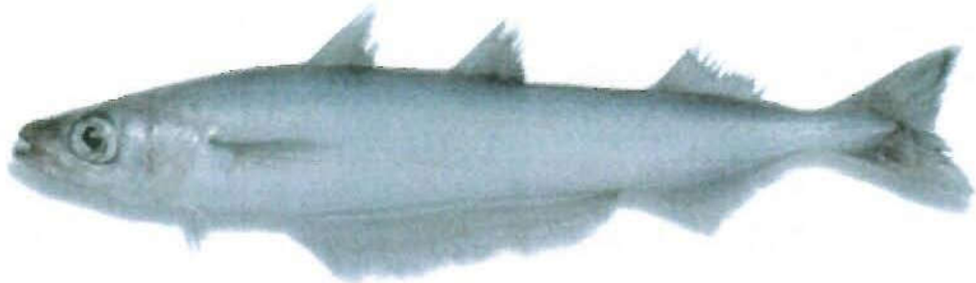
Ministry for Primary Industries
Manatū Ahu Matua

2012 Compliance Risk Profile of the Sub-Antarctic Southern Blue Whiting Fisheries



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1. Executive Summary

In line with the National Fisheries Plan for Deepwater and Middle-depth Fisheries the Ministry for Primary Industries (MPI) Operational Coordination Maritime team (OCM) was tasked to deliver a risk profile on the 2012 Sub-Antarctic Southern Blue Whiting (SBW) fisheries. Three of the Sub-Antarctic SBW fisheries are ranked as Tier 1. The profile is intended to provide MPI fisheries management, compliance and fishing industry participants with an assessment of compliance risks in this fishery. The risk profile is not required to be delivered to an evidential standard. Risks have been identified where possible, based on the data available.

The SBW fishery is managed as four separate fish stocks within the Sub-Antarctic fisheries management area (FMA6). The main two SBW fishstocks (i.e. SBW6I [Campbell Rise] and SBW6B [Bounty Platform]) have undergone changes in TACC levels since 2000, however both are now at similar levels to where they were 12 years ago.

In 2012, the SBW fishery became New Zealand's third fishery to achieve Marine Stewardship Council (MSC) certification. This eco-label gives endorsement that New Zealand SBW meets the MSC's guiding principles and criteria for a healthy, well managed sustainable fishery.

To profile the Sub-Antarctic SBW fisheries, OCM commenced an operation code named "Operation Trois" to gather, examine and analyse data pertaining to the 2012 SBW fishery. Data was collected by Fishery Officers during 17 in port vessel inspections. In addition, 15 vessel trips carried MPI observers who also collected data and carried out SBW length frequency work. Vessel TCEPR data was used and analysed for both MPI observed and unobserved vessels operating in this fishery.

As a result of this analysis the 2012 SBW risk profile has identified a number of compliance related risks. The three main risks are:

1. Non-compliant head cuts for the DRE state;
2. The underreporting of carton weights
3. The underreporting of whole and processed SBW to meal

It is estimated that the total greenweight of SBW unreported due to non-compliant head-cuts was between 1,108 tonne and 2,677 tonne (which equates to between 3% and 6% of the TACC for the tier 1 SBW stocks). Quantification of unreported catch for other risks identified in this report has not been possible due to insufficient data obtained. Therefore estimates of unreported greenweight are considered conservative for this season. Further examination of risk areas will be continued during the 2013 season.

Due to resource limitations and the time required to prepare for and co-ordinate both observer and at-sea phases for the 2013 fishery, completion of this profile has been delayed. The risks identified in this report were, however, addressed with Industry members prior to the commencement of the 2013 SBW season. It is intended that the 2013 update will provide a more comprehensive assessment.

2. Background

In collaboration with industry and environmental organisations, MPI has developed a National Fisheries Plan for Deep-water and Middle-depth Fisheries. The National Deep-water Plan, approved by the Minister, sets out the long-term goals and objectives for deep-water fisheries. It also sets the specific operational objectives that will be delivered annually for each key deep-water species, and establishes performance indicators to assess if the management strategy has been delivered.

All deepwater QMS species are ranked into two tiers according to their commercial importance. Tier 1 fisheries are high volume and/or high value fisheries and are traditionally targeted. Tier 2 fisheries are typically less valuable bycatch fisheries or are only targeted sporadically.

The specific compliance services for 2012-13 contained in the National Deep-water Plan include the completion of risk profiles on the tier 1 SBW fisheries. These service requirements are in addition to the typical monitoring and surveillance activities undertaken by the Compliance Directorate.

The SBW fishery, like many other QMS species, is subject to a number of regulatory measures. Discarding of SBW, area misreporting and the non deployment of bird mitigation devices are listed in the Southern Blue Whiting Fisheries Plan Chapter as the three main compliance risks of particular relevance to the fishery. The plan describes these risks as:

1. Discarding of Southern Blue Whiting

There is evidence of discarding within the Southern Blue Whiting fishery. Illegal dumping may occur in an attempt to avoid utilising or acquiring annual catch entitlement (ACE) or paying deemed value charges where ACE is unavailable to purchase.

Because Southern Blue Whiting can be caught in large volumes during a single tow there are increased risks of catch been dumped in order to maximise economic return. Reasons for dumping include (but are not limited too):

a) Catch taken in excess of vessel's capacity to process all fish before it begins to spoil;
b) Large catches resulting in large quantities of damaged fish;
c) Near the end of the season when fishers are near their quota limit, catching a large bag may push them over their quota limit and result in large deem value fines.

It is vital that operators in this fishery therefore monitor and regulate catch rates in order to prevent wastage.

2. Area Misreporting ("trucking")

Area misreporting occurs when catch taken in one QMA is reported as caught in another. The primary motive behind this type of offence is to minimise the cost of acquiring ACE or payment of deemed value charges, by taking advantage of differential ACE prices or deemed value rates between QMAs. To reduce this incentive to misreport, MPI has implemented uniform deemed value rates across the four sub-Antarctic stocks.

3. Deployment of Seabird Mitigation Devices

Regulations require that all deepwater trawl vessels operating in the southern blue whiting fisheries deploy bird mitigation devices to ensure that fishing activity does not pose an unnecessary risk to seabirds.

With the assistance of the fishing industry, MPI undertakes risk analysis of the southern blue whiting fishery. Some risks were identified as a result of previous investigations and prosecutions.

Risk analysis and information sharing between MPI and industry allows the Ministry to adapt compliance efforts to current risks. It helps minimise opportunities for offending and facilitates the development and monitoring of the compliance standards necessary to achieve the objectives of the National Deep-water Plan.

3. The Southern Blue Whiting Fishery

The SBW fishery is a high volume fishery and is managed as four separate stocks within the sub-Antarctic fisheries management area (FMA6). Beyond FMA6, the rest of SBW is managed under a single QMA to account for SBW taken as bycatch.

In 2011, approximately 21,000 tonnes (t) of southern blue whiting was exported with a value of NZ$36.3 m[1]. For that year it was the fifth largest export species by volume and the fourth largest deepwater species by value. In 2009 the estimated total asset value of southern blue whiting was $74 m. The majority of landings are exported (>90%) with the main export markets being Europe, Japan, Russia and Spain.

Because of its commercial importance, SBW is ranked as a Tier 1 fishery in the National Deep-water Plan. Three of the stocks (SBW6B, SBW6I and SBW6R) are considered Tier 1 stocks and are assessed accordingly. Currently SBW6A and SBW1 are listed as Tier 2 fishstocks due to a distinct lack of target fishing in these areas. SBW6A may in the future be elevated to Tier 1 status if there is evidence to indicate increased fishing effort.

Regulations prescribe a minimum mesh size of 60mm for cod end for trawls in the southern blue whiting fisheries. These mesh sizes are not permitted for use in any other fisheries.

In April 2012 SBW gained Marine Stewardship Council (MSC) certification. Assessors found that the targeted fish stock was healthy, fishing practices have minimal impact on the marine ecosystem and overall the fishery was well managed.

3.1 Southern Blue Whiting Management

SBW was introduced into the QMS in November 1999. Prior to this it was managed by catch limits which were set across the three tier 1 stocks. Initially SBW was managed by the October/September fishing year but this was later changed to the April/March fishing year to better align with the timing of the fishing season and associated commercial catch taken.

[1] SBW scores again (page 12). Seafood New Zealand May 2012.

Figure 1 below illustrates SBW QMAs within New Zealand's EEZ. The sub-Antarctic SBW QMAs are based on four known spawning locations, defined as:

1. SBW6B – Bounty Platform
2. SBW6I – Campbell Island Rise
3. SBW6R – Pukaki Rise
4. SBW6A – Auckland Islands

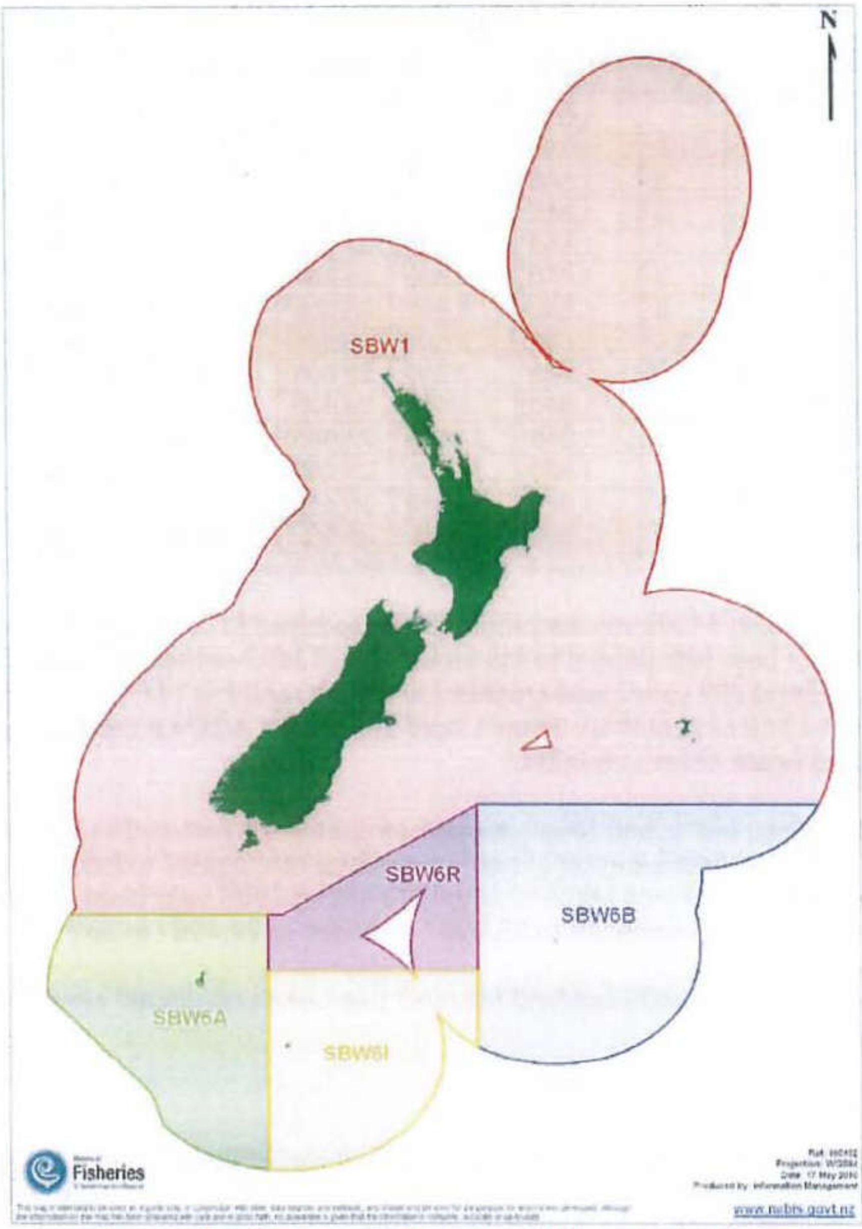

Figure 1 – Map illustrating Southern Blue Whiting stock boundaries

3.2 *Southern Blue Whiting TACC Changes*

Pre-1980 SBW was predominantly taken by the Soviet foreign licensed fleet. Annual landings during this time fluctuated between 2,000 and 48,500 t. In 1986 Japanese surimi vessels entered the fishery, which resulted in increased catches peaking at 76,000 t in 1991-92. In 1992-93 a catch limit of 32,000 t was set with area sub limits (for SBW6B, SBW6I and SBW6R/6A). When SBW was first introduced into the QMS on 1 November 1999 the total allowable commercial catch (TACC) was set at 58,000 t.

Since 2000-01 the TACC has been subject to a number of reductions and by 2006-07 the TACC was set at 30,648 t. Subsequent increases and decreases to the TACCs set for SBW6B and SBW6I have resulted in the 2012-13 combined TACC being set at 43,408 t. SBW has been managed using a Current Annual Yield (CAY) strategy which has contributed to the fluctuations in catch limits and TACCs[2]. Table 1 below illustrates TACC changes since the introduction of southern blue whiting into the QMS in November 1999.

	TACC (tonnes)					
Fishing Year	SBW1	SBW6A	SBW6B	SBW6I	SBW6R	Total TACC
1999/00		1,640	15,400	35,460	5,500	**58,000**
2000/01	8	1,640	8,000	30,000	5,500	**45,148**
2001/02	8	1,640	8,000	30,000	5,500	**45,148**
2002/03	8	1,640	8,000	30,000	5,500	**45,148**
2003/04	8	1,640	3,500	25,000	5,500	**35,648**
2004/05	8	1,640	3,500	25,000	5,500	**35,648**
2005/06	8	1,640	3,500	25,000	5,500	**35,648**
2006/07	8	1,640	3,500	20,000	5,500	**30,648**
2007/08	8	1,640	3,500	20,000	5,500	**30,648**
2008/09	8	1,640	9,800	20,000	5,500	**36,948**
2009/10	8	1,640	14,700	23,000	5,500	**44,848**
2010/11	8	1,640	14,700	23,000	5,500	**44,848**
2011/12	8	1,640	6,860	29,400	5,500	**43,408**
2012/13	8	1,640	6,860	29,400	5,500	**43,408**

Table 1 - Changes to TACC for southern blue whiting

The TACC for the Bounty Platform was progressively reduced to 3,500 t by 2003-04, reflecting a period of poor recruitment to the stock[2]. The TACC remained the same until 2008 when the strong 2002 year class entered the fishery, and the TACC was increased to 9,800 t and then 14,700 t in 2009-10. From 1 April 2011, the TACC for the Bounty Platform stock was reduced again down to 6,860 t.

The TACC for the Campbell Island Rise was also progressively reduced to 20,000 t by 2006-07, which is thought to reflect a period of poor to average recruitment to the stock. The TACC remained at that level until 2009-10 when the strong 2006 year class entered the fishery, and the TACC was increased to 23,000 t and then to 29,400 t in 2011-12.

Catch limits for Pukaki Rise and Auckland Islands have been unchanged since 1997–98[2].

3.3 Southern Blue Whiting Biology[3]

Southern Blue Whiting (*Micromesistius australis*) are almost entirely restricted in distribution to sub-Antarctic waters. They are dispersed throughout the Campbell Plateau and Bounty Platform for much of the year, but during August and September they aggregate to spawn near the Campbell Islands, on Pukaki Rise, on Bounty Platform and near Auckland Islands, over depths of 250-600m. During most years, fish in the spawning fishery range between 35-50cm fork length (FL), although occasionally a smaller size class of males (29-32cm FL) is also present. Information received from NIWA indicated there may be a high percentage of small SBW (≤30cm) present within the Campbell Islands fishery for the 2012 season.

SBW juveniles reach about 20cm FL at the end of their first year and 30cm FL after two years. Growth slows down after 5 years and virtually ceases after 10 years. It is believed

[2] Review and summary of the time series of input data available for the assessment of southern blue whiting (Micomesistius australis) stocks. Dunn et al 2013 – unpublished report.
[3] Report from the Fisheries Assessment Plenary, May 2012, part 3.

that SBW live to a maximum age of about 25 years. The age and length of maturity, and recruitment to the fishery, varies between areas and between years. The majority of both males and females mature at age 3 or 4, at lengths of 33-40 and 35-42cm FL respectively. SBW have been shown to have very high recruitment variability.

Spawning on Bounty Platform begins in mid-August and finishes by mid-September, while spawning usually begins 3-4 weeks later in all other areas, finishing in late September/early October. The Campbell Island Rise has two separate spawning grounds, one in the north and one in the south. Fish appear to recruit first to the southern ground, but thereafter spawn on the northern ground. Spawning appears to occur at night, in mid-water, over depths of 400-500m on Campbell Island Rise but shallower elsewhere. Spawning aggregations have also been found near Auckland Islands however the uncertainty of spawning here means that this fishery is rarely targeted. The main distribution and spawning grounds for SBW are illustrated in figure 2 below.

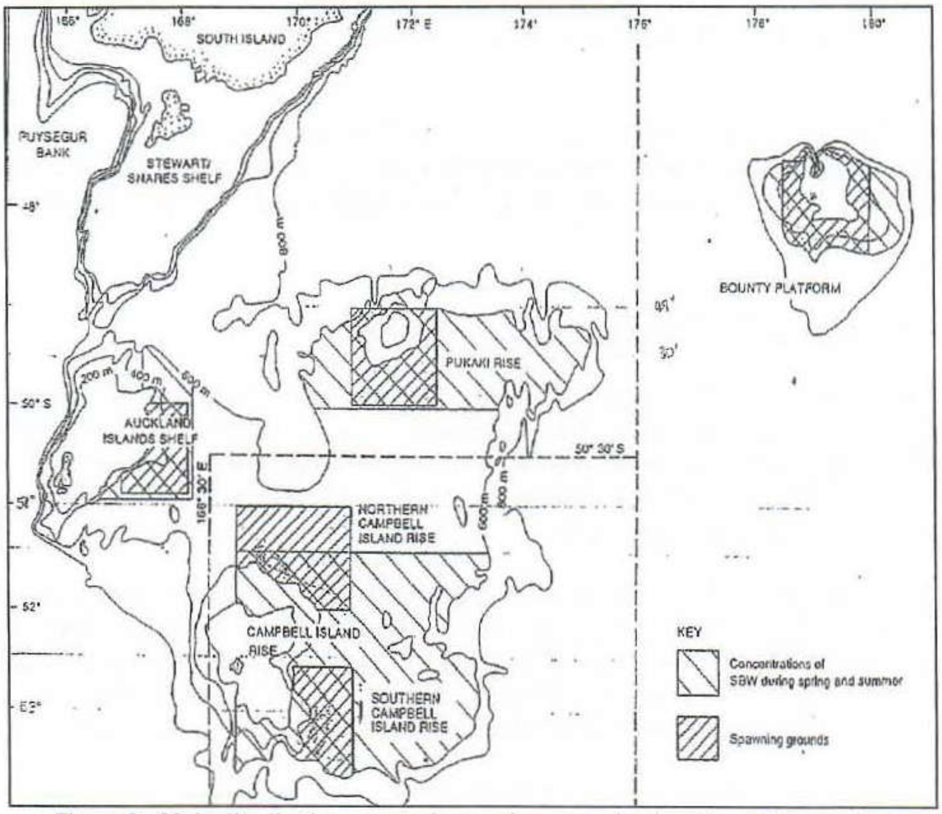

Figure 2 - Main distribution area and spawning grounds of southern blue whiting.

3.4 *Illegal Catches*

The 2011 and 2012 stock assessments suggest that the level of illegal and unreported catch is thought to be low. However, a number of operators have been convicted for area misreporting and discarding without reporting. In 2002-03, one vessel falsely reported approximately 684 t which was taken from the Campbell Island Rise (SBW6I). Of this 480 t was reported against quota for the Auckland Islands (SBW6A) and the balance of 204 t was reported against quota for the Pukaki Rise (SBW6R). In addition to this, evidence suggested that another vessel had misreported a total of 250 t of SBW catch during the 2002-03 and 2004-05 fishing years relating to falsely reported catches in SBW 6R, SBW 6B, and SBW 6I. Further still, the operators of another vessel were convicted for discarding without reporting fish in 2004: crew members estimated that between 40 and 310 t of SBW were illegally discarded during a two and a half week period fishing on the Campbell Island Rise.

3.5 *Other sources of Mortality*

Scientific observers have occasionally reported discards of undersize fish and accidental loss from torn or burst codends. The Fisheries 2012 Plenary report[4] provides estimates for annual discards as determined by Anderson (2004) whom estimated total annual discards (including estimates of fish lost from the net at the surface) as ranging between 0.4% and 2.0% of the total estimated SBW catch. Anderson (2009) reviewed fish and invertebrate bycatch and discards in the SBW fishery using observer data from 2002 to 2007. Anderson estimated that 0.23% of the catch was discarded from observed vessels. The low levels of discarding were thought to occur primarily because most catch came from vessels that targeted spawning aggregations.

In August 2010, the F.V. Oyang 70 sank while fishing for SBW on the Bounty Platform. It was fishing an area between 48°00" S and 48°20" S, and 179°20" E and 180°00" E between 15 and 17 August 2010, before sinking on 18 August 2010. The Ministry of Fisheries estimated that it had taken a catch of between 120 t and 190 t that was lost with the vessel.

The TAC has a built-in allowance for "other sources of fishing mortality", which may include unreported burst bags, loss of catch, discarding of small fish and mortality of escapees from the net. In April 2011 the allowance was set at 740 t (made up of 140 t for SBW6B and 600 t for SBW6I).

3.6 *Marine Stewardship Council (MSC) Certification*

In April 2012 southern blue whiting gained Marine Stewardship Council (MSC) certification. This eco-label gives endorsement that New Zealand Southern Blue Whiting meets the MSC's guiding principles and criteria for a healthy, well managed sustainable fishery. SBW is NZ's third fishery to receive MSC certification. Current certification is valid until April 2017 with reassessment required before expiry.

The independent assessment was undertaken by Intertek Moody Marine which found that the targeted fish stock was healthy, fishing practices have minimal impact on the marine ecosystem and overall the fishery was well managed. Annual surveillance audits are a requirement of certification. Actions required by industry as part of the certification process are strongly linked to the environmental effects of fishing within this bulk fishery.

The main issues relate to the level of interactions with:

- NZ sea lions (particularly at the Campbell fishery)
- NZ fur seals (particularly at the Bounty fishery) and
- Seabirds

For continued certification the Deepwater Group Ltd were required to develop an 'Action Plan' to address issues associated with their management strategy for Endangered, Threatened and Protected (ETP) species.

Prior to the 2012 season, the Deepwater Group Ltd produced a 'Southern Blue Whiting Industry Briefing Paper' (refer appendix 1). This paper details particular actions required through the MSC Certification process regarding environmental effects of fishing for SBW, especially reducing instances of non-fish bycatch. Strategies discussed in this paper for limiting these effects focus on good management of offal and whole fish lost overboard, and good fishing practices that limit the amount of time the net is near the surface.

[4] Report from the Fisheries Assessment Plenary, May 2012.

3.7 *Bird Mitigation Devices and Vessel Management Plans (VMPs)*

Seabirds are killed or injured by trawl gear because they are either struck by the trawl warps (particularly larger seabirds such as albatross) or caught in the net when it is on the surface during deployment and retrieval (particularly smaller seabirds such as shearwaters and petrels). Regulations require trawl vessels to deploy bird mitigation devices, such as tori lines, to scare birds away from the danger zone around the stern of the vessel.

Mitigation methods such as streamer (tori) lines, Brady bird bafflers, warp deflectors and offal management are used in the SBW trawl fishery. Warp mitigation became mandatory in April 2006. The 2006 notice mandated that all trawlers >28 m in length use a seabird scaring device while trawling (being "paired streamer lines", "bird baffler" or "warp deflector" as defined in the notice).

In addition to the requirement to deploy bird mitigation devices, all trawlers over 28 m in length must have and comply with a Vessel Management Plan (VMP). VMPs specify measures that must be followed on the vessel to reduce the risk of incidental seabird captures. These measures include storing offal while shooting and hauling fishing gear, and making sure all fish is removed from the net before it is put back in the water. Vessels capable of producing fishmeal are better able to control offal, as they are able to process most offal into fishmeal. LPFVs[5] with no meal plant may have several tonnes of offal and fish waste per day to manage and discard (Albert Times, 2007). MPI monitors vessels' performance against their VMPs. If a vessel is not complying with its VMP, the Chief Executive of MPI has the option of imposing vessel-specific regulations to control offal management practices.

4. Fisheries Profiling

Monitoring and auditing the behaviour of vessels processing at sea is challenging in the absence of direct surveillance. Inferring behaviour from data analysis is often the only option. Profiling of deep-water fisheries can be undertaken using a number of analytical methods, ranging from comparing relatively simple indices derived from the data to sophisticated statistical modelling. These methods have provided indicators of behaviours such as illegal discarding of small and/or damaged fish and non-target or "bycatch" species.

Data from observed fishing trips is a vital component of this profiling. There is substantial evidence, from NZ and elsewhere, that vessels with government observers aboard tend to report accurately, while those without frequently do not. Observed trip catch data thus provides a standard against which reported catch from unobserved trips can be assessed.

To date, fishery profiling has concentrated on the West Coast South Island (WCSI) hoki spawn fishery and the East Coast South Island (ECSI) hoki fishery. This is the first profile to be completed in relation to the SBW fishery.

5. Southern Blue Whiting Fishery Risk Profile

OCM were tasked to deliver a risk profile on the SBW Fishery in line with the Annual Operational Plan for Deepwater Fisheries for 2012-13. The profile is intended to provide fisheries management with an assessment of identified compliance risks, as they pertain to sub-Antarctic fisheries management area 6.

The SBW fleet is made up of foreign chartered limited processing factory vessels (LPFVs) and NZ factory vessels (producing DRE product), which are >46m in overall length.

[5] LPFVs are restricted to the following primary processing activities: washing, scaling, gutting; deheading, tubing and tailing; chilling and freezing; storage, packing and transport.

5.1 *Operation Trois*

An operation code-named "Operation Trois" was coordinated to gather, examine and analyse data pertaining to the sub-Antarctic SBW fishery. The operation involved deep-water vessels operating on the spawn fisheries between August and October 2012.

Operation Trois contained two phases[6] as follows:

5.1 (a) Phase I – In-port inspections

Fisheries Officers responsible for conducting in-port inspections for this phase were tasked to gather information specific to vessels operating in the southern blue whiting fishery. Key taskings were as follows:

- Confirm details relating to vessel processing specifications for southern blue whiting processed by state and grade (as provided by company);
- Obtain copies of vessel unload manifests for the trip for all species by state, grade, number of units and weight;
- Conduct carton checks of a random sample of southern blue whiting from each state and grade to determine the following (but not limited to); gross carton weight; block weight; number of fish (where applicable) per block; packaging weight; application of glaze; compliance with state definition;
- Where possible establish minimum processing sizes for southern blue whiting and determine destination of unwanted southern blue whiting i.e. green block, meal etc;
- Obtain copies of fish meal plants and relevant details to the production of fish meal;
- Establish what southern blue whiting 'green block' contained (e.g. small and/or damaged fish);
- Establish whether or not an industry observer was onboard for the trip being inspected.
- Obtain copies of purchase invoice from LFR in respect of landing inspected.

5.1 (b) Phase II – MPI observer coverage

MPI observers were tasked with collecting information in addition to their normal duties. This helped the Operational Coordination team gain a comprehensive understanding of fishing and at-sea processing operations. The key tasks requested of observers specific to this phase were:

- Document crew details including role and responsibilities as well as source documents they may be responsible for;
- Describe fishing effort and strategy deployed by senior crew;
- Give detailed description of vessel processing from the time catch is hauled onto the deck to packed into cartons and placed in the hold, including quantification of 'stickers' and whole fish to meal;
- Provide detailed information about the processing, freezing and factory records (non statutory source documents) pertaining to the operation of the vessel;
- Provide details regarding vessel procedures for discards and accidental losses;

[6] An at-sea phase was also planned, but had to be cancelled due to the unavailability of a RNZN offshore patrol vessel to undertake this tasking. The cancellation was outside of the control of MPI.

- Collect information about the manufacturing of meal;
- Describe weighing and glaze application used on the vessel, including description of automated weighing systems used onboard (if applicable);
- Obtain copies of vessels "summary of fish onboard" recording all species by state, grade, number of units and weight.

5.2 *Fishing Activity during the 2012 SBW Season*

Fishing activity predominantly occurred within statistical areas 607 and 608 (SBW6B), 610 and 611 (SBW6R) and 618 and 619 (SBW6I) during the 2012 SBW season and is plotted in figures 3a-3d below. Each black dot represents a vessel's automatic location communicator (ALC) position and hence area fished.

Vessels tend to fish the Bounty Platform first followed by concentrated effort on the Campbell Plateau, generally in the southern part of the rise. Fishing effort then moves to the northern grounds of the Campbell Plateau where spawning aggregations are also found.

Figure 3a illustrates activity by vessels of all three nationalities during the 2012 SBW season.

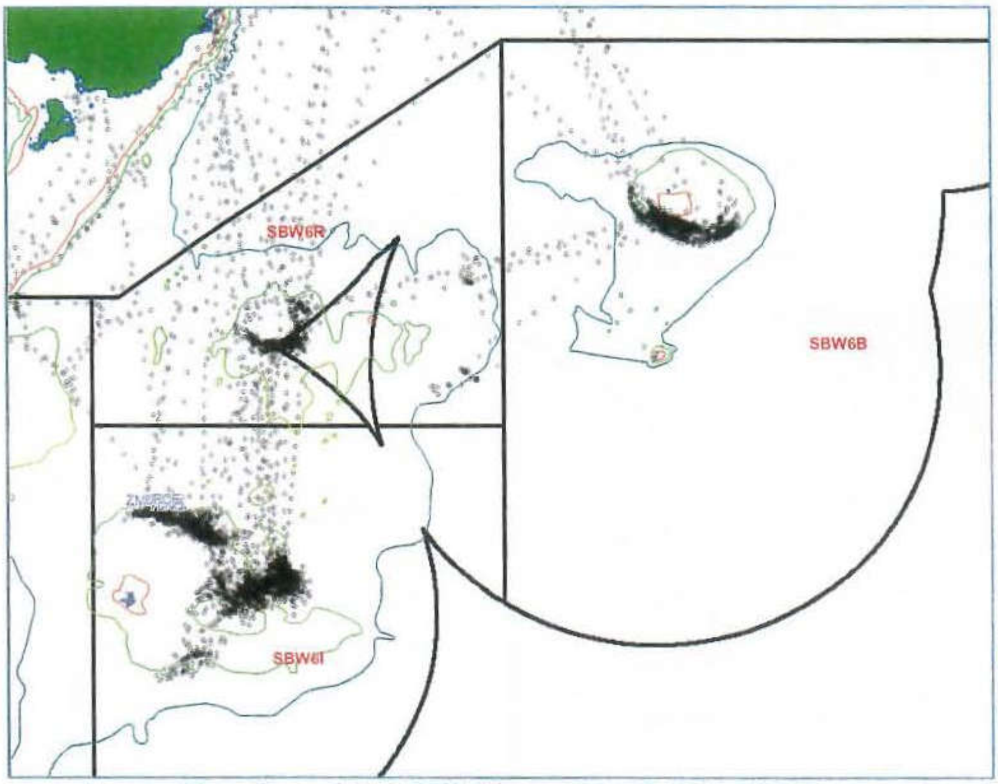

Figure 3a – activity in SBW fishery - all vessels [2/8 to 5/10/12]

Figure 3b illustrates activity by New Zealand vessels during the 2012 SBW season. NZ vessels fished all three fishstocks, with more activity in the Pukaki area than FCVs.

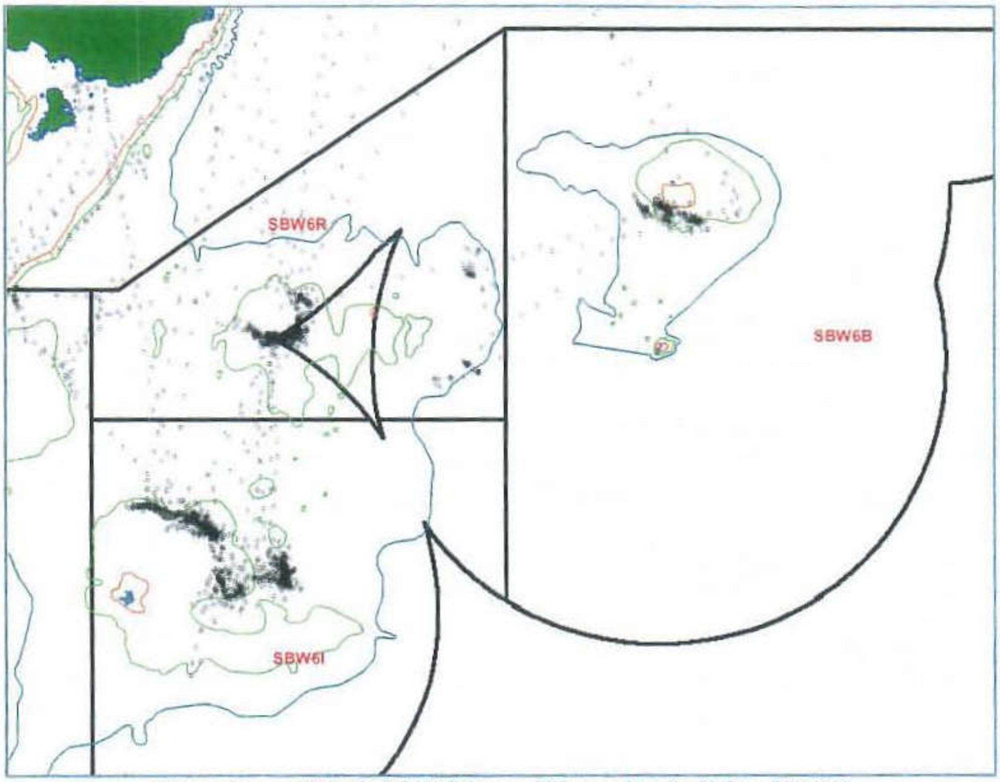

Figure 3b – activity in SBW fishery - NZ vessels only [2/8 to 5/10/12]

Figure 3c illustrates activity by the Japanese vessel during the 2012 SBW season. This vessel fished the Bounty and Campbell areas only.

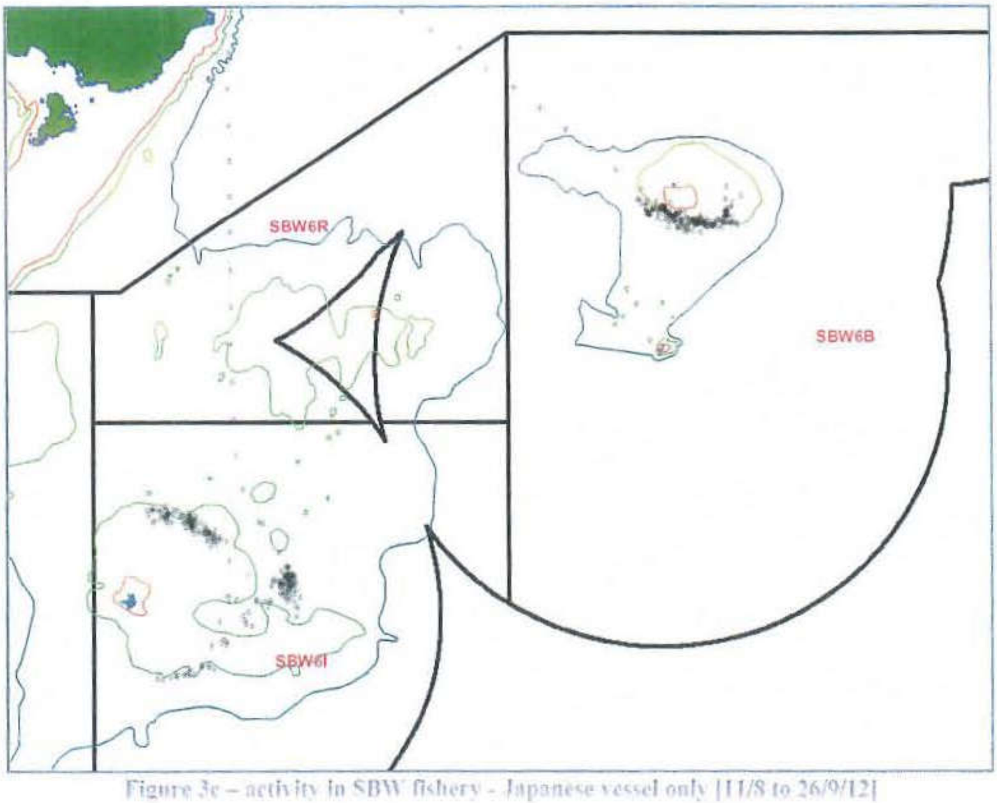

Figure 3c – activity in SBW fishery - Japanese vessel only [11/8 to 26/9/12]

Figure 3d illustrates activity by Ukrainian vessels during the 2012 SBW season. Ukrainian vessels fished all three fishstock areas, but with minimal effort in the Pukaki area.

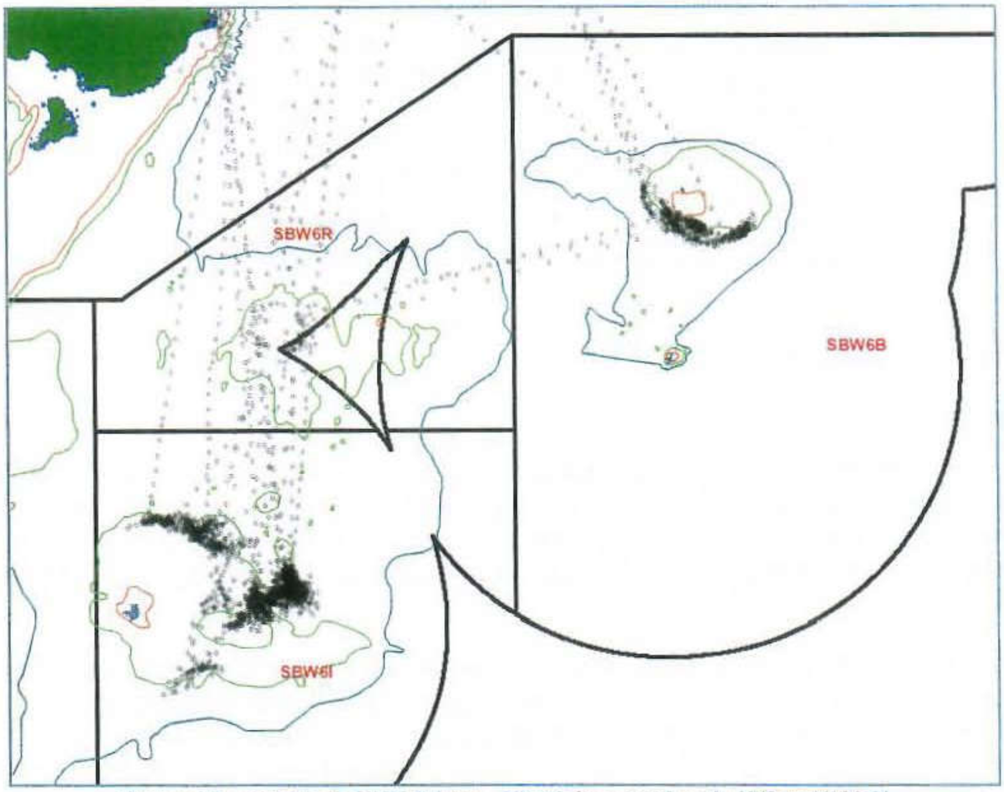

Figure 3d – activity in SBW fishery - Ukrainian vessels only [5/8 to 1/10/12]

6. 2012/13 Risk Profile Analysis

6.1 *General Information*

Landing data for the 2012-13 season suggests that only 70% of the available TACC for Tier 1 SBW was caught. Approximately 98% of the TACC for SBW6B was taken compared to 72% for SBW6I. Catches in SBW6R have always been highly variable and the 2012-13 season was no exception, with only 30% of the TACC taken. Table 2 below compares reported landings for the 2012-13 fishing year to the TACC available in that year.

	Tonnes			
	SBW6B	SBW6I	SBW6R	Total
TACC 2012-2013	6,860	29,400	5,500	41,760
2012 reported landings	6,750	21,235	1,657	29,642

Table 2 – Comparison of TACC to reported landings (tonnes) by fishstock for the 2012/13 fishing year.

During the period August to October 2012, approximately 29,642 t of SBW was landed by vessels targeting SBW within FMA 6. This was reported by 13 deepwater factory processing trawlers capable of staying at sea for extended periods of time.

Seven (or 54%) of the deepwater factory trawlers operating in this fishery were foreign owned and crewed. All seven were chartered to New Zealand companies. The remaining six vessels were New Zealand owned and operated.

Approximately 80% of estimated catch was reported by foreign charter vessels (FCVs) with the remaining 20% reported by New Zealand vessels. This is summarised below in table 3.

Vessel Nationality	Number of Vessels	Total estimated SBW catch (kgs)
Japanese	1	4,783,300
Ukrainian	6	17,988,900
New Zealand	6	5,641,745
Total	**13**	**28,413,945**

Table 3 - Summary of foreign charter and NZ vessels operating in the SBW fishery

6.2 *Vessel Inspection Phases*

6.2 (a) In-Port Phase

Fishery Officers completed 14 comprehensive in-port inspections of vessels that had fished in sub-Antarctic SBW fisheries. Inspections occurred at ports of Nelson, Lyttelton, Timaru, Dunedin and Bluff. The vessels inspected ranged in overall length from 64 m to 105 m. During the in-port inspections Fishery Officers examined and weighed approximately 36.4 t of SBW product.

Fisheries officers made carton weight checks on two additional landings, but no further in-port vessel inspections were completed, as previous inspections had gathered the information required to complete the risk profile. Later in the season, Fisheries Officers also conducted an inspection on a vessel but the company refused to answer their questions claiming it would prejudice enquiries that were ongoing into the company's other vessels.

Vessel unload manifests relating to the southern blue whiting fishery were obtained from a total of 21 landings. No information was obtained relating to the trip by Amaltal Columbia during which fire broke out onboard (the vessel had fished in SBW6R for one week prior to the fire incident).

6.2 (b) Observer Phase

Of 22 trips in the SBW fishery in 2012, 17 trips carried MPI observers, providing 77% coverage. Eleven of the observed trips carried two observers ("paired trips"), with the remaining six being solo trips. 72% of paired observer trips were on FCVs, while 83% of solo trips were on NZ vessels.

Twelve of the observed trips fished exclusively in SBW. The remaining five trips spent part of the trip fishing SBW in FMA6, as well as other target species in FMAs 3, 5, 8 and 9.

6.3 *Destination of Landed Fish*

According to the data collected, all landed fish product was either:

- Transported to onshore cold storage facilities either owned or part-owned by the permit holder/licensed fish receiver; or
- Landed to an independent cold storage facility.

No frozen product was loaded directly into refrigerated containers on the wharf by vessels registered as 'mobile LFRs'. At present no permit holders have their vessels registered as mobile LFRs.

Vessels that operate as mobile LFRs are a compliance risk, as product is loaded directly from the vessel into refrigerated containers on the wharf and shipped overseas, sometimes within days of landing. This type of operation restricts MPI's ability to conduct carton content and weight checks to ensure that product is consistent with carton labelling and therefore state definition and that greenweight is accurately reported. Although this was not an issue this SBW season, because no product was landed directly into containers, it may present as an issue in future years.

OCM recommend that no deepwater vessels are issued with mobile LFR licenses in the future, because the risk of product leaving New Zealand without any opportunity for a compliance inspection is too high.

6.4 *Reporting Issues*

The following section addresses issues identified during both in-port vessel inspections and observed trips. The issues covered relate to the following:

- Reporting of effort data and processing data in the TCEPR;
- Timeliness of data entry in the CEEDT system onboard vessels; and
- The reporting of burst bags and use of destination type code "A".

6.4 (a) TCEPR estimated catch

Regulation 11(2)(a) of the Fisheries Reporting Regulations 2001 states that *"a person required to provide Trawl Catch, Effort, and Processing Returns for a vessel must complete a return on each day or part-day that the vessel is on a fishing trip"*. Section 2 (10 & 11) of the Explanatory Notes to the TCEPR describe how the section *"estimated catch by species in order of quantity"* should be completed. However, neither the regulations nor explanatory notes provide clarification about **when** this information should be entered into the TCEPR. As such, operators use a variety of methods for capturing this data. Table 4 provides a brief summary of reporting and filing methods across the fleet.

At time of tow	Once per day
Six vessels (all filing EDT)	Seven vessels (6 filing EDT, 1 filing paper)

Table 4 – Method of completing TCEPR estimated catch.

Completion of effort data is described in categories (a) and (b) below:

(a) Real-time – fields are completed at time of tow. Five NZ vessels (Amaltal Atlantis, Amaltal Columbia, Amaltal Enterprise, Amaltal Explorer, San Enterprise) and one Ukrainian vessel (Meridian 1) report in this manner. All these vessels file returns using EDT.

(b) Entered once per day. Data is transferred from other records which are kept more timely. Five Ukrainian vessels (Aleksey Slobodchikov, Alexander Buryachenko, Ivan Golubets, Mainstream, Profesor Mykhaylo Aleksandrov), one NZ vessel (San Waitaki) and one Japanese vessel (Tomi Maru 87) report in this manner. Ukrainian and NZ vessels all file using EDT and the Tomi Maru files paper returns.

These reporting methods are consistent with those found during the hoki season in the same year. However, it is not possible to assess the veracity of this information using either paper returns or the EDT audit data available at the time.

OCM recommend that greater clarification is needed in the Fisheries Reporting Regulations 2001 to improve reporting of effort data. The requirement for the timely entry of effort and estimated catch data (e.g. "as soon as practicable once the trawl net has been landed on the vessel") should be paramount.

6.4 (b) TCEPR daily processing summary

Regulation 11(2)(a) of the Fisheries Reporting Regulations [see reference in 6.4 (a) above] is silent on the manner in which the daily processing summary should be completed. Section 3(1) of the Explanatory Notes to the TCEPR describes how the processed catch should be completed and instructs permit holders to "Fill out this section for the fish taken on the day written at the top of the form, whether or not it was processed on that day".

At the Compliance Group meeting held on the 28th June 2012, industry was advised to report in accordance with the explanatory notes. This required a change in reporting practices for some vessels. Feedback received indicated this change was causing serious disruption to the information flow on-board vessels and it was resulting in complications for some companies. As a result of this feedback, interim advice was given to companies that they should continue to report processing data using current on-board practices.

All NZ and Ukrainian vessels fishing SBW in 2012 recorded processed catch in the TCEPR processing summary for product processed during set timeframes regardless of what day the catch came from. The Japanese vessel, however, recorded TCEPR processing summary data in relation to the day on which the tow began, regardless of when processing finished.

OCM recommend that greater clarification is needed in the Fisheries Reporting Regulations 2001 to improve reporting of processing data. The requirement for the timely entry of processed catch data should be paramount. Explanatory notes need to be amended to reflect the intent of the regulations and best practice for auditing purposes.

6.4 (c) Catch Effort Electronic Data Transfer Returns (CEEDT)

CEEDT was introduced to enable authorised users to meet their reporting obligations under the Fisheries Reporting Regulations 2001, to reduce costs and improve data quality.

During the 2012 SBW season, 12 of the 13 vessels were using CEEDT to file returns, with only one (the Japanese FCV) still using paper returns.

The use of CEEDT should provide Compliance with a unique opportunity to monitor the timeliness of return completion; and to potentially identify false declarations including area mis-reporting, under-reporting and discarding. Accurate date/time stamping of each individual field populated is imperative for Compliance auditing purposes. However, as the current audit log does not accurately reflect time of entry, this data is of little use. For this reason, no analysis of the CEEDT audit data has been conducted.

OCM recommend that:

- The manner in which dates and times are written out to the CEEDT event fields needs to be amended to accurately record when the data was entered, in-accordance with the original CEEDT specifications.
- An analysis tool to process the CEEDT audit history data exported from the FishServe system is developed to enable prompt and accurate data analysis.

- The analysis tool to process the Compliance Management Tool (CMT) exported CEEDT audit history data needs to be further developed as only an early draft version of an analysis tool has been prepared at this stage.

6.4 (d) Accidental Loss, Abandonment and Authorised Discards

Section 72 of the Fisheries Act 1996 prohibits the dumping of fish. However, 72(5)(c) provides for authorised discards in the presence of a fishery officer or Observer. All authorised discards of fish must be included in the appropriate returns, and reported against destination type code (DTC) 'A'. This code relates to fish or fish product of the species or classes of fish subject to the quota management system established under Part 4 of the Fisheries Act 1996 that are returned to, or abandoned in, or accidentally lost at sea.

The use of DTC 'A' in CLRs may relate to catch that was either (or a combination of): authorised discards, accidental losses (e.g. attributed to burst bag) and/or intentional releases (or abandonment) for reasons of vessel/crew safety. It is not immediately possible to identify what of these circumstances apply to catch recorded against DTC 'A' in a CLR. During the 2012 season 152,065 kg of SBW was recorded against DTC 'A' by 10 vessels.

Table 5 provides a summary, by vessel, of SBW reported against DTC "A" on CLRs during the 2012 SBW season. A comparison of TCEPR and CLR data, where DTC "A" was used, showed that all SBW reported as "ACC" or "DIS" on TCEPRs was accounted for on the appropriate CLR.

Vessel	Landing date	MPI observer onboard	SBW Reported as 'A' on CLR	Observer Authorised Discard/ Burst Bag	TCEPR ACC/ DIS
Aleksey Slobodchikov	2/09/2012	Yes	20,100	100	20,100
	26/09/2012	Yes	670	650	670
Alexander Buryachenko	7/09/2012	No	10,500	N/A	10,500
	27/09/2012	Yes	500	0	500
Amaltal Columbia	13/09/2012	Yes	13,949		40
Amaltal Explorer	26/08/2012	No	6,000	N/A	6,000
Mainstream	12/09/2012	Yes	1,000	500	1,000
Meridian 1	27/08/2012	Yes	120	0	120
	18/09/2012	No	300	N/A	300
Profesor Mykhaylo Aleksandrov	4/09/2012	Yes	3,300	6,000	3,300
San Enterprise	25/09/2012	Yes	4,665	**	4,665
San Waitaki	19/09/2012	Yes	3,217	2,187	3,217
	24/10/2012	Yes	2,402	0	
Tomi Maru 87	31/08/2012	Yes	53,553	84,645	53,363
	29/09/2012	Yes	31,789	(damaged)	31,482
Grand Total			**152,065**	**94,082**	**135,257**

Table 5 – SBW reported against DTC'A' on CLRs during the 2012 season.

*** Obs Trip Report states "whilst no burst bags were observed, any surface losses – recorded as ACC – were assessed jointly by deck boss and observer", but no amounts were recorded in trip report.*

Yellow shading indicates observer reported as burst bag, red shading as authorised discard (neither of these vessels have a meal plant).

All SBW recorded by observers as authorised discards was reported on the relevant CLRs.

135 t (89%) of SBW reported as 'A' on CLRs was from observed trips. The remaining 17 t was from trips not carrying MPI observers so should be related to accidental losses (note these reported losses may be recorded to disguise illegal discards).

6.5 *Fishing Practices*

6.5 (a) Trawling Statistics

Eight vessels (5 Ukrainian, 2 NZ and 1 Japanese vessel) fished the Bounty Platform. The area they fished was approximately 102 nm long by 16 nm wide, typically fishing between 200 m and 560 m depth.

Eleven vessels (6 Ukrainian, 4 NZ and 1 Japanese vessel) fished the Campbell Island Rise. These vessels tended to fish in three distinct areas on the north, east and southern part of the rise. The northern most area fished was approximately 59 nm long by 10 nm wide (with a 30nm width towards the middle of the area), the eastern area fished was approximately 59 nm long by 32 nm wide, and the southern area fished was approximately 21 nm long by 5 nm wide. Typically fishing on the Campbell Rise was between 160 m and 574 m depth.

Nine vessels (4 Ukrainian and 5 NZ) fished the Pukaki Rise. The area they fished was approximately 32 nm long by 5 nm wide, typically fishing between 230 m and 548 m deep.

Table 6a provides a summary of the number of tows, categorised by depth range, for each fishstock area.

	Number of Tows		
Depth of Groundrope	**SBW6B**	**SBW6I**	**SBW6R**
On seabed	135 (81%)	213 (36%)	95 (74%)
Between 1-50m off seabed	27 (16%)	105 (18%)	19 (15%)
Between 51-100m off seabed	2 (1%)	75 (13%)	8 (6%)
More than 100m off seabed	2 (1%)	197 (33%)	6 (5%)
Total Number of Tows	***167***	***591***	***128***

Table 6a – Distance off seabed for tows in SBW fishery in 2012.

The data shows that two thirds of tows were conducted in area 6I, which is consistent with this area having the largest TACC. The majority of tows in this area occurred mid-water, while trawling in 6B and 6R was most often on or near the seabed.

Table 6b summarises fishing effort by method and vessel nationality for each fishstock area.

		SBW6B		SBW6I		SBW6R	
Nationality	**Method**	**Num Tows**	**Average Distance off Seabed (m)**	**Num Tows**	**Average Distance off Seabed (m)**	**Num Tows**	**Average Distance off Seabed (m)**
Japanese	MW	26	6	50	130		
NZ	BT	10	6	6	23	84	0
	MW	25	14	154	121	36	51
Ukrainian	MW	106	2	381	73	8	0
Total		**167**	**5**	**591**	**90**	**128**	**14**

Table 6b – Summary of fishing effort by fishstock area and vessel nationality.

Ukrainian and Japanese vessels used MW gear only, in all areas fished, whilst NZ vessels used a combination of MW and BT gear. FCVs typically fished on or near the seabed in SBW6B and 6R, compared to mid-water fishing in SBW6I. NZ vessels used MW gear the majority of the time in SBW6B and SBW6I. In 6B, gear was fished near the seabed, whilst in 6I mid-water fishing took place. In SBW6R, NZ vessels used BT gear on the seabed for the majority of tows, with those tows using MW gear fishing mid-water.

6.5 (b) Tow Duration

In the SBW fishery it is not unusual for vessels to have short tows, eg less than one hour. However, this does not appear to be reflected in the average tow durations shown in table 7 below. This is likely due to the way in which end of tow data is reported, i.e. end of tow time includes period of time net was soaked (refer to section 6.5(c) below).

Nationality	Method	SBW6B Average Tow Duration (hrs)	SBW6B Tow Duration Range (hrs)	SBW6I Average Tow Duration (hrs)	SBW6I Tow Duration Range (hrs)	SBW6R Average Tow Duration (hrs)	SBW6R Tow Duration Range (hrs)
Japanese	MW	5.3	0.5-15.0	4.2	0.8-11.2	Nil	Nil
NZ	BT	2.3	0.7-3.7	3.6	1.4-5.1	4.7	0.6-10.5
	MW	1.9	0.1-11.4	2.5	0.2-8.3	3.0	0.3-12.2
Ukrainian	MW	3.0	0.2-7.4	3.6	0.3-10.5	2.4	0.8-4.1
Overall		3.1	0.1-15.0	3.3	0.2-11.2	4.1	0.3-12.2

Table 7 - Summary of tow data reported by vessels operating in SBW fishery in 2012, for tows targeting SBW.

Overall the average tow duration in SBW6B, 6I and 6R was 3.1, 3.3 and 4.1 respectively. The Japanese vessel typically towed for longer periods of time compared to the rest of the fleet. NZ vessels had longer tows when using BT gear than when using MW gear, but overall generally had shorter tows than the FCVs. NZ and Ukrainian vessels towed for shorter periods of time in SBW6B than 6I compared to that of the Japanese vessel.

6.5 (c) Soaking the Net

The practice known in the industry as 'soaking the net', 'flying the net' or keeping the bag "in the fridge" is typically used by vessels when they have reached their target catch weight and consequently lift the net from the target depth and leave in the water until the pounds are cleared. Table 8 summarises the use, or non-use, of the practice of soaking the net, by nationality, as noted by observers during the 2012 SBW season.

Nationality	Did Soak	Didn't Soak	Not Recorded
Japanese			1
NZ	1	2	3
Ukrainian	5*	1	

Table 8 – Summary of vessels who were noted as soaking their nets

**One Ukrainian vessel only shot the net when there was 2-3hrs of processing left in factory, thereby limiting the number of times net needed to be soaked.*

Soaking the net was used by at least six vessels in the 2012 SBW fishery, with the majority of these being Ukrainian. In the case of four vessels, it is unclear whether or not this practice was used, as identified by "not recorded" in table 8.

'Soaking the net' can have varying impacts on fish quality depending on a number of variables. The damage to SBW through 'soaking' may be less than that to hoki, due to the flesh of hoki being softer. In this case, for SBW the practice may be preferable to hauling before the pounds are empty and factory is ready to process the catch. However, the ideal situation is still for vessels to consistently catch to factory capabilities, hence avoiding the use of 'soaking' entirely.

OCM recommend that the practice of 'soaking the net' is monitored to identify and mitigate the use of bad practices such as vessels catching beyond capacity.

6.5 (d) Estimated Catch Statistics

Table 9a summarises total SBW estimated catch and number of days fished, by nationality and fishstock area. Total estimated catch, by fishstock, for each vessel operating in the fishery in 2012 is provided in appendix 2.

Nationality	Total estimated catch (kg) and number of days fished							
	SBW6B		SBW6I		SBW6R		Total	
	Total Catch	No. days	Total Catch	No. days	Total Catch	No. days	Total Catch	No. days
Japan	2,174,500	18	2,608,800	24			4,783,300	42
New Zealand	875,590	19	3,448,487	77	1,317,668	49	5,641,745	145
Ukrainian	3,805,100	37	14,098,80	128	85,000	6	17,988,90	171
Grand Total	**6,855,190**	**74**	**20,156,087**	**229**	**1,402,668**	**55**	**28,413,945**	**358**

Table 9a - Total estimated catch of SBW for 2012-13 season, and number of days fished, by fishstock area, where target is SBW.

The Ukrainian fleet reported 55% of the total catch in SBW6B, with the Japanese vessel reporting 32%, and the remaining 13% being reported by NZ vessels. In SBW6I, Ukrainian vessels reported 70% of the total catch, with the NZ fleet reporting 17% and the Japanese vessel 13%. NZ vessels reported 94% of the total catch in SBW6R, with the Ukrainian fleet reporting the remaining 6%.

Table 9b compares average daily SBW catch rates per vessel, by nationality and fishstock area. The quantities represent the average daily catch taken by a single vessel and are based on all estimated catch reported by vessels for a nationality.

	Average Daily Catch (kg)		
Nationality	SBW6B	SBW6I	SBW6R
Japan	120,806	108,700	
New Zealand	46,085	44,786	27,518
Ukrainian	102,841	110,147	14,167
Total	**92,638**	**88,018**	**2,061**

Table 9b – Average daily catch (kg) per vessel

Average daily catch rates were consistent between SBW6B and 6I. By comparison, daily catch rates in SBW6R were significantly less, which corresponds with the sporadic nature of this fishery. The lower catch rates by NZ vessels in the main two fishstock areas (6B and 6I) are consistent with the processing capacity of these vessels being lower than that of the FCVs, due to differing machinery used on board (refer to section 6.7(a) for details of processing machinery).

6.5 (e) Mechanisms for Disposal of Unwanted Fish

The Fisheries Act states that commercial fisherman cannot "return to the sea or abandon in the sea" any fish subject to a quota management system, except when:

- The fish is diseased, or
- The fish is under the minimum legal size specified for that species, or
- The discarding is necessary for the safety of the vessel, or
- The return or abandoned discarding is approved by a Fishery Officer or Observer, or
- The release meets the conditions set out in the Sixth Schedule.

"Abandon" refers to the deliberate release of fish from the codend or set lines. Fish not subject to a quota management system and offal may be discarded.

The illegal disposal of SBW is a significant compliance risk, particularly on vessels with no meal plant. Large volumes of unwanted (small and/or damaged) fish can easily be routed by conveyors to discard chutes, macerators and/or hashers and discharged illegally overboard. Illegal discards are not recorded in vessel documentation or fishing returns in which case the true greenweight extracted from the fishery is under-reported. A summary documenting the presence of discard chutes, macerators and/or hashers on-board vessels is provided in appendix 3.

Vessels with no meal plant

Of 13 deepwater factory trawlers operating in the SBW fishery, the Tomi Maru 87 and Amaltal Explorer are the only two that do not have a meal plant. On the Tomi Maru 87, unwanted whole fish and fish waste are discharged overboard, as slurry, via macerator pumps below sea level. The Amaltal Explorer has one discard chute on the starboard side of the factory for batch discarding of offal. Damaged product is usually landed green for on-shore mealing.

Vessels with meal plants

The remaining 11 SBW trawlers all have meal plants. For further detail relating to the mealing process, see section 6.7(c).

The six Ukrainian vessels have no mascerator or hasher onboard and therefore all unwanted wholefish (e.g. SPD) are discarded via sea doors which are located within close proximity to the main sorting conveyor just in front of the pounds. The sorting conveyor can be reversed to discharge fish over board via a chute temporarily positioned at the end of the conveyor to redirect fish out the sea door. Therefore in the event that the meal plant was operating at capacity or broken down then unwanted fish could easily be illegally discarded.

Of the five NZ vessels with meal plants, three have hashers for product to meal. NZ vessels also have an outlet in the factory that can be used for discarding whole fish and/or offal overboard.

6.5 (f) Vessel Management Plans and Seabird Scaring devices

The Fisheries (Commercial Fishing) Regulations 2001 require trawlers 28m or more in length to use a "seabird scaring device", pursuant to NZ Gazette No. 29. The seabird scaring device must be deployed as soon as practicable after the shooting of the net and shall remain deployed for as long as practicable prior to the net being brought back on board the vessel. Seabird scaring devices include: paired streamer lines (Tori lines), bird bafflers and warp deflectors. The SBW fishery is recognised as having significant by-catch of a number of species of birds. It is imperative that the regulations relating to seabird scaring devices are adhered to.

On 17th September 2012 a RNZAF Orion flight made contact with nine SBW vessels fishing in the Campbell Island area. Five of those vessels were identified as having bird mitigation devices deployed, with the remaining four identified as being in transit. No offences were detected.

No assessment of vessel offal management practices has been made for this season.

OCM recommend that vessel operators continue to ensure that vessels correctly maintain and deploy seabird scaring devices and follow correct offal management procedures.

6.6 *Reporting Greenweight*

Systems for capturing and reporting the greenweight of fish processed at sea usually fall into one of five categories:

(a) The vessel has automated weighing and recording systems capable of capturing greenweight and the permit holder/ LFR uses this data to report greenweight.

(b) The vessel has automated weighing and recording systems capable of capturing greenweight but the permit holder/ LFR does not use this data directly to report greenweight, and instead uses vessel data and/or onshore-weighing data to calculate greenweight.

(c) The vessel does not have automated weighing and recording systems capable of capturing greenweight, but conducts and documents onboard weight checks which are used to calculate greenweight. Onshore weight checks may or may not be conducted in combination with this.

(d) The vessel does not have automated weighing and recording systems capable of capturing greenweight, but conducts and documents onboard weight checks. These checks are not used to calculate greenweight. Onshore weight checks are conducted for calculation of greenweight.

(e) The vessel does not have automated weighing and recording systems capable of capturing greenweight. Infrequent and undocumented weight checks are conducted onboard but are not used to calculated greenweight. Onshore weight checks are required for calculation of greenweight.

Where onboard weighing procedures are inadequate, or incapable of accurately recording product weight, good onshore procedures for capturing and reporting greenweight are essential.

Where neither the vessel's nor the on-shore procedures are adequate for capturing greenweight, then reported greenweight is essentially an estimate, and that estimate typically under-reports the actual catch.

OCM recommend that where onboard automated weighing systems are in place then these should be used for informing greenweight reported on CLRs. Inadequate shore based sampling of carton weights should not be used in preference to automated weighing systems. Automated weighing systems should be monitored and verified by MPI.

OCM further recommend that all onboard and onshore sampling regimes used for determining greenweight are statistically robust and verifiable. Procedures must be documented and submitted to MPI. Both onboard and onshore weighing procedures should be monitored and verified by MPI.

6.6 (a) Carton Examination

The purpose of carrying out in-port carton examinations and weight checks was to verify contents including: species, state, grade and weight. Fishery Officers selected non-random samples of cartons of dressed SBW. The carton sample size was calculated according to the total number of cartons in the product line. The sample was then pro-rated across the grades within each product line, as determined from the unload schedule. Fishery Officers were instructed not to take the first cartons that came to hand, but rather to ensure the sample included cartons packed on a range of days throughout the trip.

For each carton, Fishery Officers recorded weight printed on the carton and gross carton weight. They weighed each block within each carton, where applicable. Where block weights included packaging, they recorded packaging weights so these could be deducted for calculating the actual net weight of processed fish in each carton. Fishery Officers recorded a count of the total number of fish (or pieces of fish) per block where this was achievable. Fishery Officers also assessed whether cartons were labelled correctly and if states were compliant with the prescribed definition as per the Fisheries (Conversion Factor) Notice 2005.

OCM calculated the average net weight for each product line landed by a vessel in order to test the veracity of greenweight declarations on the CLR. To achieve this, cartons were weighed at all in-port inspections. A total of 1,503 cartons of SBW DRE were examined and weighed as part of this exercise, totalling 33,976 kg product weight. In addition, 96 cartons of SBW SUR were examined and weighed as part of this exercise, totalling 1,998 kg product weight.

Table 10a provides a comparison between average weights calculated from in-port inspections and CLR greenweight declarations for SBW.

Historically some companies applied a 2% standard deduction to product weight to account for glaze water added to frozen blocks of fish produced by LPFVs. For this reason, where Fishery Officers noted that glaze had been applied, a deduction of 2% to allow for glaze has been made in calculating the average carton weight for DRE product. The deduction for glaze is not applicable for surimi as this product is not glazed.

Vessel	Landing Date	State	FO Ave Carton Weight	CLR Calculated Ave Unit Weight (from GW)	CLR # Units	Total Difference GW
Aleksey Slobodchikov	3/09/12	DRE	20.55	20.23	55,412	-29,939
	25/09/12	DRE	20.41	20.37	60,124	-4,476
Alexander Buryachenko	6/09/12	DRE	20.86	20.92	51,597	5,263
	27/09/12	DRE	21.43	20.96	12,838	-10,213
Amaltal Atlantis	25/09/12	DRE	21.72	22.82	6,719	12,565
Amaltal Enterprise	27/09/12	DRE	22.60	22.68	14,786	2,046
Amaltal Explorer	27/08/12	DRE	26.50	25.95	14,610	-13,681
	25/09/12	DRE	26.07	26.21	25,214	6,081
Ivan Golubets	21/08/12	DRE	20.26	20.20	36,241	-3,697
	4/10/12	DRE	20.38	20.00	51,148	-33,042
Mainstream	11/09/12	DRE	20.39	20.20	54,044	-17,456
Meridian I	18/09/12	DRE	21.22	21.23	73,166	1,102
Profesor Mykhaylo Aleksandrov	4/09/12	DRE	21.58	21.21	53,052	-33,039
San Enterprise	25/09/12	DRE	22.95	22.79	21,390	-5,647
San Waitaki	18/09/12	DRE	24.87	25.09	11,259	4,276
Tomi Maru 87	31/08/12	SUR	20.22	20.24	19,631	2,120

Table 10a – Comparison of carton weights reported on CLRs with those recorded by Fishery Officers at in-port inspections.

The data in table 10a indicates that 56% of trips where product was weighed by Fishery Officers reported less than the expected greenweight of SBW, based on average carton weights. The results from the remaining 44% of trips suggest that greenweight was adequately reported.

Table 10b provides a summary of total Southern Blue Whiting calculated as under-reported for each permit holder and associated vessel detailed in table 10a.

Company	Vessel	Estimated under-reported GW (kg)
Amaltal Fishing Co Ltd	Amaltal Explorer	13,681
Amaltal Total		**13,681**
Independent Fisheries Ltd	Ivan Golubets	36,420
	Mainstream	17,456
Independent Total		**53,876**
Maruha (NZ) Corp Ltd	Aleksey Slobodchikov	34,415
Maruha Total		**34,415**
Sanford Ltd	San Enterprise	5,647
Sanford Total		**5,647**
Sealord Ltd	Alexander Buryachenko	10,213
	Profesor Mykhaylo Aleksandrov	33,039
Sealord Total		**43,252**
Grand Total		**150,871**

Table 10b – Summary of under-reported weights, by vessel.

The total estimated under-reported greenweight for SBW product was 151 t. This relates to the 16 landings where carton weight checks were conducted by Fishery Officers. The remaining six trips had no carton weight checks conducted, so the total could be higher. For this reason, 151 t is considered a conservative estimate. This amount would not have been recorded in monthly harvest returns and therefore not counted against ACE.

6.6 (b) Unit Weight Testing

In order to obtain independent data, MPI Observers are required to carry out product unit weight testing[7] at regular intervals throughout the trip, on each product line produced by the vessel. Table 11a compares unit weights calculated by MPI Observers to those derived from the CLR.

Vessel	Landing Date	State	Vessel Nominal Unit Weight	Observer Average Unit Weight	CLR Calculated Ave Unit Weight (from GW)	CLR # Units	Total Difference GW
Aleksey Slobodchikov	3/09/12	DRE	20.0	20.87 (20.47)	20.23	55,412	-22,608
	25/09/12	DRE	20.0	20.87 (20.47)	20.37	60,124	-10,221
Alexander Buryachenko	27/09/12	DRE	10.0	10.46	20.96	12,838	873
Amaltal Atlantis	25/09/12	DRE	7.5	7.66	22.82	6,719	-2,056
Amaltal Enterprise	27/09/12	DRE	7.5	7.58	22.68	14,786	-1,508
Amaltal Explorer	25/09/12	DRE	13.0	13.11	26.21	25,214	-429
	14/10/12	DRE	13.0	13.11	26.19	9,973	-509
Ivan Golubets	4/10/12	DRE	10.0	10.06	20.00	51,148	-10,434
Mainstream	11/09/12	DRE	10.0	10.12	20.20	54,044	-3,675
Meridian 1	27/08/12	DRE	10.5	10.40	21.22	16,344	11,670
Profesor Mykhaylo Aleksandrov	4/09/12	DRE	21.11	21.19	21.21	53,052	1,804
San Enterprise	25/09/12	DRE	7.5	7.68	22.79	21,390	-9,091
San Waitaki	18/09/12	DRE	12.5	12.62	25.09	11,259	-2,871
	24/10/12	DRE	12.5	12.68	25.05	7,536	-3,971
Tomi Maru 87	31/08/12	SUR	10.0	10.00	20.24	19,631	25,442
	28/09/12	SUR	10.0	10.00	20.16	24,375	21,060

Table 11a – Comparison of carton weights reported on CLRs with unit weights recorded by MPI observers at sea.

[7] Observers are required to take a random sample of approximately 20 units. Methodologies vary depending on vessel processing and packing systems. Unit weight measurements can be taken pre-freezing or post-freezing (either pre- or post-glaze). Methodology applied is decided by Observer for each trip.

All MPI Observer unit weight testing was performed pre-glaze (either pre- or post-freezing), with the exception of tests conducted on the Aleksey Slobodchikov and Profesor Mykhaylo Aleksandrov. On the Aleksey, testing was conducted on packed cartons (less packaging), with average carton weights equating to 20.87 kg per trip. Observers were advised that the vessel made a glaze allowance of 400g per carton, so average carton weights less glaze equated to 20.47 kg, as shown in brackets in table 11a. On the Profesor, Observers recorded carton weights from the vessel weighing system, which had a glaze allowance factored in, so this should represent pre-glaze weights. Since glaze is not applied to surimi product, testing of pre- and post-glaze weights is irrelevant.

Total under-reported greenweight by vessel is summarised in table 11b. MPI Observer block weight testing indicates that SBW product was underreported by 67,373 kgs.

Company	Vessel	Estimated under-reported GW (kg)
Amaltal Fishing Co Ltd	Amaltal Explorer	938
	Amaltal Enterprise	1,508
	Amaltal Atlantis	2,056
Amaltal Total		**4,502**
Independent Fisheries Ltd	Ivan Golubets	10,434
	Mainstream	3,675
Independent Total		**14,109**
Maruha (NZ) Corp Ltd	Aleksey Slobodchikov	32,829
Maruha Total		**32,829**
Sanford Ltd	San Enterprise	-9,091
	San Waitaki	-6,842
Sanford Total		**15,933**
Grand Total		**67,373**

Table 11b – Summary of under-reported amounts based on MPI Observer block weight testing.

Of 16 observed trips, vessels underreported greenweight on 11 trips (69%) compared to Observer derived average unit weights. The average underreported weight per trip was 6,125 kg. If this average is applied across 69% of the fleet (excluding non observed trips inspected by FO's) then the total underreported greenweight is calculated to be 71,846kg.

Table 12 provides a comparison between FO carton weight checks and MPI Observer unit weight tests.

State	Vessel	Landing Date	Total Difference using MPI Observer data GW (kg)	Total Difference using FO data GW (kg)
DRE	Aleksey Slobodchikov	3/09/2012	-22,608	-29,939
		25/09/2012	-10,221	-4,476
	Amaltal Atlantis	25/09/2012	-2,056	12,565
	Amaltal Enterprise	27/09/2012	-1,508	2,046
	Amaltal Explorer	25/09/2012	-429	6,081
	Ivan Golubets	4/10/2012	-10,434	-33,042
	Mainstream	11/09/2012	-3,675	-17,456
	Alexander Buryachenko	27/09/2012	873	-10,213
	Profesor Mykhaylo Aleksandrov	4/09/2012	1,804*	-33,039
	San Enterprise	25/09/2012	-9,091	-5,647
	San Waitaki	18/09/2012	-2,871	4,276
SUR	Tomi Maru 87	31/08/2012	25,442	2,120

Table 12 - Comparison of MPI Observer and FO unit weight testing

There appears to be a lack of consistency in unit weight testing undertaken by MPI Observers and as such it is not possible to confidently utilise this data. This may account for some of the differences identified in table 12 above. Ultimately the best way to determine actual processed weight is at sea prior to any application of glaze and/or packaging.

OCM recommend that more prescriptive methodologies are provided to MPI Observers for undertaking unit weight testing, to avoid inconsistencies and to improve data quality and reliability. Where deviations in methodology are required these should be fully documented so that weight comparisons can be undertaken with confidence.

6.6 (c) Glaze Application

Prior to the 2012 season Industry were advised that they could not rely on the 2% glaze allowance that had historically been used. Companies were advised that vessels had to carry out their own glaze testing, preferably on a tow by tow basis. Results from testing needed to be documented and retained, and the measured glaze percentage applied when calculating and reporting greenweight. All relevant documents had to be retained and made available to FO's upon request. If product lines were not glazed, no allowance for glaze could be claimed.

Information obtained during Operation Trois is detailed below:

- All six Ukrainian vessels applied glaze to SBW DRE product (applied by spray or bath). In the majority of cases, glaze testing was not witnessed by the Observer, despite procedures being prescribed in vessel documentation. For two vessels, glaze testing was conducted. However, in all cases it is unclear whether testing methodology is consistently applied, documented and retained.
- New Zealand fillet vessels did not glaze SBW DRE product as it was packed in liners (cartons) prior to freezing.
- New Zealand LPFVs applied spray glaze to SBW DRE product. It does not appear that reliable glaze weight testing was carried out on these vessels.

It appears that a number of vessels do not conduct glaze tests despite MPI advising them to do so. Nor do some vessels retain glaze test documentation. Currently it is unclear what each vessel deducts for glaze, what methodology is used to test for glaze, what documentation is completed and whether or not documentation is retained.

Companies can under-report greenweight by deducting a percentage for glaze that is greater than actually applied to fish product. This remains a compliance risk. In order to assess the accuracy of glaze deductions and deter false claims, monitoring of vessel glaze weight testing procedures and documented checks should continue.

OCM recommend that all glaze testing procedures are robust and verifiable. Procedures particular to each vessel must be documented and submitted to MPI.

OCM further recommend that MPI Observers verify vessel glaze test procedures including documentation completed, and that independent glaze weight tests are carried out by MPI Observers on each trip.

OCM recommend that unit weight testing pre/post glaze application (where applicable) be carried out by MPI observers during the 2013 SBW season. This will allow glaze percentage and average unit weight for processed product to be calculated, thereby enabling accuracy of reported greenweight to be assessed.

6.7 *Vessel Processing*

A number of different machine types are used to process SBW. Machine type is dependent upon the nationality and processing setup of the vessel. Processing machines vary in efficiency and also the recovery of processed product.

In the SBW fishery individual fish size typically range from 25 to 45 cm. Vessels attempt to avoid targeting schools of small fish preferring fish in the mid 30 cm range for optimal processing, although in practice this is not achievable.

As this is a bulk fishery with small fish and a short window of fishing opportunity, automated machines are used on a number of the vessels operating in this fishery. This enables large volumes of fish to be processed within a short time frame.

The bulk of SBW is processed to DRE (dressed) state as either tail-on or tail-off product. One vessel, the Tomi Maru 87, produces surimi, a minced fish product.

The processing of SBW to DRE state with compliant cuts presents a number of difficulties. This is partly due to the limitations of processing machinery. All machines should be capable of processing product with compliant cuts provided operators take account of these factors. In some instances production of compliant cuts is at the expense of green weight through-put.

6.7 (a) Processing Machinery

Ukrainian vessels process all SBW for frozen product using Ira 110 machines and/or circular saws. These vessels are crewed and set up in such a manner that all machines are utilised concurrently while operating in the fishery.

On board New Zealand vessels a combination of Baader 212 and Baader 424 machines are employed. Often only one machine is operating at a time as vessels do not have the crewing capacity to operate more than this or to pack out the extra product produced. One vessel, the Amaltal Explorer, has two B424 machines aboard but all SBW is put through a machine purpose built for producing SBW dressed product (similar to the Ira 110).

The Tomi Maru 87 utilises a number of processing machines specific to the production of surimi.

Ira 110

The Ira 110 is an automated machine used by the Ukrainian fleet to process the bulk of the SBW catch. This machine is utilised only in the SBW fishery. The Aleksey Slobodchikov, Alexander Buryachenko, Meridian 1 and Profesor Mykhaylo Aleksandrov each operate one Ira machine, while the Mainstream and Ivan Golubets each operate two machines. The Ira 110 is an efficient machine for processing large volumes of SBW provided appropriate size grading takes place prior to fish entering the machine, attention is given to correct placement of fish and regular maintenance is carried out to avoid internal blockages and subsequent losses.

The machine consists of two parallel endless belts with body trays attached, into which individual fish are placed by hand. Typically six crewmen load the trays (see figure 4 on the next page), placing fish so the head is oriented towards the saw blade and ideally the cut made directly behind the pectoral fin. The belt carries fish forward to a fixed circular saw which removes the head, viscera is also removed by suction at this stage. Product is processed to DRE state, tail-on. Offal drops from the machine into a chute which is directed into an auger by which it is carried to the fish meal plant or disposed of over board. Processed fish then pass by conveyor to a grading station and on to the blast freezers.

Processing rates vary depending on the size of fish, with 5 tonnes an hour typical for this machine, but as low as 3 tonnes on very small fish.

Figure 4 – Loading fish into the Ira 110. Precise placement of fish into the trays is critical for achieving compliant cuts. Fish circled in red will produce non compliant cuts.

The Ira cannot be adjusted to allow for a range of fish sizes. Fish ranging from 35–40 cm provide an ideal size for processing, but in reality the range is from about 25–45 cm. Often smaller fish are graded out to fish meal and larger fish processed through a circular saw.

Due to limitations of the machine and a lack of operator care, a high proportion of the product processed through the Ira has exhibited non-compliant dressed cuts during the 2012 season.

Correct placement of fish in the trays is critical to achieving a compliant dressed cut. Large fish poorly placed in the machine result in a cut either through the head forward of the pectoral fin or through the body beyond the pectoral fin. Smaller fish mis-aligned are cut through the body posterior to the pectoral fin, also resulting in a non-compliant DRE cut. Non-compliant cuts also occur as a result of fish lodged in the interior of the machine causing succeeding fish to be pushed out of alignment prior to the cutting saw.

Substantial losses of fish from the Ira can also occur due to fish dropping out of the machine into the offal stream. This can be attributed to poor maintenance and operator inattention. These fish are generally not recovered from the offal stream and are processed to fish meal where they may not be reported. Losses in this manner vary considerably depending upon vigilance of the operators and corrective action being taken. In circumstances when offal is disposed of overboard, the loss of fish in this manner has the potential to result in illegal discards occurring. After the intervention of observers, the Ivan Golubets placed a grill in the Ira offal chute to trap whole fish which were then removed by a crew man and quantified. It is unlikely this would occur without the presence of observers as the manpower required reduces the number of crew on the production line and overall factory output.

Observer monitoring aboard the Profesor Mykhaylo Aleksandrov recorded Ira loss rates ranging from 65–252 kg an hour, with an average of 147 kg/hr. Over a standard 22 hour processing day, this equates to a loss of 3.2 tonnes of fish. The vessel recorded time samples of Ira losses in an exercise book at the completion of each 8 hour shift, supposedly for a single 10 minute period. These results, after post trip analysis, were shown to be one fifth of that recorded by observers. Observers did not note at any time such sampling being undertaken. By contrast, Observers aboard the Aleksey Slobodchikov noted the vessel conducted a systematic time sampling regime to determine the volume of losses. Daily sampling results were entered into a spread sheet showing details of each sample.

Operator induced losses from the Ira result from too much emphasis being placed on maximising production as opposed to quality of product. Mechanical maintenance of factory machinery takes place every four hours, during meal breaks and shift changes. The Ira is checked and adjustments made if necessary to ensure effective operation. Observers have noted that losses from the Ira are lower after the machine has been hosed out or adjusted by factory engineers.

Circular Saw

The circular saw is used by some Ukrainian vessels to process large SBW, generally fish over 40 cm which are graded out from the Ira processing line. It is a basic fixed blade saw which is used to process all catch in other fisheries, such as HOK and JMA. A conveyor belt carries fish to the saw operator who lines the fish up and passes it manually through the blade to remove the head and in some cases also the tail (see figure 5). After cutting, fish pass to the gutting line where the viscera are removed and roe is recovered. Product is processed to DRE state as either tail-on or tail-off. Processing rates are variable depending upon fish size and the manpower available to work the processing line. In general circumstances, when operating in conjunction with the Ira, 1.5 to 2 tonnes an hour is processed through the circular saw. Processed fish then pass to the blast freezers.

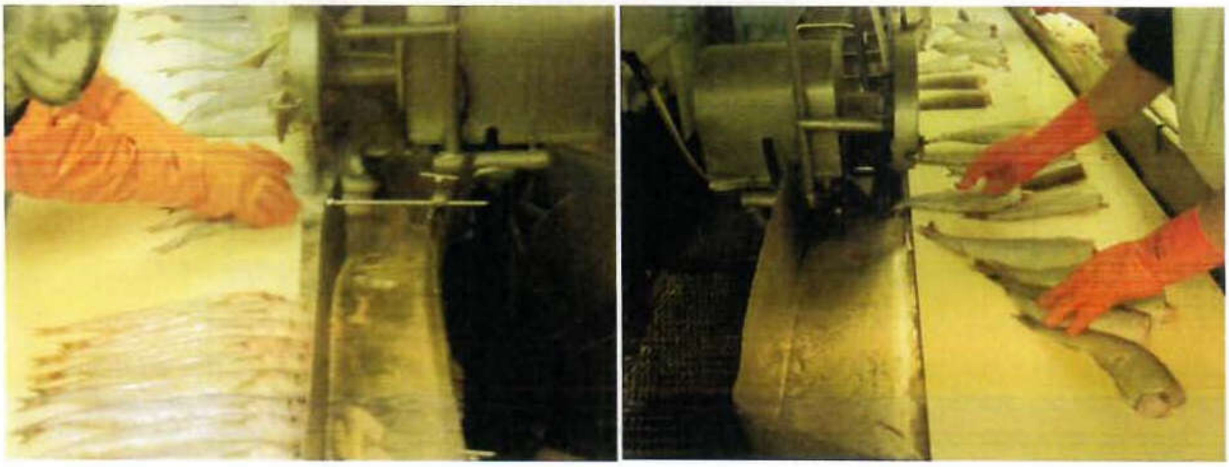

Figure 5 – Removal of SBW heads and tails on circular saws. The chute in front of each conveyor leads directly to the offal auger.

As each fish is passed through the saw by hand, cuts made are generally compliant regardless of fish size. Inadvertent losses from the processing line into the offal stream do not occur. It is, however, possible for whole fish to be deliberately put to meal via the offal stream. The close proximity of the offal chute to the saw enables this to happen with ease.

The circular saw is also used for all production in circumstances when the Ira 110 is taken out of commission due to break downs requiring major maintenance other than that occurring during four hourly factory breaks.

Baader 424

The Baader 424 is carried by all New Zealand vessels operating on the SBW fishery. Production through put is approximately 1.5 tonnes per hour green weight, producing DRE tail-on product. This machine is used in other fisheries for processing species such as hoki, ling, hake, oreo and orange roughy to dressed state. Although vessels may have two machines on board only one is operated at a time when processing SBW. Production through put is slow due to the labour intensive nature of placing fish individually into the machine for processing.

The B424 comprises of a fixed circular saw blade and an integrated transport belt. The belt carries fish through the blade, which severs the head. A stationary alignment lug is fixed to the bed of the machine, over which the operculum is hooked as the fish is placed onto the belt; this assists the operator in correctly aligning fish for precise cutting (see figure 6). This machine is operated by one person although a second may also assist with orienting fish correctly prior to placing on to the transport belt. Providing fish are aligned correctly when placed on the transport belt, compliant cuts can be consistently achieved.

Figure 6 – Baader 424 Processing Machine – the gill plate of the fish is hooked over the alignment lug and carried through the saw by the transport belt, a secondary spring-loaded belt presses down on top of the fish as it is carried through the saw.

After removal of the head, fish continue out of the machine to progress along the production line for gutting, grading, packing and freezing. Losses of fish from the B424 are minimal, occurring only occasionally if a number of jammed fish aggregate as they leave the machine.

<u>Baader 212</u>

The Baader 212 is primarily a filleting machine used to process hoki on board New Zealand vessels. All vessels carrying the B212 also have a B424 on board.

The Baader 212 is composed of two distinct operating parts; a head and tailing section, and a filleting section. The former consists of an endless belt with body trays into which fish are loaded and transported through saws which are set to remove the head of the fish and tail if required. Sensors fitted to the machine read the position of the head to determine the optimum position for the saw to make the cut. When processing SBW to DRE product, the head and tail section is operated independently of the fillet section. Vessels are able to process up to 3 tonnes of SBW an hour through the B212.

Fish to be processed are carried to the machine by conveyor from the pounds and aggregated in a holding buffer prior to loading into body trays. One crew member places fish into the moving body trays.

On occasions, due to a broad range of fish sizes, the catch may be graded between large and small for processing as separate production runs. Aboard the Amaltal Columbia observers noted that size grading occurred and when processing small fish, a spacer block was placed into the head of the body trays. This allowed the B212 to be adjusted to make the most efficient cut as the block effectively moves the head of the fish closer to the saw achieving a cut close to the pectoral fin. With out the use of the block the cut on small fish may be made deep into the body, resulting in a non compliant cut. Despite size grading, non compliant cuts resulted from very small fish which also tended to drop out of the machine into the meal stream. Losses to meal were accounted for through the fish meal time sampling process. Fish processed beyond the DRE state were graded out prior to packing, and processed to fish meal.

In contrast to the Amaltal Columbia, aboard the San Enterprise all SBW was processed through the B212 regardless of size. The machine had a head pusher attachment which aligned fish for precise cutting. Engineers also developed and fitted a suction system for removing the guts from fish as they were processed. The observer noted that this was an efficient innovation with the potential to reduce the number of crew on the gutting line but was discontinued by the vessel. It is unclear why the vessel chose to discontinue the use of the suction system given the improved efficiencies.

<u>Custom-Built SBW Processing Machine</u>

This machine (see figure 7) is a one-off build designed in house by Talleys and has been placed on the Amaltal Explorer specifically for the processing of SBW. It is essentially similar to the Ira 110, but with a number of refinements. This machine has the capacity to process up to four tonnes green weight per hour of DRE tail-on product.

Figure 7 - NZ custom built SBW processing machine

As with the Ira, the custom-built machine consists of two endless belts with body trays into which fish are placed by hand and transported through fixed saws. These saws remove the head, and viscera are removed by suction. The machine is operated by three to four crew placing fish into the trays. Processed fish pass onto a conveyor to the grading and packing station and finally the blast freezers. Offal passes out as a separate stream.

Positioning of fish within the body trays is crucial to ensure the head cut is made in the correct position. This machine has an adjustable block at the head of the trays which may be moved in or out depending upon fish size. Adjustment is made quickly and simply by sliding the block in or out and locking it into position prior to processing a run of fish. Individual fish are placed in each tray with the head up against the block, which ensures optimum alignment for the saw to remove the head. This adjustable alignment block is the fundamental difference between the custom-built machine and the Ira 110.

During processing of tows with a range of fish sizes, the machine is able to be set up to process large and small fish concurrently, thus optimising the accuracy of cuts. This is achieved by setting the head block on one side of the machine for large fish and the other for small fish. Fish are graded to size as they are loaded into the machine by the crew.

Due to the design of offal removal, very few processed fish are lost into the offal stream. An Observer noted that all such losses are removed prior to offal being discharged over board.

The custom-built machine appears to be a significant improvement on the Ira 110, upon which the design is based. The two main disadvantages associated with the Ira, non compliant cuts and high volumes of losses to the offal stream, have been ameliorated to a large extent providing due care is taken.

Surimi Processing

Surimi (minced fish paste), produced only by the Tomi Maru 87, is an intermediate product used in the manufacture of processed fish products. Surimi production is reliant on the ability of a vessel to consistently catch and process very large volumes of fish, up to 180 tonnes a day in this instance. Any bulk fisheries can be used in the production of Surimi, in which the end product bears no resemblance to the raw material in colour, flavour or texture.

Surimi production is multi-faceted, involving increasingly sophisticated machinery as fish passes through eight stages of processing. The initial green weight is reduced to a product weight of approximately 18% of the original weight caught.

Chilled fish is initially passed through a filleting process, then minced, washed and pumped to a refiner at which stage moisture is removed. The product in paste form is then carried by auger to a mixing bowl where 8.6% additives are introduced. The final product is extruded into plastic bags, after which it is frozen. The factory is able to process 8 t/hr.

The initial stages of processing involving head removal and filleting are labour intensive as fish are manually placed into machines. It is at this stage losses of whole fish occur as damaged fish are graded out, mis-cuts occur and processing machinery damages fish which is not recoverable for further processing. During the remaining part of the process flesh is reduced to mince to which water is added prior to refining. Losses from the process occur at this stage as a result of machine settings and the flushing out of residual product in a slurry form at the end of a production run or for maintenance purposes. Refer to figure 8 on the next page for a factory diagram depicting surimi product flow on the Tomi Maru 87.

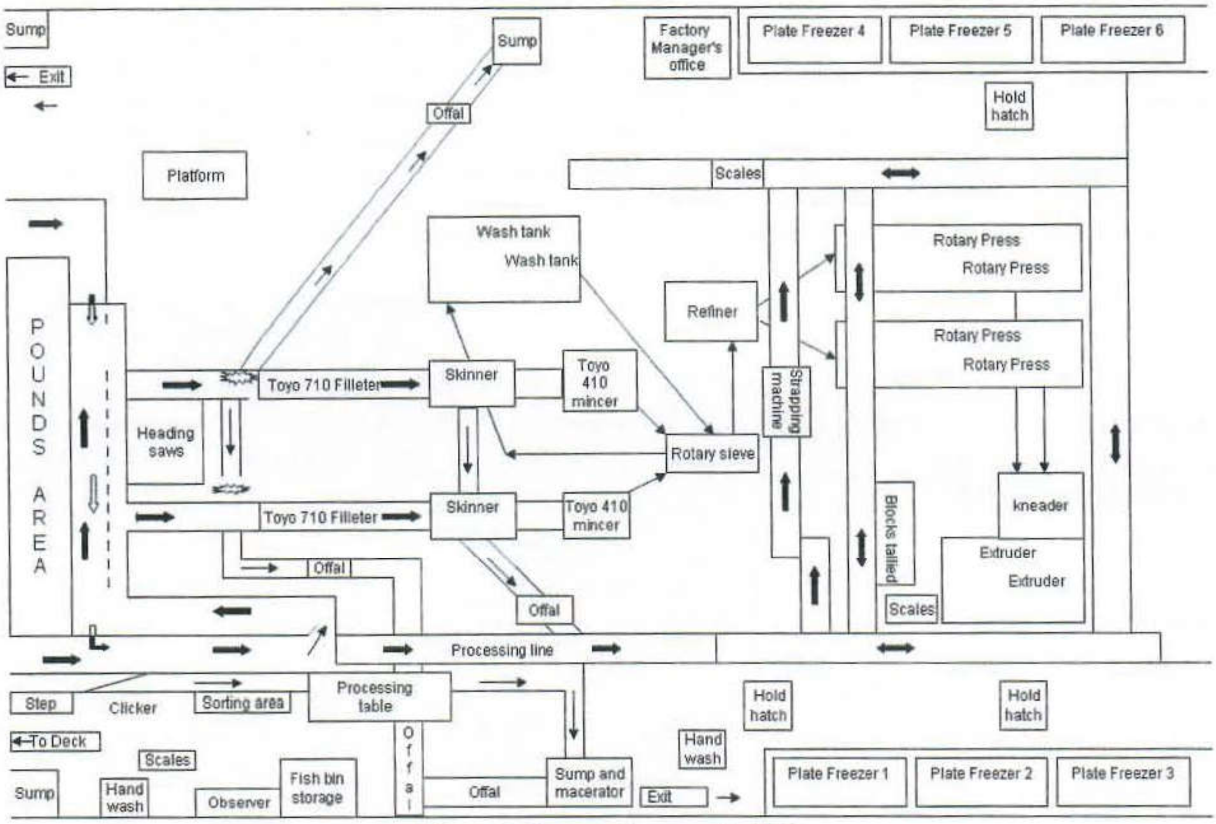

Figure 8 - Factory diagram trip 3549

Recommendations

OCM recommend that where non-compliant cuts and/or inadvertent losses regularly occur, action is taken to mitigate these circumstances by way of modification to processing machinery, where practicable. If modification is not possible, consideration should be given to replacing machinery.

OCM recommend that correct alignment of fish into processing machines is constantly monitored to enable precision of DRE cuts. Size grading and adjustment of machine settings should be used for optimal performance.

OCM recommend that immediate action is taken to reduce losses when blockages occur in processing machinery. Maintenance should be conducted routinely to avoid blockages occurring.

OCM recommend that all vessels have robust systems in place to account for losses from processing machines. It is vital that these systems are strictly adhered to, in order to ensure accuracy of reporting.

6.7 (b) Cuts beyond the defined state (Fisheries Conversion Factor Notice)

The Fisheries (Conversion Factor) Notice 2005 defines the dressed state as *"a continuous straight line passing immediately behind the posterior insertions of both pectoral fins and the forward angle of the cut not less than 90 degrees in relation to the longitudinal axis of the fish"*.

Examination of product at in-port inspections found that processing of dressed SBW contrary to this definition was widespread. The degree of non-compliance (i.e. how far posterior of the pectoral fin the cut was made) was variable for a number of reasons relating to processing machinery, as discussed in section 6.7 (a) above.

Table 13a shows the proportion of SBW declared as DRE for each grade, that were identified as being cut contrary to the Conversion Factor Notice definition. Percentages shown in the first column illustrate the proportion of fish cut beyond the dressed state definition from the total number of fish examined. The second column shows the proportion of fish, from the same sample examined, which were cut into the first dorsal fin and beyond. The percentages provided in the second column are considered conservative, as SBW processed to this degree is well beyond the defined state for DRE product.

			Percentage of illegally cut fish, as determined from carton inspections	
Vessel	**Trip Dates**	**Grade**	**Fish cut between pectoral and first dorsal or worse**	**Fish cut into first dorsal or worse**
Independent Vessels				
Ivan Golubets	22/8 – 12/9/12	100-200 (5kg block)	84%	60%
		100-200 (10kg block)	91%	78%
		+300 (10kg block)	52%	22%
		200-300 (10kg block)	79%	32%
	14/9 – 4/10/12	100-200 (5kg block)	68%	45%
		100-200 (10kg block)	82%	50%
		200-300 (10kg block)	65%	31%
Mainstream	25/8 – 13/9/12	100-200 (10kg block)	78%	53%
		200-300 (10kg block)	61%	28%
		+300 (10kg block)	20%	10%
Amaltal Vessels				
Amaltal Explorer	16/7 – 27/8/12	G1	32%	2%
		G2	58%	18%
Amaltal Atlantis	15/8 – 24/9/12[2]	1	16%	2%
		2	67%	17%
		3	94%	68%
Sealord Vessels				
Meridian 1	17/8 – 27/8/12	M	55%	17%
	29/8 – 18/9/12	S	67%	35%
Alexander Buryachenko	1/8 – 6/9/12[2]	S	47%	19%
		M	53%	15%
Profesor Mykhaylo Aleksandrov	14/8 – 4/9/12[2]	S	70%	43%
		M	73%	39%

Table 13a – Proportions of illegally cut DRE SBW identified during carton inspections

The Fisheries (Conversion Factors) Notice 2005 state that "*where any fish is processed to more than 1 defined state but less than another defined state, the numerically larger of the conversion factors specified in respect of those defined states is to be applied in respect of that fish*". Therefore in this instance the next numerically larger conversion factor is 2.5 which relates to the FIL state.

Table 13b provides a summary of greenweight that should have been reported in addition to what was declared on CLRs, had the FIL CF (2.5) been applied. Greenweights have been calculated using the figures in table 13a above.

Vessel	Trip Dates	Extra greenweight (kg) if this fish declared as 'FIL' not 'DRE'	
		Fish cut between pectoral and first dorsal or worse	Fish cut into first dorsal or worse
Ivan Golubets	22/8 – 12/9/12	651,681	312,420
	14/9 – 4/10/12	522,413	287,129
Mainstream	25/8 – 13/9/12	514,995	218,869
Independent Total		**1,689,089**	**818,418**
Amaltal Explorer	16/7 – 27/8/12	158,143[1]	43,000
Amaltal Atlantis	15/8 – 24/9/12[2]	58,013[1]	23,939
Amaltal Total		**216,156**	**66,939**
Meridian 1	17/8 – 27/8/12	83,333	13,498
Alexander Buryachenko	1/8 – 6/9/12[2]	241,176	0
Profesor Mykhaylo Aleksandrov	14/8 – 4/9/12[2]	447,831	209,791
Sealord Total		**772,340**	**223,289**
Grand Total		**2,677,585**	**1,108,646**

Table 13b - Summary of greenweight misreported resulting from miscuts of DRE SBW. *([1] These figures are conservative as they only include fish cut immediately in front of dorsal & worse, not cuts between pectoral & dorsal. [2] These trips fished multiple SBW QMAs. These amounts are a total under-reported greenweight across all QMAs fished in.)*

Purple shading in the above table, relates to greenweights that are in addition to those already declared as FIL on the CLR. This assumes that the FIL greenweights reported on the CLR related to those grades where illegal cuts were identified. Those fields unshaded reported no FIL on CLRs.

The greenweight of SBW calculated as potentially unreported due to fish being cut further than the defined dressed state was between 1,109 t and 2,678 t.

Recommendations relating to improving compliance of cuts have been included in section 6.7 (a) above.

OCM recommend that modified conversion factor testing be undertaken by MPI Observers during the 2013 SBW season to ascertain whether the current CF of 1.70 for DRE product provides for accurate calculations of greenweight with relation to head cuts being achieved.

6.7 (c) Meal

This section outlines the sources of whole fish processed to fish meal aboard factory trawlers, the methods employed to make assessments of green weights mealed and also the potential difficulties associated with accurate reporting.

Meal plant capacity is designed to process all offal produced during production of frozen product and also limited volumes of whole fish unsuitable for processing to frozen product. During the production of meal, offal and whole fish passes through a process of mincing, cooking and drying, prior to packing into 30 kg bags.

Offal is the by product resulting from the processing of whole fish to frozen product and comprises heads, tails and viscera. Offal passes from processing saws and gutting lines into augers by which it is transported to the meal plant.

In some cases a portion of the wet offal stream (viscera) may be directed overboard. The removal of wet offal from the meal stream speeds up the cooking and drying process, particularly so for livers due to their high oil content. Excluding a portion of wet offal also provides greater capacity for processing of hard offal and whole fish. As offal disposed of overboard is not quantified or recorded in any manner, the difference can be used to disguise the production of meal from whole fish.

Whole fish is mealed for a number of reasons, including:

- Fish that is damaged or degraded and unfit for processing;
- Fish processed outside of vessel processing specifications, which is unsuitable for packing;
- Fish that is of small size and low value, or below minimum grading specification for processing to frozen product;
- Low value quota species which must be retained and not discarded.

Quantification of whole fish to meal is critical as, unlike frozen product, this cannot be easily back calculated from processed weight to green weight from the end product. For this reason, it is necessary to identify the sources of whole fish to meal and apply appropriate sampling techniques at each source in order to establish the quantity mealed.

Sources of whole SBW to meal may include:

- Fish lodged part way through cod end meshes (referred to as stickers) – this may vary considerably depending upon the target species and volume of the catch;
- Fish, both damaged and of small size, graded out at the factory sorting station and/or machines;
- Fish lost from Ira processing machines;
- Processed fish that does not meet processing specifications – processed fish is usually checked prior to passing to the blast freezers to ensure that it meets factory specifications. Product that is damaged or processed beyond these specifications is removed from the production line and either packed as a separate grade or put into the fish meal plant;
- Bulk mealing - vessels at times land catches comprising of very small SBW. Such catches are slow to process to dressed product or fall below the vessels minimum specified piece weight for packed frozen product. In such situations the entire catch, or a large portion of the catch, is sent directly from the fish pounds via the conveyor system to the meal plant;
- Reject blocks of SBW from quality control checks.

Vessels should have systems in place, using a number of techniques, to establish total fish to meal but on some vessels this is a token gesture. The volume of whole fish processed to meal is often greater than that reported, the difference being reported as MEB[8].

<u>Ukrainian Vessels</u>

All six Ukrainian vessels operating in the SBW fishery are the same BATM design class with similar factory layouts and identical meal plants. These meal plants, although identical, produce meal at varying efficiencies and quality depending upon operating processes at the time. Under normal operating conditions plants have the capacity to produce 8,000 kg of fish meal over a 24 hour period. Bags of meal are stacked in a dedicated fish meal hold adjacent to the meal plant. This hold has a capacity of approximately 150 t.

Aboard the Profesor Mykhaylo Aleksandrov the majority of wet SBW offal was disposed of overboard by suction pump from the Ira processing line and via grills in offal augers onto the factory floor before washing overboard. The volume of this offal was estimated by Observers to be at least two thirds of the entire wet offal component from SBW processing.

[8] Meal produced by-product which is a secondary state and therefore is not counted against ACE.

Various methods are used to quantify whole and processed fish to meal. Where meal plant augers are either partially or entirely covered over (eg on Meridian 1), accurate quantification of fish to meal, from some sources, can prove difficult.

Stickers

In 2012, stickers were usually kept separate on the deck to avoid mixing with the main catch in the factory. These fish were placed into bins or swept into a pile on top of a fish pound hatch. At this point an assessment of greenweight could be made by a count of filled bins or an eyeball estimate of the volume piled up. In the SBW fishery, 500–700 kg of stickers may be removed from a single 50 t tow.

Generally once a pound was cleared of the main catch, stickers from the deck were then put down into an empty pound. This fish was only flushed out of the pound at a time when it would not become mixed with the main catch; often this would occur at the end of processing and prior to a new bag of fish being brought on board. From the pounds, the damaged fish can be transported quickly by conveyor directly into the meal plant auger. In some instances stickers were mixed with the main catch in the pounds and processed where possible.

In 2012, Observers onboard the Profesor Mykhaylo Aleksandrov identified that stickers were being sent to meal without quantification while Observers were absent from the factory. Following this event, measures were put in place by the vessel in an attempt to quantify this fish. Such strategies to avoid the recording of whole fish to meal may well occur to some extent aboard all Ukrainian vessels even when Observers are on board.

Two vessels use a different system to convey damaged fish from the deck to the factory via a chute into the meal stream. The Alexander Buryachenko uses a chute to convey fish directly into the meal hopper, which empties into the meal auger. The Aleksey Slobodchikov uses a PVC pipe to convey fish directly from the deck into the meal auger. These systems avoid fish passing through the pounds, and enable it to be quickly conveyed into the meal stream.

In the SBW fishery where catches are often in the vicinity of 50 t or greater, there is considerable potential for large volumes of stickers to go unreported.

Sorting Station Fish

Immediately after the catch leaves the pounds fish is carried by conveyor past a sorting station manned by either one or two crewmen. At this point bycatch is removed along with damaged and small target species. The damaged and smalls are placed into a hopper mounted adjacent to the conveyor. The capacity of the hopper varies between vessels but ranges from 80 to 150 kg. At the base of the hopper is a sliding hatch which enables the contents to be emptied directly into the fish meal auger.

The hopper enables the crew to quantify the volume of whole fish graded out to fish meal, after each load released. Observers have noted on occasions that the hopper hatch is left open allowing whole fish to pass directly into the augur without quantification. This was recorded on the Ivan Golubets during the 2011 SBW season. Nominal hopper capacity recorded by vessels has in some cases been shown to be significantly less than the actual capacity. Also on the Ivan Golubets, Observers assessed the hopper capacity to be 130 kg compared to the nominal 100 kg used by the vessel. This would have resulted in the under reporting of fish to meal from this source.

If proper systems are adhered to, fish to meal from this source should be accurately reported, as it is straight forward to monitor and quantify.

Ira Fish Losses

Due to machine design and operation, fish - both whole and processed, fall into the offal stream along with heads and viscera. The volume of losses is highly variable depending upon fish size, machine maintenance and crew vigilance. Rates recorded by observers aboard the Profesor Mykhaylo Aleksandrov ranged from 65-252 kg an hour with an average of 147 kg an hour. Extrapolated over the course of a 22 hour processing day, an average of 3.2 tonnes of whole fish per day would be lost from this source.

Observers have noted that results from vessel time sampling are highly variable. The stationing of a crew man to remove fish from the offal stream is unlikely to occur in the absence of an observer as this takes one man out of the production line, thereby slowing overall factory out-put.

Out of Grade Product

Grading and subsequent removal of product occurs at several locations in the factory including: at processing machines; at the base of each elevator carrying product to the blast freezers; and on conveyor belts carrying fish from processing machines to washers.

Fish is checked at each station by a crew man, and if out-of-grade it is removed and placed into a fish case. Machine operators may deliberately place out-of-grade fish directly into the offal auger, avoiding the use of a fish case and consequent quantification. This may also occur at grading stations following head and tail removal. Over the course of an eight hour shift cases are aggregated at the grading station. Upon completion of the shift these are taken to the aft of the factory and emptied into the meal plant. This is the only location in the factory where cases of fish may be easily emptied into the meal stream.

Cased up processed fish should be quantified by weighing and multiplying the weight by the appropriate conversion factor to ascertain greenweight. All fish graded out but processed beyond the dressed state should have the next highest conversion factor applied (in this case fillet) but in practice this generally did not occur. Volumes from this source are variable depending upon the quality of processing, severity of grading and the presence, or not, of Ira grade outs. From a 50 t tow in excess of 500 kg greenweight may be graded out from the elevator grading stations alone.

The greenweight for out-of-grade product is recorded either at the aft of the factory on the hopper fish white board or directly into factory logbooks at end of shift. Observers have noted that recording by vessels of fish from this source is again variable in completion and accuracy. In some cases the weight of product is recorded but the conversion factor is not applied, and therefore greenweight is substantially under reported.

<u>New Zealand Vessels</u>

Two NZ companies, Sanford and Talleys, operated a total of six vessels in the 2012 SBW fishery. With the exception of the Amaltal Explorer, all these vessels have meal plants on board. Essentially the fish pound arrangement, processing and meal production aboard NZ vessels is similar. The main variable between vessels is the management of fish within the system and methods used to quantify volumes of whole fish to meal.

In comparison to the Ukrainian fleet, NZ vessels are not well set up to manage or process the high volumes of small fish encountered in this fishery. Aboard a number of vessels the combination of large catches, slow processing and long holding times can result in degradation of fish quality and consequent mealing of low grade fish. In a number of cases these factors were exacerbated by poor management practices of fish held in the pounds. All offal is processed to meal. On infrequent occasions when meal plants broke down, offal was disposed of overboard for short periods.

Stickers

Damaged fish from this source passes through the pounds and into the factory on the pound conveyor. At this point it is then either removed from the main catch into bins or remains on the main conveyor and passes to the meal stream. Fish removed into bins is quantified by bin counts and that remaining on the conveyor by time sampling of the offal line.

Fish Pounds

Refrigerated sea water (RSW) is used on a number of vessels to chill fish and maintain quality but if not adequately managed can contribute to the degradation of fish quality. RSW is sprayed over fish while held in the pounds from an over head sprinkler system but if unable to drain from the pounds fish becomes soft due to both soaking and a rise in temperature. Compounding this, physical damage also occurs due to a washing machine affect, particularly in rough weather. These factors coupled with long holding periods due to slow processing result in degrading of large volumes of fish which is processed to meal in bulk. The primary factor contributing to bulk damage is fishing beyond processing capacity and subsequent poor management of the RSW system.

Fish quality is also compromised when ambient temperature seawater is used to flush fish from the pounds. The consequent rise in temperature causes fish to soften and degrade.

Pound damaged fish to meal quantities are captured either when the fish is removed from the pound conveyor into bins or by time sampling of fish passing through the offal stream. In the case of bulk mealing of large quantities, eyeball estimates of volumes in the pounds are made prior to the fish being directly conveyed to the meal plant.

Processing Drop Outs

This refers to fish falling out of processing machines, particularly the Baader 212, into the meal stream. This machine is primarily set up to process Hoki, a significantly larger fish than SBW. Although adjustments are made for the SBW fishery fish fall out of the machine into the offal stream. The volume of fish to meal from this source is accounted for in time sampling of the meal conveyor.

Out of Grade Product

After machine processing fish pass to the gutting line and on to the packing line. At both these positions product which is damaged or processed beyond specification is graded out and placed into bins. Bins are quantified after which the graded out fish is consigned to the meal plant. There is potential for greenweight to be under-reported if fish is cut beyond the DRE state and the vessel applies the official CF, which would not accurately reflect greenweight.

QC Rejects

Most NZ vessels carry out quality control (QC) checks on frozen product. Typically once thawed out, this product is put to meal. If the blocks are weighed and have the appropriate CF applied then greenweight should be accurately reported. However, there is a risk that these blocks are mealed without being quantified, hence go unreported.

Meal Plant Breakdowns

Breakdowns of meal plants are rare events. Vessels have a limited holding capacity to retain offal and damaged fish when these events occur. When this capacity has been reached offal is disposed of over board and whole fish retained in holding buffers or bins and either frozen or mealed when the plant is again operating.

OCM recommend that systems for quantifying whole and processed fish to meal must be robust, reliable and verifiable. Systems must account for all sources of whole and processed fish to meal and must be strictly adhered to. Appropriate conversion factors must be applied where applicable. Procedures particular to each vessel must be documented and submitted to MPI.

OCM recommend that all sources of whole/processed SBW to meal are identified and monitored by MPI Observers in 2013 to ascertain the accuracy of the reporting of SBW to meal.

6.7 (d) Vessels with No Meal Plant

Dressed Product

The Amaltal Explorer is the only domestic vessel operating in the SBW fishery that does not have a meal plant on board. All offal and low value non quota species are disposed of overboard. Damaged SBW, mis-cut and small grade outs are retained on board and landed as frozen product.

Fish dropping out of the processing machine to the offal stream are removed from the offal conveyor belt and retained for freezing. All damaged and low grade fish retained and frozen is back calculated to green weight from production weights multiplied by official conversion factors. The potential exists for discarding of whole/damaged fish as it would be quicker to discard rather than pack and freeze. This product is considered low value and takes up freezer capacity which could otherwise be used for higher value product.

Surimi

The Tomi Maru 87 is the only FCV operating in the SBW fishery that does not have a meal plant on board. This vessel processes SBW into surimi product. The Fisheries (Conversion Factors) Notice 2005 states that *"surimi means a processed form of fish that has been headed and gutted, skinned, deboned, minced, and washed, whether or not it has been chemically stabilised".*

It is unclear whether or not fish destined for surimi processing is required to meet the "headed and gutted" (HGT) definition, which states that *"in addition to gutted, the state in which the head and that portion of the body immediately forward of the pectoral fin have been removed..."* If fish are to comply with the HGT state then cuts must be made so that the pectoral fins remain attached to the portion of the body that is to undergo further processing. As can be seen in figures 9a and 9b, SBW cuts on the Tomi Maru 87 would not meet the HGT state definition in many instances.

Figure 9a - SBW head cuts on Tomi Maru 87

Figure 9b - SBW head cuts on Tomi Maru 87

Head removal is the first stage of the surimi manufacturing process. The consequence of poor cuts is low recovery and leads to high conversion factors. Where the conversion factor derived for a trip is higher than the official CF, subsequent greenweight declarations are under-reported.

On surimi vessels, because of the huge quantities of fish involved, the greenweight of fish used to calculate conversion factors is determined by measuring the volume and density of fish while it is still in the pounds. Therefore accurate pound volumes are needed for each tow and product flow must be carefully observed and recorded. The conversion factor is calculated by dividing the total greenweight of SBW destined for surimi (excluding all bycatch species and discarded fish) by the total surimi processed weight.

Conversion factor tests were completed by Observers on the Tomi Maru 87 during August and September 2012. Average test results are shown in table 14.

Species	State	Greenweight (A)	Processed Weight (B)	CF (A ÷ B)	Official CF
SBW6B	SUR	2,256,392	392,680	5.746	5.4
SBW6I	SUR	2,630,714	488,000	5.390	5.4

Table 14 - Surimi Conversion Factor Testing results from Observer Trip 3549

The differential between the official CF and the trip-derived CF for SBW6B on this trip means that 130 tonne of greenweight was under-reported. The official CF appears too low in relation to production by the Tomi Maru 87. The SUR production process is able to be altered depending upon machinery settings and quality of product produced. In an attempt to resolve this issue, the vessel was issued with a vessel specific CF (VSCF) for the 2013 season.

Discards

Since this vessel has no meal plant, all offal, fish waste and discards are disposed of overboard as slurry via macerator pumps situated below sea level. The vessel does not retain any damaged fish and has limited capacity to do so easily, therefore there is a potential risk that damaged fish will be discarded illegally and not reported.

Sources of damaged fish include:

- Factory (fish falling to factory floor while processing)
- Heading machine (damage caused during heading)
- Fillet machine (damage to fillets rendering further processing impossible)
- Surimi process (in situations when the surimi plant breaks down or is cleaned out fish in the form of a minced sludge is discharged overboard)

Product lost during the surimi process is very difficult to quantify and often goes un-monitored and unreported.

Figures 10a and 10b provide examples of losses that occur during surimi production. Figure 10a depicts minced product which has overflowed onto the factory floor. This is typically washed overboard and not quantified.

Figure 10a – SBW being lost from Surimi refining process on the Tomi Maru 87

Figure 10b shows the discard conveyor with whole fish and fillets mixed with soft and hard offal, en route to the macerator where it is made into slurry for sub-surface disposal.

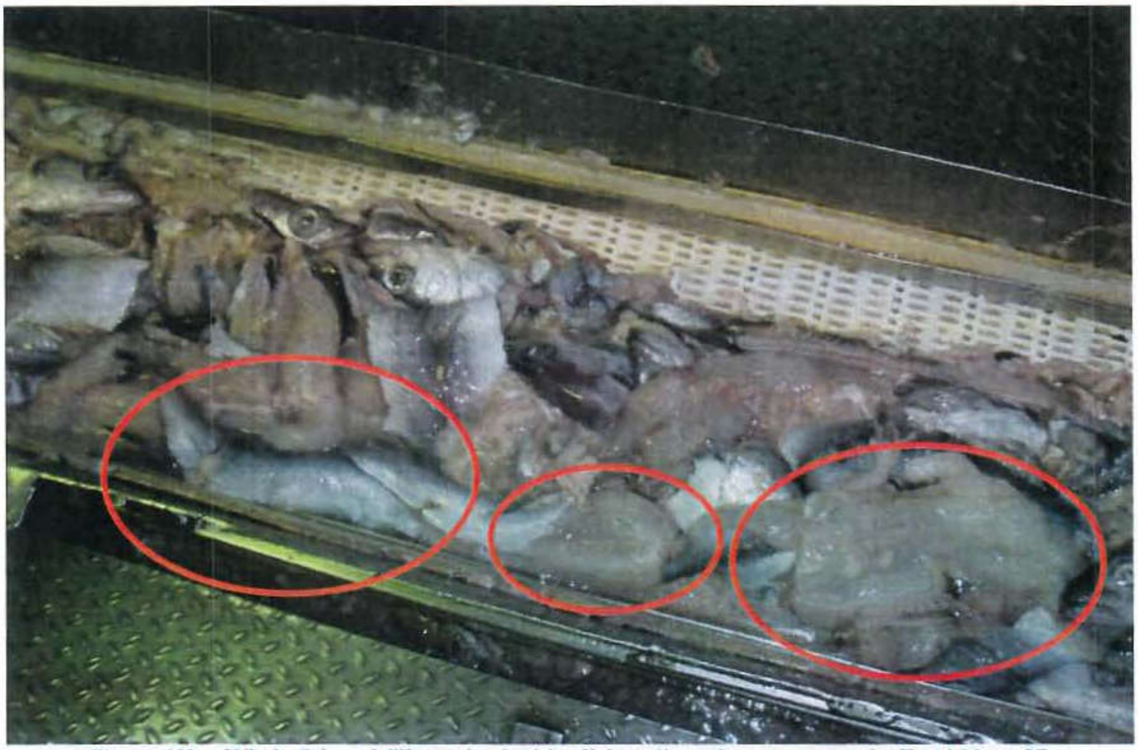

Figure 10b – Whole fish and fillets mixed with offal on discard conveyor on the Tomi Maru 87

In both these situations it is likely that primary product is not quantified and therefore is not reported in MPI returns.

The Observer manual prescribes the following for authorised discards. *"Any discard must be undertaken in the presence of an MPI observer and only after such time that the observer has quantified the species and amounts being discarded. This means that the vessel must seek approval to discard any quota fish before they discard the fish. To discard fish without prior approval constitutes an offence. Fish discarded must be quantified and supervised by an MPI Observer. No blanket coverage is to be issued for the discarding of any species."*

There have been situations recorded during observed trips whereby vessel crew keep a count of cases being discarded using click-counters. Essentially these are unsupervised discards and this practice is contrary to Observer manual instructions and should not be used as the observer has no way of verifying accuracy of counts.

OCM recommend that pound volumes for the Tomi Maru 87 are certified by an independent party so that observers are not recalculating values on each trip. Certified pound volumes should be verified annually.

OCM recommend that where the vessel fails to meet the official surimi CF (or VSCF) continuously then the operator should be made to re-declare catch using the observer derived conversion factor for the trip.

OCM recommend that the surimi state definition is reviewed in order to define explicitly the position in which the head must be cut prior to further processing.

OCM recommend that the Tomi Maru 87 carries two observers at all times during the SBW fishery, as damaged fish is discarded continuously. Observers must supervise and quantify all authorised discards. Unsupervised discards must not occur under any circumstances.

7. Summary of Identified Issues and Compliance Risks

The 2012 SBW Compliance Risk Profile has identified a number of issues, as described below:

Reporting & Fishing Practices

- Lack of clarity in Reporting Regulations regarding timeliness of completion.
- Some vessels with EDT not entering effort/catch data directly into EDT at time of tow, but transferring from other records later.
- Problem associated with lack of audit history with EDT.
- Calculated tow duration does not accurately reflect length of tow as reported end time includes soaking (where this has occurred).
- Vessels not catching to factory capacity leading to practice of soaking the net.
- The illegal disposal of SBW is a significant compliance risk, particularly on vessels with no meal plant. Large volumes of unwanted (small and/or damaged) fish can easily be routed by conveyors to discard chutes and/or mascerators and discharged illegally overboard.

Greenweight Declaration

- Inadequate onboard or onshore weighing procedures which are incapable of accurately recording product weight.
- FO carton weight checks and MPI Observer unit weight checks indicate under-reporting of greenweight.
- Lack of consistency in unit weight testing undertaken by MPI Observers identified.
- Inadequate levels of glaze testing and documentation. Potential risk for operators to deduct greater glaze allowance than applied leading to under-reporting of greenweight.
- Non-compliant head cuts and product loss leading to under-reporting of greenweight.
  - The Ira 110 machine has a number of issues relating to non-compliant head cuts due to: inability to adjust machine to allow for range of fish sizes; lack of attention to correct placement of fish in trays; inadequate and irregular maintenance of machine to remove blockages and mitigate drop outs; and poor grading of fish to machine. Substantial losses of whole and processed fish to the offal stream, from the Ira, can occur and may not be reported.
  - At the circular saw, whole fish can be deliberately put to meal via the offal stream with ease and without quantification.
  - The B424 requires fish to be aligned correctly when placed on the transport belt to ensure compliant cuts. Losses from this machine occur and may not be reported.
  - The B212 requires size grading for optimal processing of catch. Without the use of a spacer the cut on small fish may be deep into the body resulting in non-compliant cuts. Drop outs of very small fish from this machine occur and may not be reported.

- Fish processed beyond the state definition are graded out prior to packing. In many instances where this product was sent to fish meal no CF, or the incorrect CF, was applied to accurately account for greenweight.
- Non-compliant head cuts from the custom built SBW processing machine were an issue as this machine requires correct placement of fish into body trays to ensure precision of cuts.
- Losses of whole fish and mince occur during the surimi process and often go unquantified. Poor head cuts, resulting in lower recovery, are also an issue and may lead to under-reporting of greenweight.

- SBW processed beyond the DRE state definition was found to be widespread. The degree of non-compliance was variable. On average 62% of product examined by FO's during inport inspections had cuts between the pectoral fin and first dorsal or worse. Extreme cuts (those made into the first dorsal fin or worse) account for 33% of total product examined. The greenweight of SBW calculated as potentially unreported due to fish being cut further than the defined dressed state was between 1,109 t and 2,678 t.
- Systems to account for all sources of whole and processed fish to meal were often inadequate, leading to under-reporting of greenweight.
- The disposal of wet offal overboard provided opportunity to disguise the production of meal from whole fish, as MEA is illegally reported as MEB.
- The potential exists for discarding of whole/damaged fish on vessels with no meal plant as it is often quicker to discard than to pack and freeze this product.
- Unsupervised discarding of whole SBW on the Tomi Maru 87 was permitted by observer(s) during a trip. This relied on the vessel keeping accurate records of all discards which were then provided to Observers. In this instance the risk for under-reporting greenweight is significant.

8. Recommendations

OCM has made a number of recommendations throughout the 2012 SBW Compliance Risk Profile. For ease of reference, all recommendations are listed below:

OCM recommend that no deepwater vessels are issued with mobile LFR licenses in the future, because the risk of product leaving New Zealand without any opportunity for a compliance inspection is too high.

OCM recommend that greater clarification is needed in the Fisheries Reporting Regulations 2001 to improve reporting of effort data. The requirement for the timely entry of effort and estimated catch data (e.g. "as soon as practicable once the trawl net has been landed on the vessel") should be paramount.

OCM recommend that greater clarification is needed in the Fisheries Reporting Regulations 2001 to improve reporting of processing data. The requirement for the timely entry of processed catch data should be paramount. Explanatory notes need to be amended to reflect the intent of the regulations and best practice for auditing purposes.

OCM recommend that:

- The manner in which dates and times are written out to the CEEDT event fields needs to be amended to accurately record when the data was entered, in-accordance with the original CEEDT specifications.
- An analysis tool to process the CEEDT audit history data exported from the FishServe system is developed to enable prompt and accurate data analysis.
- The analysis tool to process the Compliance Management Tool (CMT) exported CEEDT audit history data needs to be further developed as only an early draft version of an analysis tool has been prepared at this stage.

OCM recommend that the practice of 'soaking the net' is monitored to identify and mitigate the use of bad practices such as vessels catching beyond capacity.

OCM recommend that vessel operators continue to ensure that vessels correctly maintain and deploy seabird scaring devices and follow correct offal management procedures.

OCM recommend that where onboard automated weighing systems are in place then these should be used for informing greenweight reported on CLRs. Inadequate shore based sampling of carton weights should not be used in preference to automated weighing systems. Automated weighing systems should be monitored and verified by MPI.

OCM further recommend that all onboard and onshore sampling regimes used for determining greenweight are statistically robust and verifiable. Procedures must be documented and submitted to MPI. Both onboard and onshore weighing procedures should be monitored and verified by MPI.

OCM recommend that more prescriptive methodologies are provided to MPI Observers for undertaking unit weight testing, to avoid inconsistencies and to improve data quality and reliability. Where deviations in methodology are required these should be fully documented so that weight comparisons can be undertaken with confidence.

OCM recommend that all glaze testing procedures are robust and verifiable. Procedures particular to each vessel must be documented and submitted to MPI.

OCM further recommend that MPI Observers verify vessel glaze test procedures including documentation completed, and that independent glaze weight tests are carried out by MPI Observers on each trip.

OCM recommend that unit weight testing pre/post glaze application (where applicable) be carried out by MPI observers during the 2013 SBW season. This will allow glaze percentage and average unit weight for processed product to be calculated, thereby enabling accuracy of reported greenweight to be assessed.

OCM recommend that where non-compliant cuts and/or inadvertent losses regularly occur, action is taken to mitigate these circumstances by way of modification to processing machinery, where practicable. If modification is not possible, consideration should be given to replacing machinery.

OCM recommend that correct alignment of fish into processing machines is constantly monitored to enable precision of DRE cuts. Size grading and adjustment of machine settings should be used for optimal performance.

OCM recommend that immediate action is taken to reduce losses when blockages occur in processing machinery. Maintenance should be conducted routinely to avoid blockages occurring.

OCM recommend that all vessels have robust systems in place to account for losses from processing machines. It is vital that these systems are strictly adhered to, in order to ensure accuracy of reporting.

OCM recommend that modified conversion factor testing be undertaken by MPI Observers during the 2013 SBW season to ascertain whether the current CF of 1.70 for DRE product provides for accurate calculations of greenweight with relation to head cuts being achieved.

OCM recommend that systems for quantifying whole and processed fish to meal must be robust, reliable and verifiable. Systems must account for all sources of whole and processed fish to meal and must be strictly adhered to. Appropriate conversion factors must be applied where applicable. Procedures particular to each vessel must be documented and submitted to MPI.

OCM recommend that all sources of whole/processed SBW to meal are identified and monitored by MPI Observers in 2013 to ascertain the accuracy of the reporting of SBW to meal.

OCM recommend that pound volumes for the Tomi Maru 87 are certified by an independent party so that observers are not recalculating values on each trip. Certified pound volumes should be verified annually.

OCM recommend that where the vessel fails to meet the official surimi CF (or VSCF) continuously then the operator should be made to re-declare catch using the observer derived conversion factor for the trip.

OCM recommend that the surimi state definition is reviewed in order to define explicitly the position in which the head must be cut prior to further processing.

OCM recommend that the Tomi Maru 87 carries two observers at all times during the SBW fishery, as damaged fish is discarded continuously. Observers must supervise and quantify all authorised discards. Unsupervised discards must not occur under any circumstances.

Appendix 1 - Southern Blue Whiting Fishery Industry Briefing Paper

Background

The southern blue whiting fishery is a bulk fishery focussed on highly aggregated fish and in a region renowned for hostile weather and hence operating conditions. Safety of vessels and crew are paramount.

The already significant value of this fishery has been further enhanced by quota owners investing in the MSC certification process. This certification has been achieved but it is important that everybody involved in the fishery remains aware of the issues that are of concern to the auditors of the fishery. Particular action is required through the Certification process, regarding the environmental effects of fishing.

In particular these concerns relate to the level of interactions with:

- NZ sea lions (particularly at the Campbell fishery)
- NZ fur seals (particularly at the Bounty fishery) and
- Seabird interactions –these are less than most other deepwater fisheries but constant vigilance is required.

As a consequence, DWG and managers would like to provide vessel owners and operators with additional information to help reduce the level of protected species interactions that occur during the 2012 southern blue whiting season.

Campbell Islands – NZ sea lions

Key Points

- The NZ sea lion is listed with a threat classification of Nationally Critical by DOC and is a species about which the community is expressing concern
- The MSC certification requires DWG and managers to analyse and address the level of sea lion captures in this fishery over the next 2 years – we are on notice
- Of particular concern is the apparent rising trend in captures, especially since around 2007 (see Fig 1)
- All operators in the fishery are aware of the costs and constraints caused by sea lion interactions in the squid fishery
- DWG and managers would therefore like to highlight the strategies available that are likely to help the fishery reduce the current level of interactions, therefore reducing the risk of additional management being required
- It would appear that several factors have occurred that have increased the risk of captures and the number of captures by individual vessels:
    - Since 2007 there appears to be more fishing activity due east of the Campbell Islands and most of the increase in captures has occurred there (rates on the grounds to the north and south have remained much the same)
    - Capture rates appear high whether early or later in the season (August 25th- 28th Sept)
    - The large storm event of 2010 lead to increased fishing effort east of Campbell and the highest level and rate of captures on record
    - It appears that fishing practices that lead to large offal discharges or loss of fish may attract large numbers of sea lions, increasing the risk of captures occurring
- The DWG MMOP explains how the best way to reduce risk is to keep the time gear is on the surface to an ABSOLUTE MINIMUM and not shoot the gear when large numbers of animals are surrounding the vessel. Any practices that lead to interruptions in shooting and hauling (poorly maintained gear, excessive catches etc) greatly increase risk

- The DWG MMOP also highlights the importance of managing offal discharge and how this can reduce the number of marine mammals that are attracted to the vessel. It is paramount that all vessels continue to closely follow offal management procedures detailed in their VMPs. "Soaking" catch may increase risk as sea lions can dive to 500 metres. Noting this is a bulk fishery, vessels must operate in a manner of good fishing practice that does all possible to ensure that significant volumes of fish are not lost from the net
- Immediate reporting of all captures to DWG is critical so that a fleet overview of risk and interaction levels can be maintained in real time

<u>Bounty Islands – NZ fur seals</u>

Key points:

- The catch rate of NZ fur seals in this fishery is the highest of any fishery in NZ; this is an undesirable record
- Risk appears greatest at the start of the season, when fur seals are most aggressive and prepared to take bigger risks for a "free feed"
- Also at the start of the season, fewer vessels are on the fishing grounds attracting greater numbers of fur seals
- As with NZ sea lions, anything that can be done to minimise time the gear is on the surface is the most effective mitigation a vessel can apply
- Report triggers in 24 hours

<u>Seabirds</u>

Key Points

- Seabird numbers are much lower in the Southern Ocean at this time and consequently the level of interactions with the southern blue whiting fisheries is not a concern at this time
- However, in order to maintain the traditionally good performance of the fishery in this area, vessels should keep watch on mitigation device maintenance, offal management and adherence to VMPs. These actions should be sufficient to ensure continued good performance in this area.
- Report trigger breaches within 24 hours

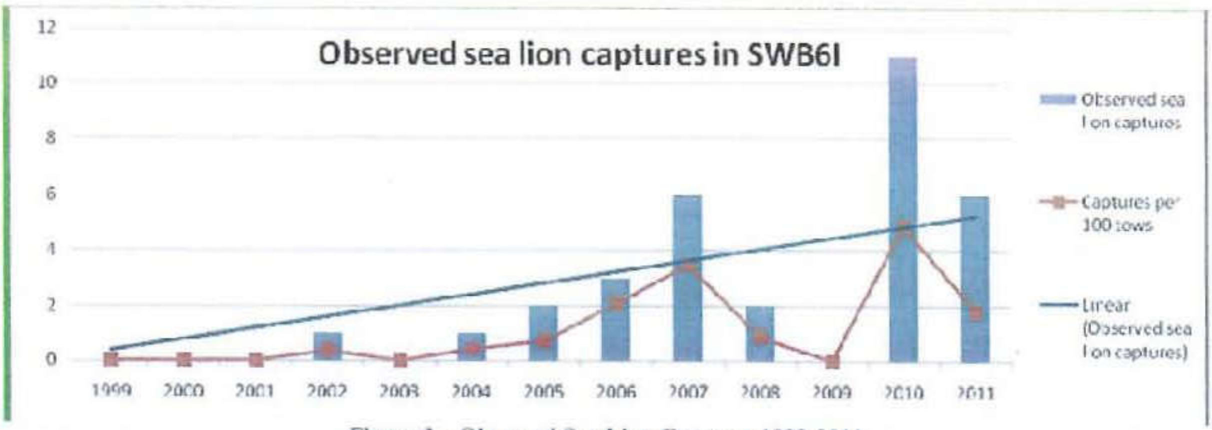

Figure 3 – Observed Sea Lion Captures 1999-2011.

(Fig.1) Observed Sea lion Captures 1999-2011 [2011 data not yet finalised]

Appendix 2 - Total estimated catch by vessel

	Estimated catch (kgs)			
Nationality/Vessel Name	SBW6B	SBW6I	SBW6R	Total
JAPANESE	**2,174,500**	**2,608,800**		**4,783,300**
Tomi Maru 87	2,174,500	2,608,800		4,783,300
NEW ZEALAND	**875,590**	**3,448,487**	**1,317,668**	**5,641,745**
Amaltal Atlantis	83,000		155,500	238,500
Amaltal Columbia			216,555	216,555
Amaltal Enterprise		882,440	146,365	1,028,805
Amaltal Explorer	792,590	1,689,050		2,481,640
San Enterprise		598,047	325,018	923,065
San Waitaki		278,950	474,230	753,180
UKRAINIAN	**3,805,100**	**14,098,800**	**85,000**	**17,988,900**
Aleksey Slobodchikov	575,000	3,179,500	17,000	3,771,500
Alexander Buryachenko	685,000	1,814,100	29,000	2,528,100
Ivan Golubets	1,262,100	3,735,200	300	4,997,600
Mainstream		2,146,000		2,146,000
Meridian 1	656,000	2,040,000		2,696,000
Profesor Mykhaylo Aleksandrov	627,000	1,184,000	38,700	1,849,700
Grand Total	**6,855,190**	**20,156,087**	**1,402,668**	**28,413,945**

Appendix 3 – Presence of Discard Outlets, Macerators and Hashers by Vessel

Nationality	Vessel Name	Discard Outlets	Macerator/Hasher
Ukrainian	Aleksey Slobodchikov	One discard hatch above water-line, easy to discard.	
	Alexander Buryachenko	Two - 1 each side, exit above water-line.	
	Ivan Golubets	Two - 1 each side, exit above water-line.	
	Mainstream	One discard hatch, starboard aft of factory. Easy access from sorting conveyor from pounds.	
	Meridian 1	Two discard chutes near pounds, one on either side, exit above water-line. Port side chute has a grate and lets only water out. Fish discarded through starboard chute.	
	Profesor Mykhaylo Aleksandrov	A sea door, starboard aft in the factory can be opened to discard species.	
New Zealand	Amaltal Atlantis	One port side, exit above water-line.	Hasher for product to meal.
	Amaltal Columbia	One at rear port corner of factory.	
	Amaltal Enterprise	No information	
	Amaltal Explorer	One starboard side, forward of pounds. Exits above water line.	
	San Enterprise	One, port aft, at end of main sorting conveyor. However, there is a chute on sorting conveyor that leads directly to meal plant, switch needs to be flicked to send fish to discard chute instead of meal.	Hasher for product to meal.
	San Waitaki	One discard outlet, port side exits just above water-line. Discard conveyor belt leads from main sorting conveyor to chute, but is usually turned off so all discards go to meal.	Hasher for product to meal.
Japanese	Tomi Maru 87	Two chutes, run off conveyor form rear to front pounds on starboard side of factory.	Macerator, output pumped over the side.