

DEEPWATER TRAWL

MARINE MAMMALS

OPERATIONAL PROCEDURES

VERSION 9.0

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PART 1: INTRODUCTION

The following Marine Mammal Operational Procedures (MMOPs) stipulate the requirements for mitigating incidental captures of marine mammals as agreed by Deepwater Group Ltd (DWG) shareholders and administered by DWG.

***Disclaimer:** These OPs do not replace or override any fisheries legislation or other regulations including Health & Safety and Maritime Safety. Vessel operators should ensure that officers and crew understand all regulations that are in place for the fisheries, areas and environment that they are operating in.*

Objectives of these procedures

The objectives of these MMOPs are to:

- Reduce the risk of incidental captures of marine mammals during deepwater trawling operations in New Zealand's Exclusive Economic Zone (EEZ)
- Ensure the safe and careful handling of marine mammals
- Enable the proper collection of data and reporting of marine mammal captures

These MMOPs apply to all trawlers over 28 m in length fishing within the EEZ and relate to all marine mammals but with a specific focus on New Zealand sea lions, New Zealand fur seals and common dolphins (note sea lion and fur seal are referred to as "New Zealand sea lion" and "New Zealand fur seal" within this document).

These MMOPs provide information on:

- Risks and areas of risk
- Mitigation measures you should take to minimise these risks and avoid captures
- Procedures you should follow if a marine mammal is captured
- Crew health and safety and animal welfare when handling marine mammals
- Identification guide for key marine mammal species.

Legislative framework

Key legislation that underpins the management and protection of marine mammals in New Zealand includes:

- **Marine Mammals Protection Act 1978:** the accidental capture of any marine mammal is permitted provided that the capture is reported to the appropriate authority without delay. It is an offence to accidentally capture a marine mammal and to not report it.
- **Fisheries Act 1996:** requires that measures are taken to avoid, remedy or mitigate any adverse effects of fishing related mortality on any protected species. This Act also includes requirements to report captures of protected species.
- Other relevant statutes include the **Wildlife Act 1953** and **Animal Welfare Act 1999**

PART 2: RISK

Deepwater trawl fisheries overlap with, and at times interact and capture, marine mammals including pinnipeds (e.g. fur seals and sea lions) and cetaceans (e.g. common or other dolphins).

Due to their low numbers, sub-population decline and other risk factors; New Zealand sea lions have a specific Threat Management Plan (www.doc.govt.nz/nature/native-animals/marine-mammals/seals/new-zealand-sea-lion/new-zealand-sea-lion-rapoka-threat-management-plan/). Other marine mammals are assessed via Fisheries New Zealand Risk Assessment processes.

Risk to marine mammals is caused by various factors dependent on the fishery and marine mammal involved. New Zealand fur seals are attracted to fish in the net and most interactions occur near breeding rookeries where fur seals are numerous such as near the Bounty Islands. This can also be the case where fisheries overlap with sea lion breeding or foraging grounds such as near the Auckland Islands or Campbell Plateau. Common dolphins target fish in the same area and time as trawlers and may also feed on use trawl herded fish.

Once animals are attracted to, or are in the vicinity of, the gear then how the net is operated can add to risk. Marine mammals can access the net more easily when it is on or near the surface or can be caught when gear geometry changes (e.g. when turning closes net mouth).

Table 1: Main marine mammal species at risk from deepwater fisheries

SPECIES	RISK AREA/PERIOD
New Zealand sea lion	<ul style="list-style-type: none">Auckland Islands shelf and Campbell Island to 100 nm offshore; probably year round but notably squid and southern blue whiting seasons
New Zealand fur seal	<ul style="list-style-type: none">Hoki seasonal fisheries on WCSI and Cook Strait, Bounty Islands shelf and western Chatham Rise; less prevalent but still observed caught in Campbell and Auckland Islands areasYear-round but risk driven by seasonal fisheries
Common dolphin	<ul style="list-style-type: none">Greatest risk WCSI and WCNI north of 42 30S shallow (60-200 m) or surface watersSpring and summer periods greatest risk due to seasonal fisheries
Other dolphin species (e.g. dusky)	<ul style="list-style-type: none">Occasionally caught FMA 3
Toothed whales (e.g. pilot whale)	<ul style="list-style-type: none">Occasionally caught FMA 7 and 8 (WCNI)
Other pinnipeds (e.g. leopard seal)	<ul style="list-style-type: none">Rarely caught, usually in sub-Antarctic

PART 3: MANAGING RISK

The following outlines the mitigation measures for reducing the risk of incidental captures.

Responsibilities of vessel owner, operator or manager

All vessel owners, operators and managers must:

- Ensure key crew are briefed on these MMOPs and the relevant regulations and fully understand the actions required
- Ensure the current OPs are on board and easily accessible
- Brief vessel on particular Fisheries New Zealand Operational Plans (e.g. SQU 6T and SBW 6I) or other requirements (e.g. JMA)
- Advise DWG of need for any review, refresher or briefing of new captains or managers
- Ensure handover to new or relief managers or captains includes refresher on DWG OPs
- Have oversight of protected species capture reports
- Respond to Observer audit reports via DWG
- Promptly pass on trigger reports to DWG

Responsibilities of captain and crew

This vessel's captain and crew must:

- Have full knowledge of the requirements of the DWG Operational Procedures and ensure that all relevant documents (including other risk plans and Fisheries New Zealand Operational Plans) are on board and accessible
- Undertake to adhere to the requirements of these OPs, noting specific needs for different fisheries
- Respond to emerging events based on the principles and actions set out in these OPs
- Manage fishing, fish waste and mitigation devices in adherence with these OPs
- Report correctly and always advise trigger events promptly to DWG
- Seek support from shore management or DWG when needed
- Captain, senior crew and vessel manager maintain and participate with the DWG environmental risk management information and training programmes as required.

Risk mitigation measures

Marine mammals are most at risk when trawls are on or near (within 50 m) of the surface. Food in the net is the key attractant especially for fur seals. Any action taken to reduce the time the net is on the surface effectively reduces this risk. All vessels must adopt the following practices to minimise accidental catches of marine mammals, noting that many of these also reduce seabird risks.

Shooting and hauling

- Remove all 'stickers' (i.e. meshed fish) before shooting the trawl
- Complete shooting and trawling as quickly as possible
- If large numbers (>5) of fur seals or sea lions congregate around the vessel when the gear is hauled, the vessel should steam away from them before setting the gear again
- Always endeavour to mend the trawl with the whole net on deck. If this is not possible, avoid mending when hauling or haul the net mouth aboard
- Deck crew should be alert during every shot or haul and determine if marine mammals have been captured and organise timely humane assistance to release captured animals alive.

Turns while towing

- Avoid turns if possible especially full turns back onto previous towpath
- If undertaking full turns either haul gear (doors to surface or transom) to close net or keep headline of net as deep as possible (e.g. deeper than 50 m and preferably 100 m)
- In the SBW fishery, because sea lions can dive to 500 m, gear should be kept at fishing depth. Doors up turns in this fishery must be avoided.

Gear failures

Gear failures, particularly when shooting or hauling, create high-risk situations for marine mammals.

Reports show that multiple marine mammal captures occur more often when failures leave gear on the surface of the water with the net mouth open for extended periods.

In the event of a gear failure, which may delay the full shooting or hauling of the gear, either of the following should occur:

- Keep the gear deep in the water even if this means re-shooting the gear. If the gear is to remain in the water the gear headline height should be at least below 50 m and preferably below 100 m, or
- Bring the gear on board – or, at least, the ground rope and headline to ensure the net mouth is closed.

Rationale

Marine mammals appear most at risk when trawls are on or near (i.e. within 50 m) the surface especially for extended periods.

Fish waste and rubbish disposal

The management of offal and fish waste disposal is comprehensively addressed in your seabird Vessel Management Plan (VMP).

However, the following information also supports the reduction in risk to marine mammals:

- Fur seals and sea lions are attracted to fish and offal discharged from fishing vessels
- This discharge is likely to keep marine mammals near a vessel which increases the risk of accidental capture

- Fish waste must be mealed where possible. If fish waste discharging is unavoidable, ensure a fish waste holding facility is available so that offal is not discharged while shooting or hauling the net (see your vessel's VMP for further information).

Maritime Regulations prohibit the dumping of any plastic waste and netting at sea. Marine mammals may become entangled in such rubbish. Marine mammals and seabirds are known to ingest such waste.

Measures to reduce sea lion interactions in the SQU 6T and SBW 6I fisheries

Incidental captures of sea lions occur mostly in the SQU 6T (Auckland Islands) and SBW 6I (Campbell Island) fisheries.

DWG and Fisheries New Zealand require the use of Sea Lion Exclusion Devices (SLEDs) in these fisheries.

Details on the requirements for both of these fisheries is documented in the SBW and SQU sections of this OP folder.

Summary of SLED requirements:

- SLED built to specification of Fisheries New Zealand Operational Plan
- Any SLED to be deployed must be checked and certified prior to use
- Vessels must carry at least two SLEDs
- SLEDs must be used in all tows in SQU 6T and SBW 6I fisheries
- Damaged and repaired or transferred SLEDs must be notified to DWG as soon as possible

Measures to reduce common dolphin interactions in the jack mackerel fishery

Risk

Incidental captures of common dolphins occur mostly in the jack mackerel (JMA) fishery in the Challenger, Central and Auckland West fisheries management areas (FMAs 7, 8 & 9).

Common dolphins feed on mackerel so there will be times when fishing grounds and dolphin feeding activity overlap. Common dolphins feed in groups, which can increase the risk of multiple capture events.

Current information shows that the risks of dolphin capture increases:

- During the early hours of the morning (e.g. 0200-0500 hrs)
- When the headline is within 30 m of the surface
- North of latitude 38°S (and with low risk south of 40° 30'S).

Measures to reduce risk

Operational measures to reduce dolphin capture risk in the JMA fishery includes:

- When visibility permits, the officer on watch will view the immediate area around the vessel for dolphin activity before shooting the fishing gear. If dolphin sightings are confirmed, the vessel will move from that immediate area
- Before re-setting the gear, the officer on watch must confirm that the new area is also visibly clear of dolphins
- When a vessel moves for this reason it should be recorded in the ship's log
- If vessel turns are made during trawling, the doors must be hauled to (or above) the surface of the water so the trawl wing ends are closed before undertaking the turn
- Shooting and hauling of fishing gear must be completed as quickly as possible. Turns at speed should be avoided when about to haul or during hauling
- Vessels will not shoot the net between the hours of 0230 hrs and 0430 hrs (although the net may be hauled to cease the tow and fishing in that period). *Note: this procedure does not apply south of latitude 40° 30' S*
- Dolphin Dissuasive Devices (DDD) shall be deployed on every JMA 7 tow with two placed on headline
- Vessels will manage DDDs according to instructions in Appendix 4.

Reporting

Deck crew members must be alert at each haul to determine if dolphins have been captured and to organise immediate and careful assistance to release any live animals brought on deck.

Reporting each capture

When a dolphin is captured, the officer on watch will immediately contact any other vessel fishing for JMA within the general vicinity (i.e. VHF range – approx. 20 nm and using the radar to indicate how many vessels to contact) notifying that a dolphin capture event has occurred and of the vessel's hauling position. This will alert other vessel captains that dolphins are in the immediate area.

DWG trigger action

Vessels must immediately report every incidental dolphin capture event to their vessel manager or directly to DWG. Vessel managers must notify DWG as soon as possible.

Use the dolphin ID information (Appendix 1) to ensure accurate species identification.

When a multiple dolphin capture event occurs, the vessel will immediately contact their vessel manager for advice. Individual vessel or fleet decisions may be made to move from the immediate fishing area depending on the numbers of dolphins captured and the risk of further captures.

PART 4: ANIMAL HANDLING / RELEASE AND CREW SAFETY

The following outlines what to do if a marine mammal capture occurs

Animal welfare

- All practical care should be taken to release animals alive while maintaining the safety of the crew
- Handle all captures with care to minimise harm to the animal and to increase their survivability
- Deliberately harassing or harming the captured animal is an offence
- Taking any part and keeping it or cutting or mutilating the body of a protected species is an offence.

Health and safety issues

The following is a guide to the health and safety requirements for incidental captures.

Handling marine mammals (dead or alive)

Crew safety is paramount. Seals and sea lions can carry infectious diseases that can infect humans. Marine mammals can be dangerous to humans particularly when they are in stressful situations. Handling marine mammals should always be kept to a minimum and should only occur when needed.

When attending to animals landed on deck the following steps should be followed to ensure crew safety:

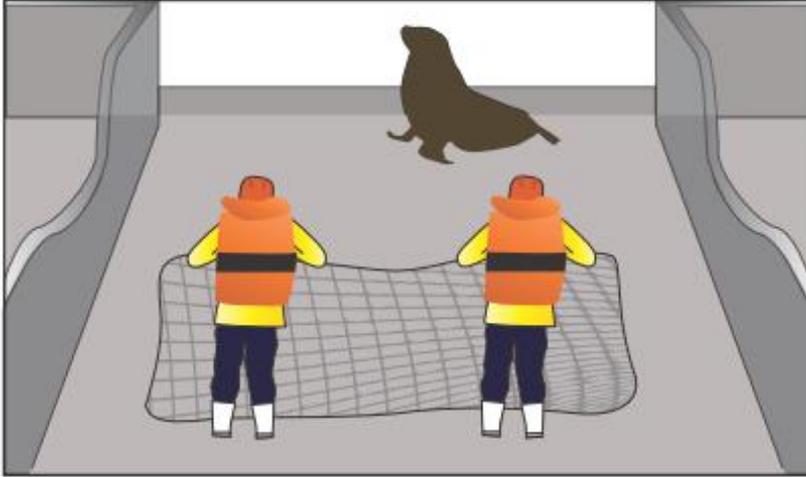
- Whenever handling bodies of drowned sea lions, fur seals, or any other marine mammals, wear waterproof gloves and waterproof protective clothing
- Where possible, avoid direct contact with blood, urine, faeces and other body fluids. It is important to avoid the mouth of the marine mammal as this is a major source of disease. Take special care when marking a dead animal
- If bitten or grazed by a marine mammal, wash and disinfect the wound immediately, apply betadine/antiseptic ointment and cover the wound. This minimises the risk of 'seal finger', a chronic and very painful infection caused by bacteria carried by some marine mammals.
- After handling any marine mammal, crew should wash their hands and forearms with antibacterial soap and their protective clothing by hosing it down.

Humane removal of live fur seals & sea lions from fishing vessels

The following outlines how to humanely remove live fur seals or sea lions from fishing vessels. Crew safety is paramount.

Using netting

You can use netting as a moving barrier to herd an animal or sea lion along the deck.



Using fire and deck hoses or plywood sheets

You can use high pressure hoses or sheets of plywood to move animals without causing injury.



Returning live marine mammals to sea

Every care should be taken to reduce stress and ensure no injury to the animal when it is being returned to the sea alive. If possible give animals time and space to leave the vessel. Do not take actions that will antagonise the animal and do not allow crew to be in its path or escape route. Watch carefully for signs of aggression in the animal.

Marking of dead fur seals and sea lions returned to sea

Any dead fur seal or sea lion returned to the sea must be marked with twine, cable tie or similar. The purpose of marking is to avoid the same animal being counted twice should the body be caught again.



When marking a dead animal ensure:

- You have made the correct identification between fur seal and sea lion. Use the ID guide in Appendix 1 to help identify marine mammals
- Either a cable tie or twine is fixed firmly behind either the lower or upper jaw canine teeth.
- That no deliberate physical damage (e.g. cutting, mutilation or removal of parts) occurs as this is illegal.

Photo ID of fur seals and sea lions returned to sea

Always take two clear photos of every dead animal (New Zealand fur seal and New Zealand sea lion) and email to admin@deepwatergroup.org, **especially when in SQU 6T or SBW 6I.**

- Take one photo of the whole animal and one clear close-up of its head (side profile so we can see whiskers and ears)
- Do not include crew or vessel ID in photos.

Retaining dead marine mammals onboard

Conditions of retention

Whole dead marine mammal bodies may, on rare occasions, need to be retained onboard a vessel at the request of a Fisheries New Zealand Observer. The Fisheries New Zealand Observer will have hygienic body bags available for the storage of these mammals.

Food safety issues

The Ministry for Primary Industries Verification Authority has approved the conditions for body bag storage in the vessel's fish hold.

Handling and storage procedures

If animals are required to be retained on board, these handling instructions must be followed:

- Record any tag or branding information on the animal
- Marine mammals should be placed in a body bag and then in the freezer hold as quickly as possible
- Ensure the body bag has no tears or leaks
- Handle the animals with care to minimise post-capture damage
- Move animals in bags carefully, avoid tearing bags on sharp corners
- Lift do not drag over the deck and do not drop the bags down stairs or into the freezer hold.

PART 5: REPORTING

Reporting and record keeping obligations

DWG trigger points

Report trigger points immediately to the DWG Liaison Officer and management at admin@deepwatergroup.org

Table 2: Trigger points and actions

SPECIES	CAPTURES PER 24 HR	CAPTURES PER 7 DAYS	TRIGGER ACTION
Sea Lion	1	n/a	<ul style="list-style-type: none">• Advise your vessel manager• Check any failures relevant to MMOP risk actions• Two ID photos taken• Complete the sea lion capture form (Appendix 2)• Check SLED where relevant• Promptly report capture to DWG either directly or via shore management

SPECIES	CAPTURES PER 24 HR	CAPTURES PER 7 DAYS	TRIGGER ACTION
Fur Seal	2	5	<ul style="list-style-type: none"> • Advise your vessel manager • Check any failures relevant to MMOP risk actions • Promptly report capture to DWG either directly or via shore management • If in vicinity of sea lion foraging grounds (e.g. Campbell or Auckland Islands), send two ID photos to DWG
Dolphin	1	n/a	<ul style="list-style-type: none"> • Advise your vessel manager • Contact and advise any other fishing vessels in vicinity (VHF) • Check any failures relevant to MMOP risk actions • Promptly report capture to DWG either directly or via shore management

Fisheries New Zealand mandatory reporting

It is not illegal to accidentally capture a marine mammal, but **it is illegal to fail to report the capture**. Report all captures as legally required via the Fisheries New Zealand Electronic Reporting system.

DWG reporting

- If there is any doubt regarding the identification of a pinniped (e.g. fur seal, leopard seal, sea lion) take a clear photograph of the animal's head and of the whole body (the fur seal images in Appendix 1 are examples of correct photos required)
- Send these to DWG (admin@deepwatergroup.org) as soon as possible
- ID photos are always required when fishing in SQU 6T and SBW 6I
- Include the species name if known. All care should be taken to correctly identify the species or use a generic code if uncertain. Appendix 1 is a guide to help identify marine mammals and correct codes
- If a trigger level event occurs, then the following should be sent to DWG by email unless a sea lion capture form is used:
 - A brief description of the conditions and circumstances that may have contributed to the capture event
 - A brief description of the condition of the animal when recovered on deck (especially if decomposed or other signs of death having occurred prior to collection or capture by the gear)
 - Any existing tag information (e.g. location, colour, and especially numbers).

Additional reporting requirements for the SQU 6T and SBW 6I fishery

If you fish in SQU 6T or SBW 6I you must also:

- Comply with the reporting requirements detailed in the Fisheries New Zealand Operational Plans for those fisheries
- Photograph all fur seal and sea lion captures and send these to DWG
- Complete the Sea Lion Capture Reporting Form and send to DWG immediately (see Appendix 2).

PART 6: AUDIT AND REVIEW

The following outlines the external review requirements for incidental captures.

VMP and MMOP Fisheries New Zealand Observer review form

During any voyage with a Fisheries New Zealand Observer present, the Observer will review the vessel equipment and performance against the vessel's current VMP and MMOP.

The review form (Appendix 3) is used to document the assessment of vessel and crews' performance and can be used to identify what to expect during the process.

The review form is completed by the Observer at the end of the voyage and submitted to Fisheries New Zealand. A copy is also sent to DWG for review, who forward this to the vessel operator.

Any negative issues or events noted by the Observer against the vessel or crew performance regarding the VMP or MMOP will be followed up and addressed with the vessel operator. Good performance will also be noted.

If in doubt, talk to the Observer about your performance and address any issues immediately. When the report is good, thank your crew.

The aggregated outcomes of these audits, and the number of issues that arise each fishing year, are publicly reported by Fisheries New Zealand in its Annual Review Report (although, individual vessel details remain confidential to the operator, DWG and Fisheries New Zealand).

APPENDIX 1: IDENTIFICATION OF KEY MARINE MAMMAL SPECIES AND CODES

Remember: Take two pictures (close-up of head and whole animal) and send to DWG so a positive identification of the species can be made.

New Zealand fur seal (FUR)



Characteristics

- Sharp pointed nose
- Very long whiskers reaching back to ears
- Dense brown fur
- Ears on side of head
- Length of males = 1.8 m
- Length of females = 1.2 m

Note: Long whiskers in photos contrast with the short whiskers found on New Zealand sea lions (see below).

Female New Zealand sea lion (HSL)



Characteristics

- Light colouring
- Blunt nose
- Short whiskers – don't reach to or past the ears

Note: If tag on flipper, always record any tag numbers on capture report.

Mature male New Zealand sea lion (HSL)



Characteristics

- Very large in size (twice that of fur seal)
- Blunt nose
- Short whiskers
- Dark colouring
- Mane of hair – not fur

Young male New Zealand sea lion (HSL)



Characteristics

- Blunt, square nose
- Short whiskers
- Darker colour than a female sea lion
- No mane like a mature male New Zealand sea lion

Leopard seal (LEO)



Characteristics

- Can be very aggressive
- Large head, massive jaws, long slim body, large fore-flippers
- Long and sleek light grey fur dappled with darker spots
- No external ears

Photo Crown Copyright: Department of Conservation Te Papa Atawhai

Very unlikely to be taken in trawl fisheries but are found in New Zealand waters

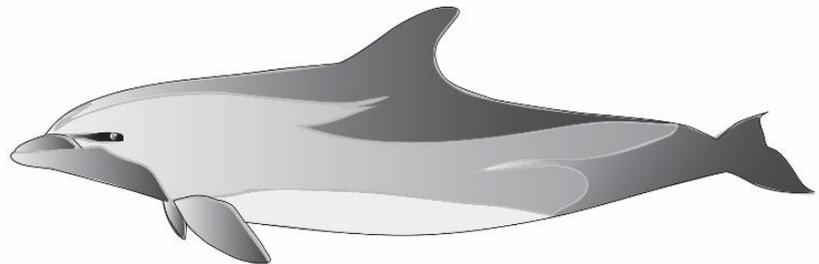
Elephant Seal (EPH)



Photos Crown Copyright: Department of Conservation Te Papa Atawhai

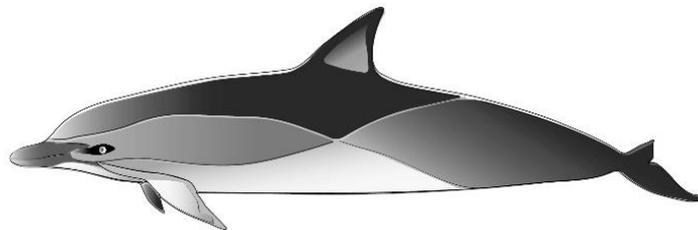
Bottlenose dolphin (BDO)

Length 3.8 m



Common dolphin (CDD)

Length 2.5 m



Dusky dolphin (DDO)

Length 2.0 m



Images by Ros Wells

Table 3: Fisheries New Zealand protected species codes for marine mammals

COMMON NAME	SPECIES CODE
Unidentified seal or sea lion	WHT
New Zealand sea lion	HSL
New Zealand fur seal	FUR
Leopard seal	LEO
Elephant seal	EPH
Unidentified whale or dolphin	WHT
Common dolphin	CDD
Dusky dolphin	DDO
Bottlenose dolphin	BDO
Pilot whale	PIW
Orca	ORC

APPENDIX 2: SEA LION CAPTURE REPORTING FORM

Do **not** photocopy – only use as example

Sea Lion Capture Reporting Form			
Date of capture		Time of capture	
Date trigger reported		Time trigger reported	
Vessel name			
Captain name		Observer (none, FNZ, Company Rep):	
Vessel Fishing Gear & Performance			
Net type – MW or BT		Number of turns during tow	
Shoot & haul position (lat/long)		Door position during turn surface/depth	
Duration of tow (hrs:min)		Any haul problems/delays	
SLED			
SLED ID number		Is SLED damaged	
If damaged – what is damaged			
Sea Lion			
Male or female		Approximate weight	
Dead or alive		Photo x2 (animal & head)	
Warm and/or foaming mouth		Was animal already tagged (record tag number etc)	
Any noticeable marks on animal		Retained or returned to sea	
Decomposed or smelly		Released animal tagged & ID number	
Length of animal (cm)		Position when returned to sea (lat/long)	
Where in net was animal found (e.g. codend/against SLED/in hood etc)			
Additional Comments			
Captains comments:			
Return to the Deepwater Group Ltd by email to admin@deepwatergroup.org			

S:\Operational Procedures\OP Manual 2018-19\Final\Marine Mammals\[Sea Lion Capture Form 011118.xlsx]SEA LION REPORT

APPENDIX 3: VMP AND MMOP FISHERIES NEW ZEALAND OBSERVER REVIEW FORM

Do **not** photocopy – only use as example

Trip Number	Vessel Name	FMAs fished	Trip start date	Trip end date
			/ /	/ /
Target species		Observer name		Tows observed

Record Yes (Y), No (N), Unknown (U) or Not Applicable (N/A) in the box provided. If you answer N or U to any questions, or Y for items 3, 4 or 19, then please make detailed comments on the reverse.

Item 1. Were copies of the DWG vessel specific *Vessel Management Plan (VMP)* and *Marine Mammal Operating Procedures (MMOP)* carried on board and made available upon request?

Item 2. Were the senior crew familiar with and have access to the above documents?

Item 3. Were any seabird, marine mammal or protected shark 'trigger-points' activated during the trip?
(if Y record details of the triggers and the action taken by the vessel)

Item 4. Did a gear or equipment failure event occur that increased the risk of seabird or marine mammal captures?
(if Y detail the event and the action taken by the vessel)

Item 5. Were there any changes in crew behaviour, fishing activity, mitigation devices or gear used following 'trigger-point' events or during high risk periods?

Seabird/Marine Mammal Mitigation Devices

Item 6. Record what mitigation devices were carried by the vessel and when they were utilised

	Carried on board	Deployed all tows	Deployed some tows	Not deployed
Bird Baffle				
Tori line				
SLED				
Other <i>(describe on reverse)</i>				

Item 7. Was an additional seabird mitigation device deployed when required by the VMP?

Item 8. Was a Dolphin Dissuasive Device deployed on every JMA7 night tow (JMA7 only)?

Item 9. Were net restrictors fitted into the centre net of a triple-rig configuration when required? **(SCI only)**
(i.e. once a 'trigger point' was reached)

Fish Waste Management:

Item 10. Was the discharge of fish waste from the vessel managed as per the VMP?

Item 11. Were there any periods of continuous fish waste discharge during the tow *(apart from minced offal)*

Item 12. Was all fish waste (including offal and whole fish) held on board during shooting and hauling?

Item 13. Was the net cleared, as practicable, of all stickers prior to shooting?

Item 14. Was a grating or trap system used to prevent fish or offal accidentally lost to the factory floor or deck from being discharged overboard via scuppers or sump-pumps *(whilst still allowing the free egress of water)*

General Procedures:

Item 15. Were all plastics and netting retained on board?

Item 16. Was shooting fishing gear near congregations of marine mammals avoided?

Item 17. Was the amount of time the net spent on the surface minimised as much as practicable?

Item 18. Were any turns conducted with the doors fully submerged and a headline depth of less than 50 m?

Item 19. Were all seabird, marine mammal or protected shark captures reported by the vessel?

Item 20. Were all seabirds, marine mammals or protected sharks released alive handled with due care?

Item 21. Was gear shot between 02:30 and 04:30 (NZST) when targeting JMA North of 40.30° S? **(JMA7 only)**

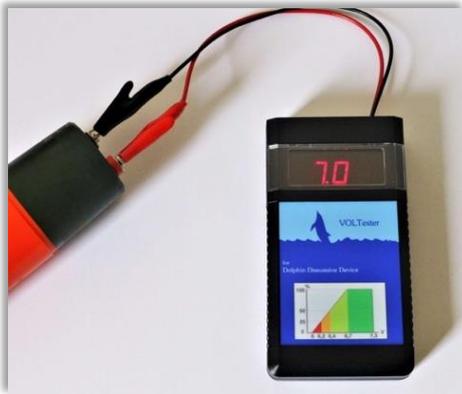
APPENDIX 4: DOLPHIN DISSUASIVE DEVICE (DDD)

General information

The Dolphin Dissuasive Device (DDD) limits the interactions between dolphins and the fishing nets by producing high frequency ultrasound signals that interfere with a dolphin's hearing system. The emission of random modulated signals (in length and width) doesn't allow dolphins to adapt to the signal. The emissions don't cause harm to mammals or fish, and fish are insensitive to the frequencies emitted.

DWG requirements

- The DDD shall be deployed on every JMA 7 tow
- **Deploy two DDD03H units simultaneously on the trawl**, either placed on the bridles (facing backward to the trawl – see Fig 2) or on the headline (facing forward – see Fig 3)
- The DDD model used in the JMA 7 fishery is DDD03H. The vessel **must have a minimum of four working units on board**, as well as a DDD charger and VOLTester
- The DDD03H battery has a limited life of charging cycles. **Replace each unit every four years** or sooner if when fully charged it can't achieve at least 7.0 volts
- It is recommended the vessel has a DDD VOLTester (voltmeter) and that crew check the DDD battery regularly.



VOLTester



DDD03H Model

Deployment and operating procedures (DDD03H)

- The device is directional (i.e. it must face the right way). Face the end with the terminals (painted dark green) forward into the area you wish to deter dolphins from; fit two DDDs an equal distance apart along trawl headline facing forward or to each side bridle between doors and trawl fitted about 50 m before the trawl oriented (green end) towards the mouth of the trawl
- The area covered by the signal is around 300 m in diameter and 80 m deep. **The unit is designed to be used at a maximum depth of 200 m**
- Normal charging duration for the DDD03H is about 15 – 20 hours. When fully charged it will last around 35 – 40 hours.

- Ensure you have the DDD VOLTester on board and that all DDD units are charged up to at least 7.0 volts. If it doesn't charge to 7.0 volt, then the unit is due for replacement. If the battery charge duration reduces significantly, it means the device is near the end of its life. (Battery life is approx. 500 to 700 charging cycles)
- The unit automatically activates when it touches water, producing special ultrasound signals which dolphins dislike. When the unit sensors touch the water it produces a series of sounds:
 - Started normal emission of variable length, modulated beeping sounds: "All OK"
 - Short beeping sounds at 2 second intervals: "Low batteries"
 - No signal/sound means batteries are flat

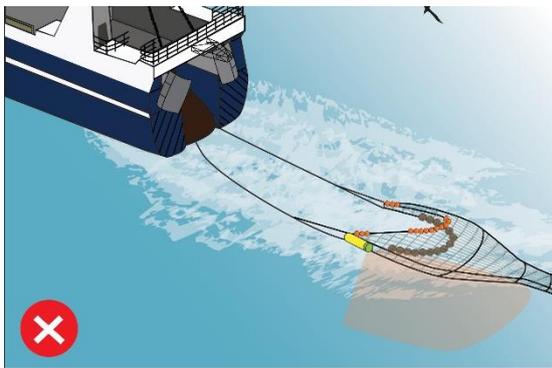


Fig 1: You must have two DDDs deployed, not one.

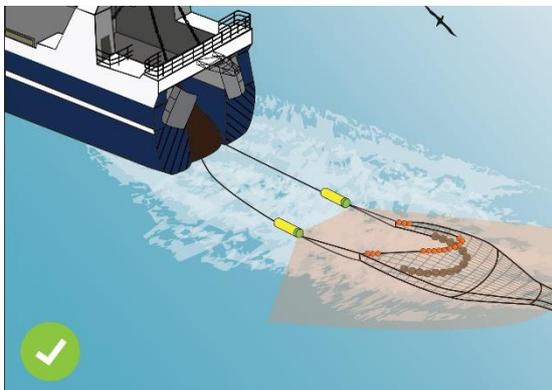


Fig 2: Two DDDs placed on bridle facing backward to the trawl. Orange shading shows direction of signal.

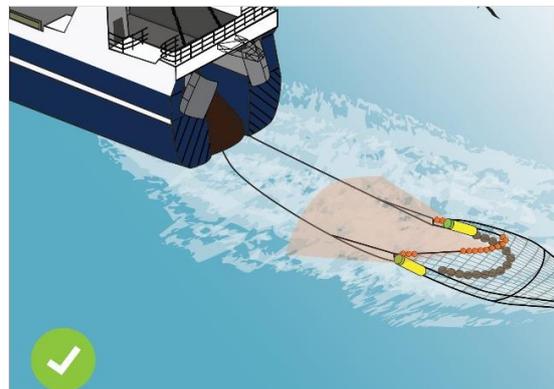


Fig 3: Two DDDs placed on headline facing forward. Orange shading shows direction of signal.

DDD03H supplier information

Manufacturer: STM Products, Italy
info@stm-products.com, www.stm-products.com

New Zealand Supplier: Marintec, Timaru
info@marintec.co.nz, www.marintec.co.nz

APPENDIX 5: TEN COMMANDMENTS



TEN COMMANDMENTS

FOR MARINE MAMMALS

- 1.** Ensure your vessel has the current DWG Marine Mammal OPs onboard and ensure senior crew are briefed and comply.
- 2.** Avoid shooting the gear when there are marine mammals visible in numbers near the vessel.
- 3.** Haul and shoot as quickly as practical and minimise time gear is on the surface for turns, repairs and breakdowns.
- 4.** Ensure all fish waste is always held during shooting and hauling.
- 5.** Remove as practicable all fish stickers from the net before shooting.
- 6.** Complete vessel turns rapidly and keep doors either hauled to or above the surface, so the wing ends are closed or below 50 m before undertaking the turn.
- 7.** Brief your crew on the JMA dolphin interaction measures. When north of 40° 30'S in JMA 7 do not shoot the net between 0230 hrs to 0430 hrs.
- 8.** Every care should be taken to release marine mammals alive. Mark any dead sea lion or fur seal with a cable tie or twine around the jaw before returning it to sea.
- 9.** Immediately report marine mammal triggers to DWG (in SQU and SBW with pictures of the animal) admin@deepwatergroup.org. Assess event and implement further risk reduction measures.
- 10.** As legally required, report all captures via your vessel's Electronic Reporting System.



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For support phone John Cleal (021 305 825) or Richard Wells (021 457 123)