

2015-16 Bycatch Reporting

These figures in this document are draft figures and should not be cited. The figures are only provided for the purpose of informing research planning, and will be finalised with the rest of the data as part of the final ARS in the coming weeks.

Middle Depth Trawl Fisheries

Hoki, Hake, Ling and Warehou species

The hoki, hake, ling, warehou trawl complex spans all months, FMAs and vessel sizes. Within the fishery complex there is a distinct subset targeting the hoki spawn in the Cook Strait. This occurs between June and September and is fished only by vessels under 42m, in an area straddling the CHA and CEE FMAs. The remaining fishing effort occurs during the other months with hoki, hake, ling and warehou targeted largely in SEC, SUB, SOE and partly SOU areas. All vessels over 28m in this fishery are required to use one of the three permissible forms of regulated bird scaring equipment and offal management. Industry defined codes of practice can also apply.

Table 1 reports the numbers of interactions by species and fate immediately post interaction for the 2015/16 fishing year. Of the observed seabird interactions, 63% resulted in mortalities. The most commonly caught seabird species was Salvin's albatross. In comparison to the 14/15 fishing year, the number of seabird interactions declined by 54%.

The number of mammal interactions was similar to the previous fishing year. New Zealand fur seal was the only mammal observed, with 78% of the interactions resulting in mortalities.

Table 1. Protected species interactions in the hake, hoki, ling and warehou middle depth trawl fisheries during the 15/16 observer year.

Species Name	Alive	Dead	Decomposing	Total
Birds				
Buller's albatross	1	8		9
Buller's and Pacific albatross		2		2
Cape petrels		1		1
Common diving petrel	1			1
Fairy prion	1			1
Giant petrels (Unidentified)		1		1
Great albatrosses	3			3
Petrel (Unidentified)	2			2
Petrels, Prions and Shearwaters	1			1
Prions (Unidentified)	2			2
Procellaria petrels	1			1
Salvin's albatross	11	14	1	26
Shearwaters		5		5
Sooty shearwater	1	12		13
White-capped albatross	5	6		11
White-chinned petrel	5	11		16
Birds Total	34	60	1	95
Marine Mammals				
New Zealand fur seal	8	32	1	41
Marine Mammals Total	8	32	1	41
Protected Fish				
Porbeagle shark		2		2
Basking shark	2	1		3
Protected Fish Total	2	3		5
Grand Total	44	95	2	141

Tables 2a, b & c detail the broad method of interactions for each species. Net capture was the most prevalent form of interaction overall, with over 70 % resulting in mortalities. Eight interactions were recorded as 'other', most of them being seabirds landing on the vessel, and one a New Zealand fur seal that was washed on board with a wave.

Table 2. Method of interaction for a) Protected species released alive, b) dead protected species, c) decomposing protected species observed in the hake, hoki, ling and warehou middle depth trawl fisheries during the 2015/16 observer year.

a) Protected species released alive

Species Name	Caught in net	Impact against vessel	Other	Unknown	Total
Birds					
Buller's albatross	1				1
Common diving petrel			1		1
Fairy prion				1	1
Great albatrosses	3				3
Petrel (Unidentified)		1	1		2
Petrels, Prions and Shearwaters			1		1
Prions (Unidentified)		2			2
Procellaria petrels	1				1
Salvin's albatross	11				11
Sooty shearwater	1				1
White-capped albatross	2		2	1	5
White-chinned petrel	3		2		5
Birds Total	22	3	7	2	34
Marine Mammals					
New Zealand fur seal	7		1		8
Marine Mammals Total	7		1		8
Protected Fish					
Basking shark	2				2
Protected Fish Total	2				2
Grand Total	31	3	8	2	44

b) Dead protected species

Species Name	Caught in net	Caught on warp or door	Other	Unknown	Total
Birds					
Buller's albatross	6	1		1	8
Buller's and Pacific albatross	2				2
Cape petrels	1				1
Giant petrels (Unidentified)			1		1
Salvin's albatross	11	1		2	14
Shearwaters	5				5
Sooty shearwater	11			1	12
White-capped albatross	2	3		1	6
White-chinned petrel	11				11
Birds Total	49	5	1	5	60
Marine Mammals					
New Zealand fur seal	32				32
Marine Mammals Total	32				32
Protected Fish					
Porbeagle shark	2				2
Basking shark	1				1
Protected Fish Total	3				3
Grand Total	84	5	1	5	95

c) Decomposing protected species

Species Name	Caught in net	Total
Birds		
Salvin's albatross	1	1
Birds Total	1	1
Marine Mammals		
New Zealand fur seal	1	1
Marine Mammals Total	1	1
Grand Total	2	2

Southern Blue Whiting

The southern blue whiting fishery is both spatially and temporally distinct from other middle depth trawl fisheries. The location of fishing effort is variable and dependent of the presence of spawning aggregations of southern blue whiting. Most effort occurs in the waters around Campbell Island. Unlike other middle depth trawl fisheries, protected species interactions tend to be dominated by marine mammal captures, specifically fur seals. Sea lion captures, however, have occurred in most years at variable levels (up to 14) (Rowe 2009, Rowe 2010, Ramm 2010, Ramm 2012a, Ramm 2012b, and Clemens-Seely et al. 2014).

Historically, the southern blue whiting fishery is one of the most highly observed fisheries (Clemens-Seely et al. 2014). In the 2014/15 observer year the observer coverage achieved was 100%, with all of the tows recorded in the SUB FMA. The data showed an anomaly in the number of tows reported by observers versus vessels, with one additional tow reported by the observers.

Table 3 reports the numbers of interactions by species and fate immediately post interaction for the 2015/16 observer year. In comparison to the 2014/15 fishing year, observed interactions declined by 41%, mainly due to fewer New Zealand fur seal interactions. All of the marine mammal interactions resulted in mortalities.

Table 3. Protected species interactions in the southern blue whiting fishery during the 2015/16 observer year.

Species Name	Alive	Dead	Total
Birds			
Campbell albatross	1		1
Cape petrels	1		1
Grey petrel	12	6	18
Light-mantled sooty albatross	2	1	3
Salvin's albatross		2	2
Birds Total	16	9	25
Marine Mammals			
New Zealand sea lion		6	6
New Zealand fur seal		41	41
Marine Mammals Total		47	47
Grand Total	16	56	72

Tables 4 a and b detail the broad method of interactions by species. Net capture was the most prevalent form of interaction and exclusively resulted in mortalities. Almost half of the protected species interactions that resulted in mortalities occurred on a single vessel during a single trip. Seven of the mammal interactions that resulted in mortalities were recorded as 'other', the remarks stated that these animals had been caught in the Sea Lion Exclusion Device (SLED).

Table 4. Method of interaction for a) protected species released alive and b) dead protected species observed in the southern blue whiting fishery during the 2015/16 observer year.

a) Protected species released alive

Species Name	Impact against vessel	Total
Birds		
Campbell albatross	1	1
Cape petrels	1	1
Grey petrel	12	12
Light-mantled sooty albatross	2	2
Birds Total	16	16
Grand Total	16	16

b) Dead protected species

Species Name	Caught in net	Caught on warp or door	Impact against vessel	Other	Unknown	Total
Birds						
Grey petrel	4		1		1	6
Light-mantled sooty albatross			1			1
Salvin's albatross		2				2
Birds Total	4	2	2		1	9
Marine Mammals						
New Zealand sea lion	4			2		6
New Zealand fur seal	36			5		41
Marine Mammals Total	40			7		47
Grand Total	44	2	2	7	1	56

Scampi

Observations in the scampi fishery are undertaken primarily to monitor interactions with seabirds and New Zealand sea lions. Historically, captures of seabirds by this fishery have been recorded in most areas, with known captures of black petrels in AKE, along with captures of New Zealand sea lions in the SUB FMA.

Table 5 reports the number of interactions by species and fate immediately post interaction. Nearly all the interactions resulted in the live release of the animal involved, excluding two seabird interactions that resulted in mortalities. Flesh-footed shearwaters were the most commonly caught species.

Table 5. Protected species interactions in the scampi fishery during the 2015/16 observer year.

Species Name	Alive	Dead	Total
Birds			
Flesh-footed shearwater	5	1	6
Grey-backed storm petrel	1		1
Salvin's albatross	1		1
Storm petrels	1		1
White-capped albatross		1	1
Birds Total	8	2	10
Marine Mammals			
New Zealand fur seal	1		1
Marine Mammals Total	1		1
Grand Total	9	2	11

Tables 6 a and b detail the broad method of interactions for each species. Majority of the interactions were recorded as 'other' by the observers, and remarks stated that the seabirds had landed on deck and were assisted off the vessel.

Table 6. Method of interaction for a) Protected species released alive and b) dead protected species observed in the scampi fishery during the 2015/16 observer year.

a) Protected species released alive

Species Name	Caught in net	Impact against vessel	Tangled in line	Other	Total
Birds					
Flesh-footed shearwater				5	5
Grey-backed storm petrel				1	1
Salvin's albatross			1		1
Storm petrels		1			1
Birds Total		1	1	6	8
Marine Mammals					
New Zealand fur seal	1				1
Marine Mammals Total	1				1
Grand Total	1	1	1	6	9

b) Dead protected species

Species Name	Caught in net	Caught on warp or door	Total
Birds			
Flesh-footed shearwater	1		1
White-capped albatross		1	1
Birds Total	1	1	2
Grand Total	1	1	2

Squid

Observer coverage in the squid fishery is often higher than other trawl fisheries due to previous high rates of bycatch of New Zealand sea lions and seabirds. The bulk of these captures have included white-capped albatross, sooty shearwaters and white-chinned petrels and this trend continues into the current year (79% of observed seabird captures).

Particularly in the SQU6T area around the Auckland Islands, the observer coverage is focused on recording New Zealand sea lion captures. Sea Lion Exclusion Devices (SLEDs) are used by all vessels operating in the SQU6T fishery.

Table 7 reports the numbers of interactions by species and fate immediately post interactions. Similar to previous years, white-chinned petrel, sooty shearwater and white-capped albatross accounted for a large part of the seabird interactions, although the sooty shearwater interactions declined by 79% from the 2014/15 fishing year. White-chinned petrel interactions were fewer than in the 2014/15 fishing year. However, the number of white-chinned petrels caught in the past two fishing years have been around and over 50% higher than in the fishing years before (2013/14).

Table 7. Protected species interactions in the squid fishery during the 2015/16 observer year.

Species Name	Alive	Dead	Decomposing	Unknown	Total
Birds					
Albatrosses (Unidentified)	6			1	7
Black (Parkinson's) petrel		2			2
Buller's albatross	7	27			34
Buller's and Pacific albatross		6			6
Cape petrels	1				1
Common diving petrel	6	7		2	15
Great albatrosses	1				1
Mid-sized Petrels & Shearwaters	2				2
Petrel (Unidentified)	1				1
Petrels, Prions and Shearwaters	1				1
Procellaria petrels	8	2			10
Salvin's albatross	2	5			7
Shearwaters	1	4		1	6
Smaller albatrosses	5				5
Sooty shearwater	5	18			23
Storm petrels	9	1		5	15
White-capped albatross	28	40	1		69
White-chinned petrel	31	98			129
White-headed petrel	7			1	8
Birds Total	121	210	1	10	342
Marine Mammals					
Seals and Sealions			1		1
New Zealand fur seal		10			10
Marine Mammals Total		10	1		11
Protected Fish					
White pointer shark	1				1
Protected Fish Total	1				1
Grand Total	122	220	2	10	354

Tables 8a, b, c and d detail the broad method of interactions for each species. Net capture was the most prevalent form of interaction overall, and was responsible for 77% of the interactions that resulted in mortalities. Fourteen interactions were recorded as other; one white pointer shark, one fur seal and one white-chinned petrel retrieved from the Sea Lion Exclusion Device (SLED), one unidentified albatross that landed on the deck of the vessel, and one Buller's albatross, two white-capped albatrosses, four white-chinned petrels and three Salvin's albatrosses that got tangled in the net lines.

Table 8. Method of interaction for a) protected species released alive, b) dead protected species, c) Decomposing protected species and d) protected species with unknown fate in the squid fishery during the 2015/16 observer year.

a) Protected species released alive						
Species Name	Caught in net	Impact against vessel	Other	Tangled in line	Unknown	Total
Birds						
Albatrosses (Unidentified)	3	2	1			6
Buller's albatross	7					7
Cape petrels	1					1
Common diving petrel		5			1	6
Great albatrosses	1					1
Mid-sized Petrels & Shearwaters	2					2
Petrel (Unidentified)	1					1
Petrels, Prions and Shearwaters	1					1
Procellaria petrels	8					8
Salvin's albatross	1		1			2
Shearwaters	1					1
Smaller albatrosses	4	1				5
Sooty shearwater	5					5
Storm petrels		9				9
White-capped albatross	25	2		1		28
White-chinned petrel	28	2		1		31
White-headed petrel		7				7
Birds Total	88	28	2	2	1	121
Protected Fish						
White pointer shark			1			1
Protected Fish Total			1			1
Grand Total	88	28	3	2	1	122

b) Dead protected species

Species Name	Caught in net	Caught on warp or door	Impact against vessel	Other	Tangled in line	Unknown	Total
Birds							
Black (Parkinson's) petrel	2						2
Buller's albatross	18	8		1			27
Buller's and Pacific albatross	2	4					6
Common diving petrel			7				7
Procellaria petrels	2						2
Salvin's albatross	3			2			5
Shearwaters	4						4
Sooty shearwater	18						18
Storm petrels			1				1
White-capped albatross	23	14	1	2			40
White-chinned petrel	89			5	1	3	98
Birds Total	161	26	9	10	1	3	210
Marine Mammals							
New Zealand fur seal	9			1			10
Marine Mammals Total	9			1			10
Grand Total	170	26	9	11	1	3	220

c) Decomposing protected species

Species Name	Caught in net	Total
Birds		
White-capped albatross	1	1
Birds Total	1	1
Marine Mammals		
Seals and Sealions	1	1
Marine Mammals Total	1	1
Grand Total	2	2

d) Protected species with unknown fate

Species Name	Caught on warp or door	Impact against vessel	Total
Birds			
Albatrosses (Unidentified)	1		1
Common diving petrel		2	2
Shearwater		1	1
Storm petrels		5	5
White-headed petrel		1	1
Birds Total	1	9	10
Grand Total	1	9	10

Pelagic Trawl Fisheries

Jack Mackerel and Barracouta

In previous years, common dolphins have been captured in the pelagic trawl fishery and in some instances multiple capture events have occurred. A Marine Mammal Operating Procedure (MMOP) has been developed by industry to reduce dolphin captures. These practices include not setting or hauling at certain times of the day in certain areas, a watch being kept for dolphins in the vicinity of fishing operations, trawl doors being hauled partially on deck whilst turning (in order to close off the mouth of the net) and not setting while dolphins are present close to the vessel. As all the vessels in this fishery are larger than 28m and are required by law to deploy bird capture mitigation devices.

Table 9 reports the number of interactions by species and fate immediately post interaction. Sooty shearwater, white-capped albatross and Salvin's albatross were the most commonly caught species. Unlike the two previous fishing years (13/14 & 14/15), there were only two common dolphin interactions, a 90% decline since the 2014/15 fishing year. Over 85% of the interactions resulted in mortalities.

Table 9. Protected species interactions in the jack mackerel and barracouta pelagic trawl fisheries during the 2015/16 observer year.

Species Name	Alive	Dead	Total
Birds			
Australasian gannet	1		1
Broad-billed prion		1	1
Buller's albatross		7	7
Cape petrels	1		1
Common diving petrel	1	2	2
Petrel (Unidentified)		2	2
Petrels, Prions and Shearwaters		1	1
Salvin's albatross	1	7	8
Sooty shearwater	1	10	11
White-capped albatross	2	7	9
White-chinned petrel		3	3
Birds Total	7	40	46
Marine Mammals			
Common dolphin		2	2
New Zealand fur seal		3	3
New Zealand sea lion		1	1
Marine Mammals Total		6	6
Grand Total	7	46	53

Table 10a and b detail the broad method of interaction for each species. Net capture was the most prevalent form of interaction overall, and was responsible for 87% of the interactions that resulted in mortalities. Four interactions were recorded as 'other'; one was found under a plastic covering of a crate, one deck strike, one landing on deck and one caught on paravane.

Table 10. Method of interaction for a) protected species released alive and b) dead protected species observed in the jack mackerel and barracouta pelagic trawl fisheries during the 2015/16 observer year.

a) Protected species released alive

Species Name	Caught in net	Other	Total
Birds			
Australasian gannet	1		1
Cape petrels		1	1
Common diving petrel	1		1
Salvin's albatross	1		1
Sooty shearwater	1		1
White-capped albatross	1	1	2
Birds Total	5	2	7
Grand Total	5	2	7

b) Dead protected species

Species Name	Caught in net	Caught on warp or door	Other	Unknown	Total
Birds					
Broad-billed prion	1				1
Buller's albatross	6		1		7
Common diving petrel	2				2
Petrel (Unidentified)	2				2
Petrels, Prions and Shearwaters			1		1
Salvin's albatross	4	2		1	7
Sooty shearwater	10				10
White-capped albatross	6	1			7
White-chinned petrel	3				3
Birds Total	34	3	2	1	40
Marine Mammals					
Common dolphin	2				2
New Zealand fur seal	3				3
New Zealand sea lion	1				1
Marine Mammals Total	6				6
Grand Total	40	3	2	1	46

Deep water Bottom Trawl Fisheries

Orange Roughy, Cardinal and Oreo species

In deep water bottom trawl fisheries, a main focus of the observer coverage is to describe the impact of the trawls on benthic communities, in particular protected corals, particularly on the Chatham rise. Seabird behaviour and abundance is also monitored around the vessels in this fishery. Discard, offal and management, as well as the mandatory use of bird scaring devices are employed by the fleet to mitigate seabird interactions.

Observed interactions this fishing year increased to thirteen from three in the year before (14/15). Only 38% of the interactions resulted in live releases, and three interactions were recorded as 'unknown' and were noted to have been tossed overboard before observer could assess the animals.

Table 11. Protected species interactions in the orange roughy, cardinal and oreo deep water bottom trawl fisheries during the 2015/16 observer year.

Species Name	Alive	Dead	Unknown	Total
Birds				
Albatrosses (Unidentified)			1	1
Buller's albatross	1			1
Chatham Island albatross		1		1
Great-winged (Grey-faced) petrel	3			3
Petrels, Prions and Shearwaters			1	1
Salvin's albatross		3		3
White-chinned petrel			1	1
White-faced storm petrel	1			1
Birds Total	5	4	3	12
Marine Mammals				
New Zealand fur seal		1		1
Marine Mammals Total		1		1
Grand Total	5	5	3	13

Table 12a, b and c detail the broad method of interaction for each species. Net capture was the most prevalent form of interaction, with over 70% of them resulting in mortalities. One interaction was recorded as 'other', as the bird was found in the pound after a tow and it was assumed it flew in on its own.

Table 12. Method of interaction for a) protected species released alive, b) dead protected species and c) protected species with unknown fate observed in the orange roughy, cardinal and oreo deep water bottom trawl fisheries during the 2015/16 observer year.

a) Protected species released alive

Species Name	Caught in net	Impact against vessel	Other	Total
Birds				
Buller's albatross	1			1
Great-winged (Grey-faced) petrel		3		3
White-faced storm petrel			1	1
Birds Total	1	3	1	5
Grand Total	1	3	1	5

b) Dead protected species

Species Name	Caught in net	Total
Birds		
Chatham Island albatross	1	1
Salvin's albatross	3	3
Birds Total	4	4
Marine Mammals		
New Zealand fur seal	1	1
Marine Mammals Total	1	1
Grand Total	5	5

c) Protected species with unknown fate

Species Name	Caught in net	Caught on warp or door	Unknown	Total
Birds				
Albatrosses (Unidentified)		1		1
Petrels, Prions and Shearwaters			1	1
White-chinned petrel	1			1
Birds Total	1	1	1	3
Grand Total	1	1	1	3

Inshore Fisheries

Inshore Trawl

Inshore fishing within the New Zealand EEZ is an immensely diverse activity, with large amounts of variation in individual practice and effort. Particularly in the case of trawl and bottom longline, it becomes difficult to draw a simple distinction between the inshore and offshore sectors, as a number of vessels make seasonal shifts across this artificial boundary. Individual vessels can range in size from just two metres in length to over thirty metres. Equally, activity can range from 20 days per year to over 300 for each vessel. Overly simplified characterisation of the inshore sector is problematic and may lead to false conclusions about the fishery. Therefore, it is critical when gathering information on the inshore fishing sector to get as broad and representative coverage as possible.

Table 13 reports the number of interactions by species and fate immediately post interaction. Seabird and mammal interactions were in similar numbers to the previous year (2014/15). However, this year, two marine reptile interactions were observed, one that resulted in the live release of the animal and one that ended in mortality.

Table 13. Protected species interactions in the inshore trawl fisheries during the 2015/16 observer year.

Species Name	Alive	Dead	Unknown	Total
Birds				
Black (Parkinson's) petrel		2		2
Buller's shearwater	1			1
Common diving petrel	3			3
Flesh-footed shearwater	1			1
Fluttering shearwater	1			1
Great-winged (Grey-faced) petrel	2			2
Procellaria petrels	10		1	11
Shearwaters	2			2
Storm petrels	2			2
Westland petrel	2			2
White-capped albatross		2		2
White-faced storm petrel	4			4
Birds Total	28	4	1	33
Marine Mammals				
Common dolphin		4		4
New Zealand fur seal	1			1
Marine Mammals Total	1	4		5
Marine Reptiles				
Green turtle	1			1
Leatherback turtle		1		1
Marine Reptiles Total	1	1		2
Other				
Unidentifiable			1	1
Other total			1	1
Grand Total	30	9	2	41

Table 14a, b and c detail the broad method of interaction for each species. Net capture was the most prevalent form of interaction, but resulted in the live release of the animal involved in 65% of the interactions. Over 87% of the seabird interactions resulted in the live release of the animals. One animal was recorded as 'unidentifiable'; feathers and bones were discovered in the splicing of the warp wire, but no samples were taken due to safety issues. Although the unidentifiable animal was recorded with unknown fate, it is likely, due to the feathers and bones seen, that the animal did not survive.

Table 14. Method of interaction for a) protected species released alive, b) dead protected species and c) protected species with unknown fate observed in the inshore trawl fisheries during the 2015/16 observer year.

a) Protected species released alive

Species Name	Caught in net	Impact against vessel	Other	Total
Birds				
Buller's shearwater			1	1
Common diving petrel		1	2	3
Flesh-footed shearwater	1			1
Fluttering shearwater			1	1
Great-winged (Grey-faced) petrel		2		2
Procellaria petrels	10			10
Shearwaters	2			2
Storm petrels			2	2
Westland petrel			2	2
White-faced storm petrel		3	1	4
Birds Total	13	6	9	28
Marine Mammals				
New Zealand fur seal	1			1
Marine Mammals Total	1			1
Marine Reptiles				
Green turtle	1			1
Marine Reptiles Total	1			1
Grand Total	15	6	9	30

b) Dead protected species

Species Name	Caught in net	Caught on warp or door	Total
Birds			
Black (Parkinson's) petrel	2		2
White-capped albatross		2	2
Birds Total	2	2	4
Marine Mammals			
Common dolphin	4		4
Marine Mammals Total	4		4
Marine Reptiles			
Leatherback turtle	1		1
Marine Reptiles Total	1		1
Grand Total	7	2	9

c) Protected species with unknown fate

Species Name	Caught in net	Caught on warp door	Total
Birds			
Procellaria petrels	1		1
Birds Total	1		1
Other			
Unidentifiable		1	1
Other Total		1	1
Grand Total	1	1	2

Inshore Setnet

Setnet fisheries have received low levels of observer coverage due to the difficulty of placing observers on board these generally very small vessels however in recent years increased monitoring has occurred in some areas; driven by Threat Management Plans for Hector's and Māui dolphins. Captures of a number of protected species have been reported in the past, including Hector's dolphins, yellow-eyed penguins, shags, sooty shearwaters and Westland petrels. Setnet is one of the few fisheries, like inshore trawl by vessels under 28m, which does not have any regulated mitigation device requirements. As with inshore trawl spatial closures have been put in place to reduce the risk of interaction with Hector's and Maui's dolphins.

Table 15 reports the number of interactions by species and fate immediately post interaction. Over half of the interactions resulted in the live release of the animals involved. Unlike the previous fishing year (14/15) no New Zealand sea lion or New Zealand fur seal interactions were recorded.

Table 15. Protected species interactions in the inshore setnet fishery during the 2015/16 observer year.

Species Name	Alive	Dead	Total
Birds			
Cape petrels		1	1
Flesh-footed shearwater		1	1
Northern giant petrel		1	1
Salvin's albatross	1		1
Southern giant petrel		1	1
Stewart Island shag		1	1
White-capped albatross	2		2
White-chinned petrel	7		7
Yellow-eyed penguin		2	2
Birds Total	10	7	17
Marine Mammals			
Dusky dolphin		1	1
Marine Mammals Total		1	1
Protected Fish			
White pointer shark		1	1
Protected Fish Total		1	1
Grand Total	10	9	19

Tables 16a and b detail the broad method of interaction for each species. Impact against vessel was the most common form of interaction, and exclusively resulted in the live release of the animals involved. Of the interactions that resulted in mortality, 89% were net captures. One interaction was recorded as 'other'; white-capped albatross that landed on deck.

Table 16. Method of interactions for a) protected species released alive and b) dead protected species observed in the setnet fishery during the 2015/16 observer year.

a) Protected species released alive

Species Name	Impact against vessel	Other	Total
Birds			
Salvin's albatross	1		1
White-capped albatross	1	1	2
White-chinned petrel	7		7
Birds Total	9	1	10
Grand Total			

b) Dead protected species

Species Name	Caught in net	Tangled in line	Total
Birds			
Cape petrels	1		1
Flesh-footed shearwater	1		1
Northern giant petrel		1	1
Southern giant petrel	1		1
Stewart Island shag	1		1
Yellow-eyed penguin	2		2
Birds Total	6	1	7
Marine Mammals			
Dusky dolphin	1		1
Marine Mammals Total	1		1
Protected Fish			
White pointer shark	1		1
Protected Fish Total	1		1
Grand Total	8	1	9

Surface Longline Fisheries

Domestic Tuna and Swordfish

The domestic tuna and swordfish fishery (targeting bigeye, southern bluefin and swordfish) has historically had low observer coverage. This is primarily due to inherent difficulties in placing observers on these small vessels, which generally work irregular patterns. Consequently, data on this fleet's interactions with protected species are poor. Southern bluefin tuna, bigeye tuna and swordfish were introduced into the quota system at the start of the 2004/05 fishing year. After a large capture event in November 2006, regulations were put in place requiring departure notices and seabird mitigation use (deployment of a streamer line and either line weighting or night setting). CSP has also distributed turtle dehookers to aid in the quick and efficient release of not only turtles but also fur seals and a number of shark species.

Table 17 reports the number of interactions by species and fate immediately post interaction. Number of interactions went up to 160 from being only 18 in the previous fishing year (14/15). The most commonly caught species were white-capped albatross and Buller's albatross. Over 65% of the total interactions resulted in mortalities, including the six marine reptiles caught.

Table 17. Protected species interactions in the domestic tuna and swordfish fishery during the 2015/16 observer year.

Species Name	Alive	Dead	Decomposing	Total
Birds				
Albatrosses (Unidentified)	1			1
Antipodean albatross		1		1
Black (Parkinson's) petrel		7		7
Black-browed albatross (Unidentified)		2		2
Buller's albatross	1	22		23
Buller's and Pacific albatross		24	5	29
Common diving petrel	3			3
Great-winged (Grey-faced) petrel	1			1
Grey petrel	2			2
Prions (Unidentified)	2			2
Southern black-browed albatross		3		3
Southern royal albatross	1	1		2
Storm petrels	1			1
Wandering albatross (Unidentified)	2	5	1	8
Westland petrel	2	8		10
White-capped albatross	4	30	4	38
Birds Total	20	103	10	133
Marine Mammals				
Bottlenose dolphin	2			2
New Zealand fur seal	17	2		19
Marine Mammals Total	19	2		21
Marine Reptiles				
Leatherback turtle	4			4
Marine turtles	2			2
Marine Reptiles Total	6			6
Grand Total	45	105	10	160

Table 18a, b and c detail the broad method of interaction for each species. Hook capture was the most prevalent form of interaction, with 69% resulting in mortalities. Ten seabirds were recorded as decomposing and the observers had made remarks stating that they were half eaten or water logged.

Table 18. Method of interaction for a) protected species released alive, b) dead protected species and c) decomposing protected species observed in the domestic tuna and swordfish fishery during the 2015/16 observer year.

a) Protected species released alive				
Species Name	Caught on hook	Impact against vessel	Tangled in line	Total
Birds				
Albatrosses (Unidentified)	1			1
Buller's albatross	1			1
Common diving petrel		3		3
Great-winged (Grey-faced) petrel		1		1
Grey petrel		2		2
Prions (Unidentified)		2		2
Southern royal albatross	1			1
Storm petrels		1		1
Wandering albatross (Unidentified)	1		1	2
Westland petrel	2			2
White-capped albatross	4			4
Birds Total	10	9	1	20
Marine Mammals				
Bottlenose dolphin	1		1	2
New Zealand fur seal	17			17
Marine Mammals Total	18		1	19
Marine Reptiles				
Leatherback turtle	4			4
Marine turtles	2			2
Marine Reptiles Total	6			6
Grand Total	34	9	2	45

b) Dead protected species

Species Name	Caught on hook	Tangled in line	Unknown	Total
Birds				
Antipodean albatross	1			1
Black (Parkinson's) petrel	6		1	7
Black-browed albatross (Unidentified)	2			2
Buller's albatross	22			22
Buller's and Pacific albatross	23	1		24
Southern black-browed albatross	3			3
Southern royal albatross	1			1
Wandering albatross (Unidentified)	5			5
Westland petrel	8			8
White-capped albatross	29	1		30
Birds Total	100	2	1	103
Marine Mammals				
New Zealand fur seal	2			2
Marine Mammals Total	2			2
Grand Total	102	2	1	105

c) Decomposing protected species

Species Name	Caught on hook	Total
Birds		
Buller's and Pacific albatross	5	5
Wandering albatross (Unidentified)	1	1
White-capped albatross	4	4
Birds Total	10	10
Grand Total	10	10

Bottom Longline Fishery

Offshore bottom longline

The offshore bottom longline fishery is observed to monitor seabird and marine mammal interactions. A relatively small fleet conducts a large amount of fishing effort in terms of hook set, mainly in the areas of SOE, SUB and CEE. Regulations on this fishery require the use of tori lines and either night-setting or line weighting. Other industry applied mitigation techniques include gas cannons and offal and bait discard management.

Table 19 reports the numbers of interactions by species and fate immediately post interaction. There were 95 seabird interactions recorded this year, in comparison to 13 in the previous year (14/15). White-chinned petrels accounted for 83% of the interactions observed.

Table 19. Protected species interactions in the offshore bottom longline fishery during the 2015/16 observer year.

Species Name	Alive	Dead	Total
Birds			
Buller's albatross	1	1	2
Grey petrel		3	3
Petrel (Unidentified)		1	1
Procellaria petrels		2	2
Royal albatrosses	1		1
Salvin's albatross		6	6
Seabird (unspecified)	1		1
White-chinned petrel	3	76	79
Birds Total	6	89	95
Grand Total	6	89	95

Table 20 details the broad method of interaction for each species. Hook capture was the most prevalent form of interaction and exclusively resulted in mortalities. Eighty-four of the seabirds caught, including seventy-four white-chinned petrels were caught on one vessel during two trips.

Table 20. Method of interaction for a) protected species released alive and b) dead protected species

a) Protected species released alive

Species Name	Impact against vessel	Other	Total
Birds			
Buller's albatross		1	1
Royal albatrosses		1	1
Seabird (unspecified)	1		1
White-chinned petrel	3		3
Birds Total	4	2	6
Grand Total	4	2	6

b) Dead protected species

Species Name	Caught on hook	Total
Birds		
Buller's albatross	1	1
Grey petrel	3	3
Petrel (Unidentified)	1	1
Procellaria petrels	2	2
Salvin's albatross	6	6
White-chinned petrel	76	76
Birds Total	89	89
Grand Total	89	89

Inshore bottom longline – Ling, Bluenose, Hāpuku, and Bass

As with other inshore fishing methods, observer coverage in the inshore bottom longline fishery has been generally limited. In the past coverage has been focused at certain time periods in selected ports or regions. Mitigation techniques used and tested (to varying extents) in this fishery include; weighting regimes, night setting, use of tori lines and use of fish oil to deter birds. In April 2008, regulations on mitigation were introduced for all bottom longline vessels, covering night setting or line weighting, tori line, and offal/discard management.

Bottom longline vessels targeting the species assemblage of ling, bluenose, hāpuku and bass tend to fish over wide areas with fishing occurring in all FMAs and ranging from 'inshore' to the Chatham rise. These fishing grounds overlap with a number of protected species' ranges, including a number of petrel and albatross.

Table 23 reports the number of interactions by species and fate immediately post interaction. There was a over 50% decline in interactions from the previous year (14/15), with only nine interactions recorded this fishing year.

Table 21. Protected species interactions in the inshore bottom longline fisheries during the 2015/16 observer year.

Species Name	Alive	Dead	Total
Birds			
Flesh-footed shearwater	2	5	7
Northern giant petrel	1		1
Westland petrel	1		1
Birds Total	4	5	9
Grand Total	4	5	9

Table 22a and b detail the method of interaction for each species. Hook captures and line entanglement were the only forms of interactions recorded.

Table 22. Method of interaction for a) protected species released alive and b) dead protected species observed in the inshore bottom longline fisherie during the 2015/16 observer year.

a) Protected species released alive

Species Name	Caught on hook	Tangled in line	Total
Birds			
Flesh-footed shearwater	2		2
Northern giant petrel	1		1
Westland petrel		1	1
Birds Total	3	1	4
Grand Total	3	1	4

b) Dead protected species

Species Name	Caught on hook	Total
Birds		
Flesh-footed shearwater	5	5
Birds Total	5	5
Grand Total	5	5

Bottom longline – Snapper

For the past years, observer coverage has been irregular in the snapper fishery and in the 2014/15 observer year there was no coverage at all.

Table 23 reports the numbers of interactions by species and fate immediately post interaction. Only seven interactions were recorded this fishing year, all of them being flesh-footed shearwaters.

Table 23. Protected species interactions in the snapper bottom longline fishery during the 2015/16 observer year.

Species Name	Alive	Dead	Total
Birds			
Flesh-footed shearwater	3	4	7
Birds Total	3	4	7
Grand Total	3	4	7

Tables 24a and b) detail the broad method of interactions. Hook capture and line entanglement were the only interaction methods recorded.

Table 24. Method of interaction for a) protected species released alive and b) dead protected species observed in the snapper bottom longline fishery during the 2015/16 observer year.

a) Protected species released alive

Species Name	Caught on hook	Total
Birds		
Flesh-footed shearwater	3	3
Birds Total	3	3
Grand Total	3	3

b) Dead protected species

Species Name	Caught on hook	Tangled in line	Total
Birds			
Flesh-footed shearwater	3	1	4
Birds Total	3	1	4
Grand Total	3	1	4

Purse Seine Fisheries

Skipjack Tuna

In July 2011, the spinetail devil ray (*Mobula japanica*) and manta ray (*Manta birostris*) became fully protected under Schedule 7A of the Wildlife Act (1953). Since these two species of rays are caught in purse seine fisheries for tuna in New Zealand and worldwide, CSP observer coverage of the purse seine fishery began in the 2011/12 observer year. This season marks the fifth year of reported coverage of the purse seine fishery.

Table 25 reports the numbers of interactions by species and fate immediately post interaction. Only seven interactions were recorded this year, all of them being spine-tailed devil ray. This is a decline of 71% from the previous observer year (14/15), where 24 spine-tailed devil ray interactions were observed.

Table 25. Protected species interactions in the purse seine fishery during the 2015/16 observer year.

Species Name	Alive	Dead	Total
Protected Fish			
Spine-tailed devil ray	6	1	7
Protected Fish Total	6	1	7
Grand Total			

Table 26a and b detail the method of interaction recorded. The only interaction method recorded was net capture, with only one of them resulting in the mortality of the spine-tailed devil ray.

Table 26. Method of interaction for a) protected species released alive and b) dead protected species observed in the skipjack tuna purse seine fishery during the 2015/16 observer year.

a) Protected species released alive

Species Name	Caught in net	Total
Protected Fish		
Spine-tailed devil ray	6	6
Protected Fish Total	6	6
Grand Total		

b) Dead protected species

Species Name	Caught in net	Total
Protected Fish		
Spine-tailed devil ray	1	1
Protected Fish Total	1	1
Grand Total		