantial increase in the number of fish measured by onboard scientific observers, with a total of 15,181 fish being measured in 2010. Most of these (73%) were orange roughy but there was a substantial increase in the number of alfonsino measured, making up 22% of the measured fish. There was also an increase in the range of species measured, with small numbers of black cardinalfish, ribaldo, wreckfish, bluenose and oreos being measured (Table 8). Plots of the length-frequency distributions of these species are shown in Figure 5.

Table 8. Summary of length-frequency sampling conducted by observers aboard New Zealand bottom trawlers in the SPRFMO Area during 2010.

Scientific Name	Common Name	Measure Used	Length (cm)			Number Measured
			Min	Mean	Max	
<i>Hoplostethus atlanticus</i>	orange roughy	standard	15	34.7	51	11,050
<i>Beryx splendens</i>	alfonsino	fork	20	35.9	50	3291
<i>Mora moro</i>	ribaldo	total	36	52.2	74	267
<i>Epigonus telescopus</i>	cardinal fish	fork	37	58.1	68	110
<i>Hyperoglyphe antarctica</i>	bluenose	fork	51	78.8	99	134
<i>Polyprion oxygeneios, P. americanus</i>	wreckfish	total	59	87.2	167	101
<i>Allocyttus niger</i>	black oreo	total	14	30.9	39	80
<i>Neocyttus rhomboidalis</i>	spiky oreo	total	32	38.3	43	7
<i>Pseudocyttus maculatus</i>	smooth oreo	total	34	44.5	59	141
Total						15,181

Female gonad maturity was determined for orange roughy measured during length-frequency sampling.

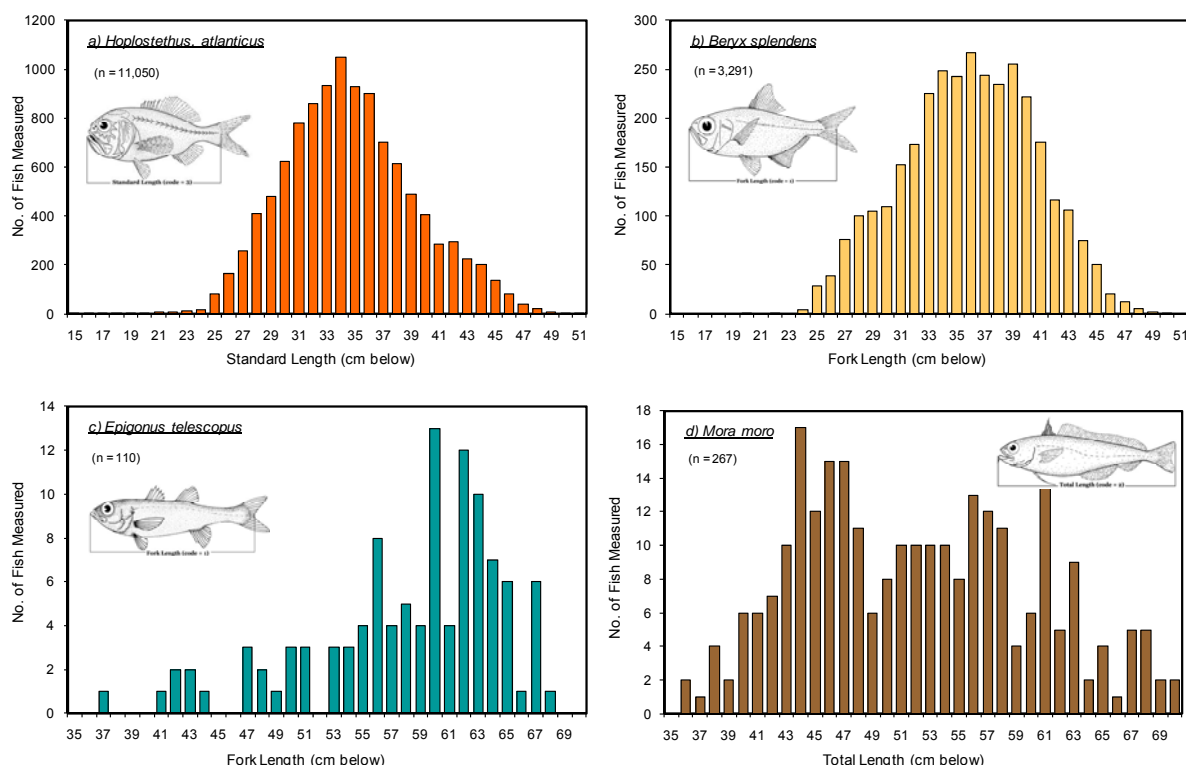


Figure 5. Length frequency distributions of a) orange roughy (*Hoplostethus atlanticus*) standard length; b) alfonsino (*Beryx splendens*) fork length; c) cardinal fish (*Epigonus telescopus*) fork length and d) ribaldo (*Mora moro*) total length, measured by scientific observers aboard New Zealand bottom trawl vessels fishing in the SPRFMO Area during the 2010 calendar year.

5. Summary of Observer Programmes

Detailed summary tables describing New Zealand observer programme activities in the SPRFMO Area during 2010 are included in the New Zealand SPRFMO Annual Observer Implementation Report for 2010 (Appendix 2). Observer coverage is summarised in Table 9.

Table 9. Summary of bottom trawl (BT) and bottom longline (BLL) fishing effort, observer coverage and sampling coverage in the SPRFMO Area during 2010.

Gear	No. of Trips	Vessel Days	Total Tows / Sets	Tows / Sets Observed	Tows / Sets Measured	Retained Catch (t)	Measured Catch (t)	No. Fish Measured
BT	16	308	1,194	1,153	240	2,098	22	14,996
BLL	1	6	27	27	21	18	2	185

(Note: Catch weights shown here are onboard estimates, and not final landed weight data. Bottom trawl tows reported includes all tows conducted, including those which made no catch, and so exceeds the 1,170 tows which made a catch, as reported in the effort summary table.)

New Zealand vessels conducted 16 bottom trawling trips on seven separate vessels in the SPRFMO Area during 2010. These vessels conducted 1,194 tows in total (which includes tows with no catch, and so differs from the successful tows in Table 3) during 308 observed vessel fishing days. Thirty-five percent of this effort was fished on the NW Challenger Plateau, 33% on the Lord Howe Rise, 26% on the Louisville Ridge and 5% on the West

Norfolk Ridge. Scientific observers were deployed on all vessels and all trips, observing 97% of the tows and measuring fish on 20% of the tows (Table 9). The total weight of fish sampled was about 21.7t, or 1% of the estimated 2,098t retained catch. A total of 14,996 bottom trawled fish were measured, 74% of which were the main target species, orange roughy.

Two bottom longline vessels fished in the SPRFMO Area during 2010, one of which was observed. On this trip, 27 sets were conducted during 6 fishing days. Bottom line observer coverage for 2010 was 50% by vessel, 23% by fishing days and 26% by sets. 185 fish were sampled during this trip, mostly wreckfish (bass).

6. Implementation of Management Measures

6.1 Description of Management Measures

A detailed description of New Zealand's implementation of the SPRFMO interim conservation and management measures adopted in 2007 can be found in New Zealand Ministry of Fisheries (2008b) and Penney *et al.* (2009). There were no revisions to these management measures during 2010. The management approach is summarised below:

High seas bottom trawling measures were established in the SPRFMO Area in the form of high seas fishing permit conditions, imposed from 1 May 2008. The key elements of these permit conditions include:

- Schedules designating open, move-on and closed bottom trawling areas within the historical (2002 – 2006) New Zealand high seas bottom trawl fishing footprint, and prohibiting bottom trawling within closed areas and everywhere else on the high seas.
- The move on rule VME Evidence Process for bottom trawling within move-on areas, with the requirement to report to the Ministry of Fisheries and move on 5nm where the VME Evidence threshold is reached.
- A requirement to carry at least one observer on all bottom trawling trips. Observers are provided by the Ministry of Fisheries and cost recovered from industry.

The effect of these measures has been to close bottom trawling in 41% of the total 217,463 km² New Zealand bottom trawl footprint surface area, with 30% made subject to a move-on rule, and 29% left open to bottom trawling. The open area represents 0.13% of the entire SPRFMO Area.

The interim measures adopted in 2009 were implemented through high seas fishing permit conditions that came into effect in February 2010. Fishing for *Trachurus* species and the use of gillnets is prohibited, and notice to the Ministry of Fisheries is required in advance of transiting the SPRFMO Convention Area with gillnets.

6.2 implementation of the VME Evidence Process and Move-On Rule

The VME Evidence Process and Move-On Rule implemented within move-on blocks in the bottom trawl fishing footprint are described in Ministry of Fisheries (2008b) and Parker *et al.* (2009). Scientific observers deployed on New Zealand bottom trawling trips in the SPRFMO Area are required to complete VME Evidence Process forms for each tow conducted within a move-on area.

Scientific observers aboard New Zealand high seas bottom trawl vessels completed VME evidence forms for 122 tows conducted in move-on areas between May 2009 and July 2011 (Table 10). Of these, 70 tows (57%) recorded no benthic by-catch and 117 tows (96%) did not reach the VME evidence move-on threshold score of three. Five tows reached or exceeded the move-on score and the vessels moved on from the tow positions concerned. The weight of VME species that triggered a move-on ranged from 0.96 kg to 113.28 kg, with 4 out of the five move-on events being triggered by average VME species weights of 2.57kg. The combined total weight of all VME species across the 122 tows was 156 kg, 73% of which came from one tow. With the exception of that one tow, the average VME species weight in tows that did retain VME species was 0.83kg.

Table 10. Summary of VME encounters in move-on areas by New Zealand bottom trawl vessels between May 2009 and July 2011, showing the number of tows that achieved various VME scores under the New Zealand VME Evidence protocol (Parker *et al.* 2009). The move-on rule is triggered by tows that achieve a total VME score of three or more.

VME Score	No. Events	Min VME Wt	Mean VME Wt	Max VME Wt	Total VME Wt
0	70	0.00	0.00	0.00	0.00
1	37	0.01	0.59	7.22	21.86
2	10	0.14	1.03	2.90	10.31
3	2	0.96	1.01	1.05	2.01
4	2	1.72	4.14	6.56	8.28
11	1	113.28	113.28	113.28	113.28
Total	122	0.00	1.28	113.28	155.74

6.3 Re-Opening of the Challenger Plateau Straddling Orange Roughy Fishery

The fishery on the straddling orange roughy fishery stock on the Challenger Plateau, which had been closed from 2000 – 2009, was re-opened on 1 Oct 2010 following assessments that indicated that the biomass has increased above the reference level (20% B_0) for re-opening of the fishery (Ministry of Fisheries 2008a). Applying a harvest strategy consistent with that implemented in orange roughy fisheries within the New Zealand EEZ would have indicated a TAC of 1,022 t for this stock. However, a more cautious approach was taken for this fishery to ensure continued re-building towards B_{MSY} levels, and it was reopened with a total allowable catch (TAC) of 525 t. The TAC is comprised of a 500t total allowable commercial catch (TACC) and an allowance of 25 tonnes for other sources of fishing-related mortality. This TAC may only be taken inside the EEZ as the high seas area where the stock straddles is outside of the New Zealand bottom trawl footprint and therefore closed to commercial fishing.

7. References

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Appendix 1. List of Species Codes, Scientific Names and Common Names Used

Scientific Name	Common Name	FAO Code	NZ Code
<i>Hyperoglyphe antarctica</i>	Bluenose	BWA	BNS
<i>Allocyttus niger</i>	Black oreo	BOE	BOE
<i>Dalatias licha</i>	Seal shark	SCK	BSH
<i>Beryx splendens</i> , <i>B. decadactylus</i>	Alfonsino & Long-finned beryx	ALF	BYX
<i>Epigonus telescopus</i>	Deepsea cardinalfish	EPI	CDL
<i>Polyprion oxygeneios</i> , <i>P. americanus</i>	Wreckfish (Hapuku & Bass)	HAU	HPB
<i>Seriola lalandi</i>	Kingfish	YTC	KIN
<i>Nemadactylus sp.</i>	King tarakihi	MOW	KTA
<i>Hoplostethus atlanticus</i>	Orange roughy	ORY	ORH
<i>Dissostichus eleginoides</i>	Patagonian toothfish	TOP	PTO
<i>Macrouridae (Family)</i>	Rattails	RTX	RAT
<i>Mora moro</i>	Ribaldo	RIB	RIB
<i>Rexea spp.</i>	Gemfish, southern kingfish	RXX	SKI
<i>Squalus spp.</i>	Spiny dogfish, northern spiny dogfish	DGS	SPD
<i>Helicolenus spp.</i>	Sea perch	ROK	SPE
<i>Pseudocyttus maculatus</i>	Smooth oreo	SSO	SSO
<i>Neocyttus rhomboidalis</i>	Spiky oreo	ONV	SOR

Appendix 2. New Zealand SPRFMO Observer Implementation Report for 2010

This report constitutes New Zealand's Annual Observer Implementation Report for the year 2010 (January – December), pursuant to paragraph 3(d) of the SPRFMO Standards for the collection, reporting, verification and exchange of data.

New Zealand has had an observer programme in place since 1986, operating as a unit within the New Zealand Ministry of Fisheries (MFish). It delivers coverage days for a number of clients, who are provided with some or all of the information collected. These clients are: The Ministry of Fisheries (Science, Field Operations, Fisheries Management groups), The Department of Conservation through the Conservation Services Levy, The National History Unit of the Museum of New Zealand, the New Zealand Fishing Industry, the Commission for the Conservation of the Antarctic Marine Living Resources (CCAMLR) and the Conversion Factors Working Group, which is a joint MFish and Industry working group.

The independence and credibility of the data collected by the NZ observer programme is subjected to critical review by our clients, who have established feedback mechanisms to inform and correct any deficiencies in our processes. When the negotiations to establish a SPRFMO adopted data standards and observer coverage levels in 2007, New Zealand was in a position to meet the requirements through this established observer programme.

Observer Training

MFish recruitment requires all our permanent Observers to successfully complete a three weeks training course before they are accepted into the programme. The course outline is as follows. Sessions preceded with a number are unit standards registered on the New Zealand Qualifications Framework:

- Observer Programme overview, Trip Planning.
- Catch effort logbooks (CELB)
- Catch effort logbook exercises
- Overview of the Observer manual
- 12306 – Identify common parts, fittings and equipment on a vessel
- 12310 – Prevent, extinguish and limit the spread of fire on a vessel
- 497 – Protect health & safety in the workplace
- 6213 – Use safe working practices in the seafood industry
- 12309 – Demonstrate knowledge of abandon ship procedures and demonstrate sea survival skills
- 15679 – Demonstrate a basic knowledge of commercial fishing methods
- Volumetric measurement
- Density factors
- Time Sampling
- Catch Assessment
- Mixed tows
- 19847 – Describe the reduction of marine mammal and turtle incidental capture during commercial fishing
- 5332 – Maintain personal hygiene and use hygienic work practices working with seafood
- 19877 – Demonstrate knowledge of protection of the marine environment during seafood vessel operations
- Department of Conservation – Marine mammals and seabirds, mitigation devices
- Non-fish bycatch forms
- Benthic form

- Personal clothing and stores
- Communications / Key vessel personnel / Emergency Evacuation codes
- The psychology of deployment – Observer health and safety issues
- Code of conduct / complaint procedure
- QMS overview
- Scales
- Net bursts / discards / Schedule 6 releases
- Product states
- 19846 – Describe the reduction of seabird incidental capture during commercial fishing
- 23030 – Use basic knife skills as a fisheries observer
- □23027 - Demonstrate knowledge of information displays aboard seafood harvesting vessels
- The Compliance Business and Observer Compliance Contribution
- 20168 – Work on a commercial fishing vessel
- Briefing / Debriefing / General paperwork
- Performance Assessment System
- Conversion factors / practical exercise
- Fish ID book
- Fish ID practical
- Otoliths/Staging
- Biological sampling forms practical
- Biological Manual
- First Aid kits
- Tablets and at-sea data entry
- Observer Powers
- Compliance Investigation Services - Role, Use of Observer data, Profiling, Forensics.
- Employment Agreement
- MFish Science use of observer data
- Examination

Successful recruits are accepted into MFish Observer Services and then deployed with an observer trainer for one to two trips of an average duration of 30 day per trip.

Programme Design and Coverage

The MFish observer programme made provision in its annual plan to meet the observer coverage levels agreed by the SPRFMO negotiations:

- A minimum of 10% observer coverage for pelagic fisheries;
- 100% observer coverage for bottom trawl fisheries; and
- A minimum of 10% observer coverage for bottom fisheries other than bottom trawl fisheries.

There was no fishing for pelagic fisheries on the high seas by New Zealand flagged vessels in 2010. New Zealand flagged vessels did fish in bottom fisheries in the SPRFMO Area using either bottom trawling or bottom lining fishing methods.

The costs of observer coverage were fully recovered directly from industry through the direct charging of vessel operators.

Table 1. Monthly fishing effort by New Zealand vessels fishing in the SPRFMO Area during 2010.

Month and Year	Number of active bottom trawl vessels	Vessel days in bottom trawl	Number of bottom line vessels	Vessel days in bottom line
January 2010	1	1	1	2
February 2010	1	20	0	0
May 2010	1	8	0	0
June 2010	6	87	0	0
July 2010	7	80	0	0
August 2010	6	63	0	0
September 2010	1	10	0	0
October 2010	1	11	1	3
November 2010	2	17	1	13
December 2010	2	11	1	8
Totals	16 trips	308	2	26

(Note: Trips often straddle more than one month, so monthly active vessels do not add up to annual active vessels.)

Table 2. Observer coverage achieved in the New Zealand bottom trawl and bottom line fisheries in the SPRFMO Area during 2010.

Month and Year	Number of bottom trawl vessels	Observed vessel days in bottom trawl	Number of bottom line vessels	Observed vessel days in bottom line
January 2010	1	1	0	0
February 2010	1	20	0	0
May 2010	1	8	0	0
June 2010	6	87	0	0
July 2010	7	80	0	0
August 2010	6	63	0	0
September 2010	1	10	0	0
October 2010	1	11	0	0
November 2010	2	17	0	0
December 2010	2	11	1	6
Totals	16 trips	308	1	6
% of vessels / tows observed	100% / 97%	100%	50%	23%

New Zealand's implementation of the SPRFMO interim measures, including the move on rule, is described in detail in its bottom fishery impact assessment. In summary, the move on rule is applied in open 'moderately trawled' areas, where vessels that encounter evidence of a VME when bottom trawling are required to move on 5 nautical miles from the position that hauling of the gear commences, and cannot return to that area for the duration of the trip.

Evidence of a VME is determined through the applications of the VME Evidence Process set out in the fishers high seas fishing permit and reproduced in Appendix 1. This process is completed by the observer, and a completed copy of the form given to the master in a timely manner. If a move on is triggered it is the master's responsibility to notify MFish and to

ensure that the vessel does not fish within 5 nautical miles of this position for the remainder of the trip.

Observer Data collection and Reporting

Observers on SPRFMO vessels were tasked to:

- Complete the VME Evidence process for all bottom trawl tows in areas where the move on rule applied;
- Complete MFish benthic material forms for all tows in all areas;
- Determine and record catch effort and catch information on each fishing tow in all areas independent of vessel reporting; and
- Obtain biological data and samples on target and other species. This includes measuring and sexing fish and collecting otoliths.

The observer reporting forms are detailed in Appendix 1.

Observers deployed on SPRFMO trips were all experienced observers and were briefed prior to each trip on the benthos identification as it related to the VME evidence process.

Observer data for 2010 for was reported to the SPRFMO interim Secretariat as required by the data standards.

Problems Encountered

Implementing the SPRFMO observer requirements did not present insurmountable problems. Most of the prerequisite processes were already in place when the data standards and coverage levels were agreed, with the main change from 2008 being an improved classification guide for potential vulnerable invertebrate taxa in the SPRFMO Area.

One or two observers are required on each bottom trawl vessel to achieve one hundred percent observer coverage of all bottom trawling activities. The number is reviewed on a case by case basis, and includes consideration of the working hours of the observers, and the fishing capacity of each vessel. In all the 2010 bottom trawl trips only one observer was required per trip. The onus was placed on the vessel operators via the high seas permitting process to keep their fishing effort within the hours achievable with the level of coverage they have requested. Fishing effort on a few occasions exceeded the daily hours safely manageable by a solo observer. In total, 97% of all hauls were viewed by an Observer.

The only other bottom fishery in the SPRFMO Area other than bottom trawling was bottom lining. The target of 10% coverage in this fishery was achieved. In the 2010 year, one solo observer trip was deployed in the bottom line fishery.