



Australian Government

Australian Fisheries Management Authority



# Handling practices guide

FOR COMMONLY CAUGHT BYCATCH SPECIES



# Contents

<b>What this guide will tell you.....</b>	<b>2</b>
<b>AFMA's six bycatch handling principles.....</b>	<b>3</b>
<b>Crew safety handling bycatch.....</b>	<b>4</b>
Sharks.....	4
Rays.....	5
Seals.....	5
Dolphins.....	5
Turtles.....	6
Sea snakes.....	6
Seabirds.....	6
General finfish bycatch.....	7
<b>Gear specific considerations.....</b>	<b>7</b>
Pelagic longline.....	7
Demersal longline and dropline.....	8
Trawl and seine.....	8
Gillnet.....	8
<b>Best practice handling.....</b>	<b>8</b>
Sharks.....	9
Rays.....	12
Seals.....	14
Dolphins.....	15
Turtles.....	16
Seabirds.....	18
Sea snakes.....	22
<b>Acknowledgements.....</b>	<b>24</b>
<b>References.....</b>	<b>24</b>

# What this guide will tell you

This guide has been designed for fishers to easily access information on the Australian Fisheries Management Authority's (AFMA) preferred methods of bycatch handling and treatment. Fishers are responsible for handling all bycatch species appropriately in order to maximise the chance of their survival. Mishandling bycatch species can significantly reduce their chances of survival and have long term impacts on the sustainability of the species. Proper handling practices also reduce the risk of injury to crew.

This guide provides information on:

- The main bycatch species groups caught in Commonwealth fisheries
- Measures to increase crew safety
- The correct and incorrect handling methods.

# AFMA's six bycatch handling principles

## PRINCIPLE 1

### **Safety of the boat and its crew are paramount**

Mishandling does not include actions taken (or not taken), which are reasonably necessary<sup>1</sup> to ensure the safety of the boat and or its crew.

## PRINCIPLE 2

### **All reasonable steps should be taken**

Operators are expected to take all reasonable steps to ensure that bycatch is returned to the water as quickly as practicable and in a manner which does not reduce its chance of survival.

## PRINCIPLE 3

### **Minor gear recovery is not 'reasonably necessary'**

Actions taken for the sole purpose of recovering minor<sup>2</sup> fishing gear, are not considered 'reasonably necessary'.

## PRINCIPLE 4

### **Expediting removal from gear is not 'reasonably necessary'**

It is not 'reasonably necessary' to injure bycatch when removing it from fishing gear to save time.

## PRINCIPLE 5

### **Harm, injury or death caused during capture is not mishandling**

Mishandling does not include where bycatch is already dead, injured or stressed when it is brought on board<sup>3</sup>.

## PRINCIPLE 6

### **Compliance with approved bycatch management plans**

Handling of bycatch in accordance with AFMA approved bycatch management plan(s) is not mishandling.

For more information, visit the AFMA website at [afma.gov.au](http://afma.gov.au).

1 See principles 3 and 4.

2 'Minor' gear includes items such as hooks, which are unlikely to cause further harm to the bycatch, or marine pollution, if discharged/discarded attached to the bycatch.

3 Unless further deliberate action or inaction results in the death or further injury to the bycatch.

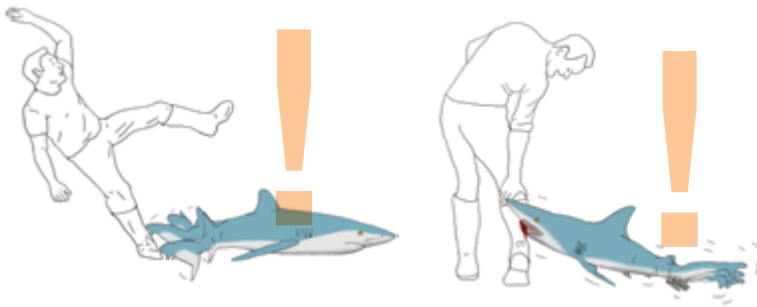
# Crew safety when handling bycatch

**Crew should always put their personal safety first when handling bycatch species.** This means that on occasion a bycatch species may need be left for a period of time until it is safe for crew members to approach. Crew should also ensure that appropriate **personal protective equipment (PPE)** is used to protect against things such as cuts, bites and stings.

The following section outlines specific dangers that may be encountered when handling certain bycatch species.

## Sharks

- Potential injuries from sharks include being struck, tripped or bitten
- Where possible, avoid working around the jaws of sharks
- Put a solid object between a shark's jaws to prevent bites.



## Rays

- Potential injuries include being tripped, stings and cuts, and allergic reaction to protective mucous
- Where possible, avoid working around the tail as rays can strike in any direction.

**Do not carry rays by the tail.**



## Seals

- Seals are fast on slippery surfaces. When cornered they may attack and can bite
- Seal bites can cause severe lacerations and infection.



## Dolphins

- Potential injuries include being struck, tripped or bitten by dolphins.

**Do not sit on/straddle a dolphin behind the dorsal fin**

as it has a strong tail and may kick.



## Turtles

- Make sure your hands are not where the flippers can crush them against the shell
- Turtles have strong jaws, so keep all fingers hands and toes away from the turtle's mouth to avoid being bitten.



## Sea snakes

- Sea snakes are **highly venomous** and can inflict lethal bites to humans, contrary to what many people believe
- When a sea snake is brought on board, alert other crew members immediately
- Be extremely careful, as snakes that seem docile can become highly agitated when handled
- It is recommended that crew use appropriate handling equipment as described in this guide.

## Seabirds

- Immobilise the beak and feet with a firm hold to avoid bites and cuts
- Hold birds at waist-height, well away from your face

### If the bird has a band around its leg:

- Either phone or email Australian Bird and Bat Banding Scheme (ABBBS) at the Department of Environment and Energy:
  - ~ Telephone: (02) 6274 2407
  - ~ Email: [abbbs@environment.gov.au](mailto:abbbs@environment.gov.au)
- You will need to give the following information:
  - ~ The band number



- ~ Where you found the band
- ~ When you found the band (date)
- ~ What you think happened to the bird
- ~ Where the bird is now
- ~ Where the band is now
- ~ Notes about any other marks on the bird.

## General finfish bycatch

- Some species of finfish caught as bycatch can be poisonous or cause extreme pain if spiked
- If you are unfamiliar with a species, take extra care of spines, gill rakers and teeth when handling.

## Gear specific considerations

Different types of fishing gear pose different challenges for managing and handling of bycatch species once caught. For some methods, releasing bycatch species before they come on board the vessel is not possible, therefore bycatch must be handled and released by crew on deck.

## Pelagic longline

In the vast majority of instances bycatch can be released before coming on board the vessel by either cutting the snood as close to the hook as possible or cutting the hook in half with bolt cutters. Small animals which pose no risk to crew can be brought on board and have the hook removed by hand.

## Demersal longline and dropline

Due to shorter snoods being used on demersal longlines and droplines compared to pelagic longlines it is more likely that bycatch species may need to be handled. Where possible, hooks should be removed by hand. If not possible to remove the hook by hand, cut the snood as close to the hook eye as possible or cut the hook with bolt cutters.

## Trawl and seine

Crew working trawl or seine vessels will generally need to handle bycatch species as all retained catch and bycatch will come on board at once unless the vessel is running a sorting conveyer.

## Gillnet

Similar to trawl or seine, crew working gillnetters will need to handle bycatch to remove it from the net and return it to the water. It may be necessary to cut meshes to assist in removal.

## Best practice handling

This section outlines the best practice handling procedures for each species group which fishers may encounter. It is important to handle non-retained species carefully to ensure that they have the best chance of survival post capture. Proper handling practices also reduces potential risk of injury to crew members.

# Sharks

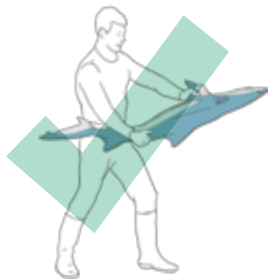
## CORRECT HANDLING

If possible, release the shark without bringing it onto the deck.

### If the shark has to be brought on board:

#### Holding and lifting of sharks

- Generally, small sharks are fragile and need to be handled very carefully. It is best to handle and release them with both hands. Methods of holding include:
  - ~ both hands supporting the body
  - ~ one hand grabbing the pectoral fin and the other the tail
  - ~ holding the dorsal fin and supporting the body and tail.



#### Holding large sharks

- Two people may be required with one person holding the dorsal fin and pectoral fin, while the other person holds the tail.



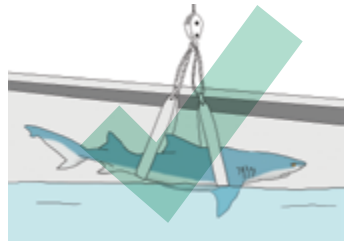
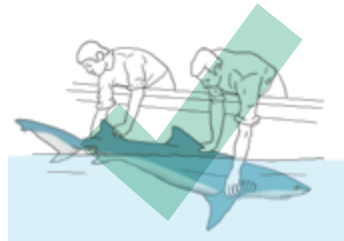
## Treating sharks on deck

- Always attempt to keep the shark in a horizontal position to reduce the risk of internal organ damage
- Hold the shark firmly behind the head and around the tail using gloves and/ or a wet towel, and then try to remove the hook
- If the hook cannot be removed easily the line should be cut as close to the mouth as possible
- To calm a shark down turn it over onto its back or place a wet towel over its eyes
- To prevent bites place a dead fish or stick in its jaws
- If release needs to be delayed place a deck hose in the shark's mouth so that water flows through the shark's gills.



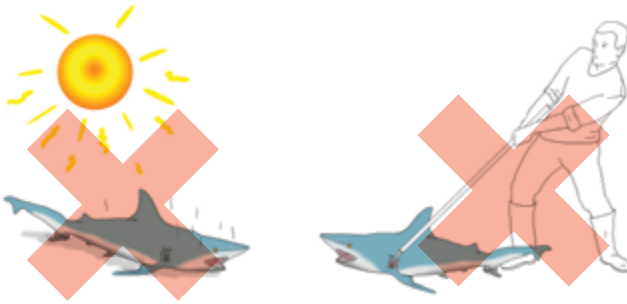
## Returning sharks to the water

1. Lower the shark gently into the water head first and release it.  
**Do not throw it**
2. It may be necessary to face the shark into the current and swim it for a few minutes to aid in recovery before it swims away
3. Small sharks can be released by one person
4. Large sharks may require two people to lift and hold the shark
5. Very large sharks may need to be lifted with the use of wide slings. **Do not use thin wires or cables.**

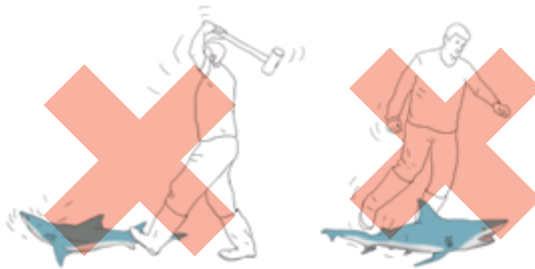


## INCORRECT HANDLING

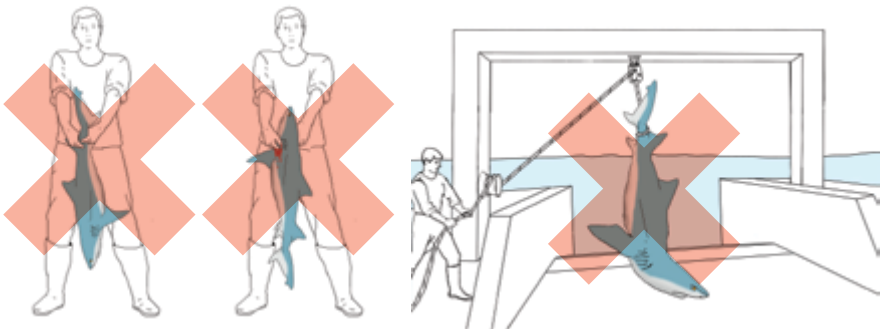
- **Do not** use gaffs or sharp objects in direct contact with the shark. A gaff should be used only to control the line



- **Do not** leave the shark exposed to sunlight for extended periods of time
- **Do not** kick, hit, throw or push the shark harshly, or expose it to other physical trauma



- **Do not** pick up the shark by the tail, head or the gill slits.



# Rays

## CORRECT HANDLING

**If possible, release the ray without landing.**

### If the ray has to be brought on board:

- Keep your fingers away from the mouth and hold the ray away from your body to avoid lashes of the tail and barb
- For small rays isolate tail and lift by snout
- For medium size rays, isolate the tail and pick up by the snout or the spiracles (the openings behind the eyes)
- For large rays it is best slide the animal along the deck to a discard chute or scupper using a blunt pole. Always watch the tail as rays have the ability to strike in any direction.

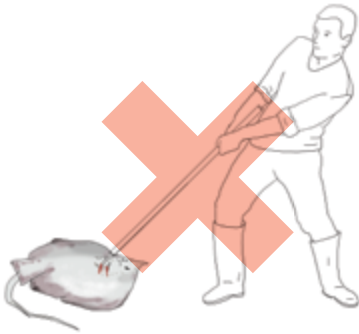


## Returning rays to the water

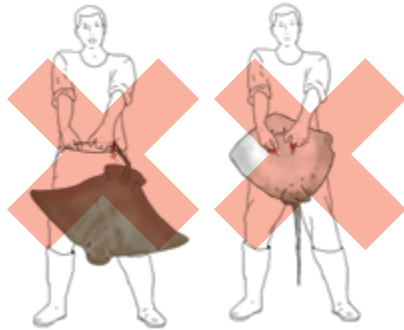
1. Lower a small to mid size ray gently into the water head first and release it.  
**Do not throw it**
2. Large rays can be released by placing them on a piece of net, plastic, or canvas that can be lifted and lowered into the water.



## INCORRECT HANDLING



- **Do not** use gaffs or sharp objects in direct contact with the ray
- **Do not** leave the ray exposed to sunlight for extended periods of time
- **Do not** kick, hit, throw or push the ray harshly, or expose it to other physical trauma
- **Do not** carry the ray by the tail to avoid being stung
- **Do not** carry the ray by the gill slits
- **Do not** cut off tail.

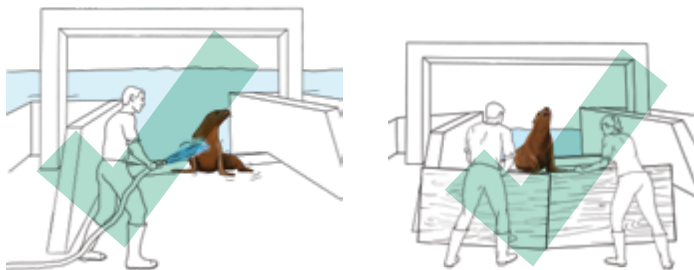


# Seals

## CORRECT HANDLING

1. Seals should be released as soon as they arrive on deck
2. Seals on deck should be restricted to an area close to where they are most likely to escape, and prevented from gaining access to other parts of the vessel.

## Returning seals to the water



A jet from a high pressure hose can force an animal to move. Sheets of timber or pallets can also be used as a moving barrier to herd a seal.

- If the seal is injured it should be returned to the water as caring for injured seals requires specialist skills and keeping it on board may add stress to the injury.

## Handling very small animals

Small seals can be lifted by grasping the tail in one hand and a front flipper in the other while supporting the belly of the seal across your arm as depicted in the diagram.

**If using this method be extremely cautious of bites.**





## INCORRECT HANDLING

- **Do not** use gaffs or sharp objects in direct contact with the seal
- **Do not** kick, hit, throw or push the seal harshly, or expose it to other physical trauma
- **Avoid** sudden actions and movements that may scare the seal.



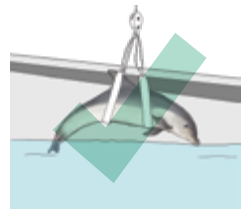
## Dolphins

### CORRECT HANDLING

**Dolphins should be released as soon as they arrive on deck.**

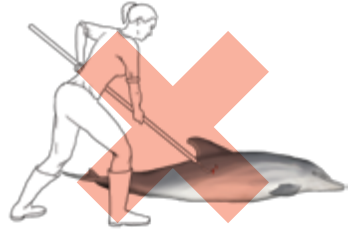
#### Returning dolphins to the water

1. Two or more crew members may need to lift the dolphin
  - a. Hold the dolphin in front of the dorsal fin while pinning the pectoral fins close to your body usually keeps them from struggling. Be cautious of the tail, and avoid the eyes and blowhole
2. Alternatively the dolphin can be lifted using wide slings. **Do not use thin cables**
3. Once untangled the dolphin can be placed on the gunwale of the boat and slid headfirst into the water
4. If the dolphin is injured it should be returned to the water as caring for injured dolphins requires specialist skills and keeping it on board may add stress to the injury.



## INCORRECT HANDLING

- **Do not** use gaffs or sharp objects in direct contact with the dolphin
- **Do not** leave the dolphin exposed to sunlight for extended periods of time
- **Do not** kick, hit, throw or push the dolphin harshly, or expose it to other physical trauma
- **Avoid** sudden actions and movements that may scare the dolphin
- **Do not** hang the dolphin up by the tail or the base of the tail as this can damage the dolphin's spinal vertebrae.



## Turtles

### CORRECT HANDLING

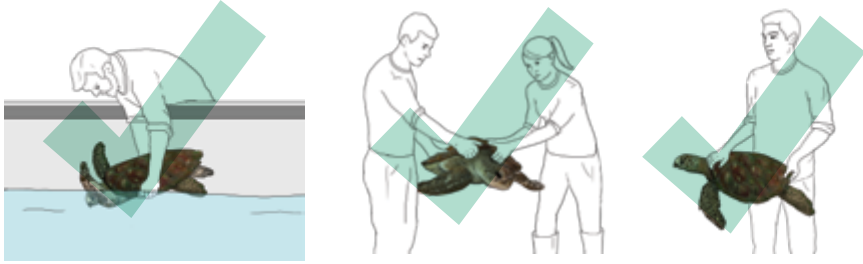
**If possible, release the turtle without landing.**

**If the turtle is hooked**

1. Use a dehooker to remove the hook or cut the hook eye off with bolt cutters
  2. If the hook cannot be safely removed, use a long-handled line cutter to cut the line as close to the hook as possible
- **If the turtle seems exhausted bring it on board to rehabilitate it.**



## If the turtle has to be brought on board



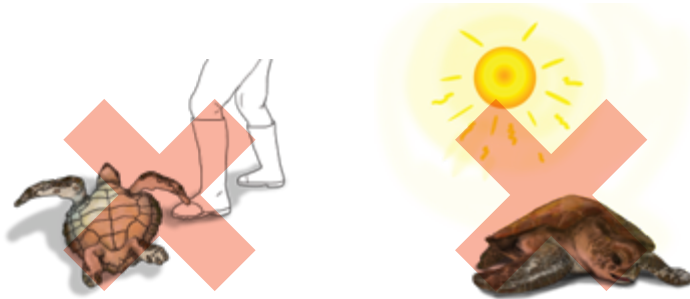
- Use a dip net to lift the turtle on board
- When lifting the turtle hold with one hand at the front of the shell and the other at the back of the shell. Remember if the turtle is large two crew members must lift the turtle to avoid injuries to fishers or dropping the turtle
- Support turtle on a cushioned surface, such as a tyre or foam mat
- To release the turtle slow or stop the boat and gently put the turtle in the water head first.

## If a turtle appears dead, comatose, or otherwise inactive

1. Place the turtle on its belly so that its tail is about 20 cm off the ground for a minimum of 4 hours
2. Test the turtle's reflex signs at least once every 2 hours. To do this gently pinch the tail of the turtle to see if it reacts
3. Keep the turtle in the shade with a wet towel on the shell and flippers. **Do not cover the nostrils**
4. If the turtle responds to the reflex test return it to the sea only after 4 hours have passed
5. If the turtle does not revive within 24 hours, the turtle must be returned to the sea in the same manner as if they were alive.



## INCORRECT HANDLING



- **Do not** use gaffs or sharp objects in direct contact with the turtle
- **Do not** leave the turtle exposed to sunlight for extended periods of time
- **Do not** kick, hit, throw or push the turtle harshly, or expose it to other physical trauma
- **Do not** leave the turtle upside down
- **Do not** hold or lift a turtle by the tail, flippers or the sides of its shell.

## Seabirds

## CORRECT HANDLING

## Bringing birds aboard

1. Release line tension. Use a landing net to lift the bird on board, or if safe and practical a crew member may be able to lift the bird.

## Restraining bird

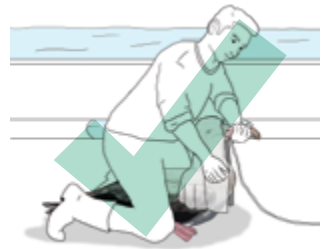
1. Carefully fold the wings against the bird's body and hold under your arm
2. Hold the beak gently and ensure that the nostrils are not covered. If the bird vomits, remove your grip on the beak
3. Wrap the bird loosely in a towel/blanket and cover the head
4. Make sure the bird doesn't come into contact with oil on deck
5. It may take more than one person to restrain larger birds.



## HOW TO REMOVE A HOOK

### If the hook is visible

1. Hold the bird securely between your legs without squeezing
2. Hold the beak shut but do not cover the nostrils
3. If the bird vomits, loosen hold on beak so the bird does not suffocate
4. It may require at least two crew members to remove the hook – one to hold the bird and one to remove the hook
5. Use bolt cutters to cut off the hook or pliers to flatten the barb
6. Gently remove the hook back out of the bird.



### If the hook is swallowed and removal is possible

1. If the tip of the barb has pierced the skin, cut the barb and back the shank out with the line attached
2. If the tip of the barb isn't exposed but can be felt, **gently** push it through the skin. Once exposed, cut the barb and back the shank out with the line attached.



### If the hook cannot be removed

1. Cut the line as close to entry as possible and leave the hook in the bird.

### If the bird is exhausted or waterlogged

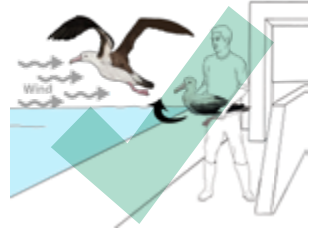
1. Put the bird in a box in a warm dry place as waterlogged birds can become hypothermic
  2. Once the bird is dry it should be placed on deck in its box to acclimatise to the outside temperature.
- **This should not be done in Antarctic or Sub-Antarctic climates as the rapid temperature change can cause injury or death.**

### Releasing the bird

1. If the bird is not waterlogged and does not seem exhausted it should be released immediately
2. **Small vessels:** Slowly lower the bird onto the water. The bird may remain on the water for some time after release.



3. **Large vessels** (where birds cannot be lowered onto water): Lift and release the bird from the side of the vessel into the wind. If it does not seem safe to release the bird in this way (e.g. obstacles in the way) leave the bird on a clear area of the deck and allow it to fly away on its own.



## INCORRECT HANDLING

- **Do not** use gaffs or sharp objects in direct contact with the seabird
- **Do not** pull the bird on board by a snood
- **Do not** kick, hit, throw or push the seabird harshly, or expose it to other physical trauma
- **Avoid** sudden actions and movements that may scare the seabird
- **Do not** throw seabirds into the air when releasing
- **Do not** lift or hold seabirds by the neck.



## Sea snakes

### CORRECT HANDLING

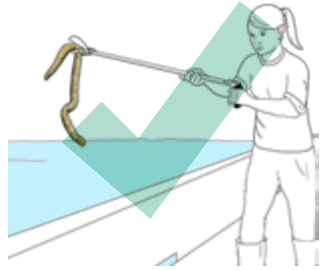
#### Sea snakes are highly venomous

- Always notify all crew on deck when a sea snake has been located in catch
- Never take your eyes off the snake
- Be aware that a docile snake can suddenly become energised during handling
- Try to keep handling to an absolute minimum.

## If the snake must be handled

### Snake tongs

1. Ensure that when using tongs you do not apply too much pressure as you can easily crush the snake
2. Hold the snake a third of a length of the body from the tail
3. You may also use a snake hook to support the snakes body.



### Snake hook

1. Clear snake from catch by hooking in the centre of the body
2. Move the snake towards the discards chute for safe release over board.



### By hand (if snake hook or tongs not available)

1. Grip the snake a third of a length of the body from the tail
2. Hold the snake out, away from your body
3. **Avoid** handling around the head where possible
4. Lower the snake over the side or down the discard chute.



## Entanglements

1. Position the net so the snake is easily accessible
2. Be extremely careful of the snake's mouth and use net scissors to cut one or two meshes from around the snake.



## INCORRECT HANDLING

- **Do not** leave the sea snake exposed to air and sunlight for extended periods of time
- **Do not** violently hit/slash/crush/rake/throw/swing/hurl the snake, or expose it to other physical trauma
- **Avoid** sudden actions and movements that may scare the sea snake
- **Do not** throw snakes overboard at high speeds, always release the snake by lowering gently into the water
- **Do not** hold snakes by the head unless absolutely necessary (i.e. when untangling from the net).

## Acknowledgements

The Australian Fisheries Management Authority (AFMA) would like to thank Dr Rachael Alderman, Simon Allen, Blanche D'Anastasi, Dr Simon Goldsworthy, Dr David Harasti, Dr Charlie Huveneers, Dr Col Limpus, Duncan Limpus, Dr Alice Mackay, Dr Will White and Dr Barbra Winecke for assisting us in compiling the guide.

We would also like to acknowledge Sandra Sharma from AFMA for her illustrations.

# References

Agreement on the Conservation of Albatrosses and Petrels 2014, Hook Removal from Seabirds.

Australian Fisheries Management Authority 2016, Bycatch handling; AFMA bycatch handling and treatment guide 2016/17.

Australian Fisheries Management Authority 2017, Shark and Ray Handling Practices; A guide for commercial fishers in southern Australia, Australian Fisheries Management Authority, Canberra.

Barrington, JHS 2016, Developing a guide on removing entangled seabird from nets, Seventh Meeting of the Seabird Bycatch Working Group, La Serena, Chile, 2–4 May 2016.

Ferris, R & Gilbert, J 2014, First responders resource guide for seabird emergencies, Sprint Print, Ballina NSW.

National Marine Fisheries Services Southeast Fisheries Science Centre 2008, Revised 2010, Careful release protocols for sea turtle release with minimal injury, NOAA Technical Memorandum NMFS-SEFSC-580, 130 pp.

National Oceania and Atmospheric Administration 2010, Sea turtle handling/release guidelines: Quick reference for hook and line fisheries.

National Oceania and Atmospheric Administration 2013, Reducing and Mitigating Interactions between Sea Turtles and Pelagic Fisheries in the Western Pacific; Handling, Resuscitation, and Release of Sea Turtles.

National Oceania and Atmospheric Administration, Marine Mammal Handling and Release Guidelines.

Ocean Watch Australia 2003, Protected Species Handling Manual Edition II.

Patterson, HM & Tudman, MJ 2009, Chondrichthyan guide for fisheries managers: A practical guide to mitigating chondrichthyan bycatch, Bureau of Rural Sciences and Australian Fisheries Management Authority, Canberra.

Pierre, J, Seabird handling after bycatch: How to help yourself and the birds, Department of Conservation.

Poisson, F Vernet, AL Séret, B Dagorn, L, Good practices to reduce the mortality of sharks and rays caught incidentally by tropical tuna purse seiners, EU FP7 project #210496 MADE, Deliverable 7.2., 30p.

South East Trawl Fishing Industry Association Ltd 2007, Industry Code of Practice to Minimise Interactions with Seals.

The State of Queensland, Department of Employment, Economic Development and Innovation 2011, Looking after protected species in Queensland; A comprehensive guide for commercial fishers.

WCPFC 2010, Guidelines for the Handling of Sea Turtles.



Australian Government

Australian Fisheries Management Authority

[afma.gov.au](http://afma.gov.au)