



## FISHERIES FACT SHEET

# BYCATCH



## What is bycatch?

Bycatch is the accidental capture of unwanted or non-targeted species.

### Blitzing bycatch!

Scientists and the fishing industry have worked hard in recent years to develop methods that will prevent as much bycatch as possible. These methods to stop or reduce bycatch depend on the type of fishing gear employed, the animals in question and their behaviour.

Methods can include changing management arrangements for a fishery, such as fishing at night to stop the catch of animals that are active during the day, or closing certain areas to fishing at certain times of the year if there are high abundances of bycatch species present.

Many clever modifications to fishing gear that are tailored to the biology or behaviour of unwanted animals have become available and are mandatory in some commercial fisheries.

### Marine bycatch can include:

- Species of little or no commercial value.
- Protected or endangered species, such as fish, sharks, turtles, dolphins, seals and sea birds.

- Species caught 'out of season', unwanted species, and animals that are the wrong size (too big or too small) or of too large a quantity.
- Plants and animals that may have been dislodged from the bottom of the ocean floor, such as corals, seagrass, algae and sponges.
- Debris such as rocks and rubbish.

### Benefits of reducing bycatch:

- Keeps species within the natural marine food web.
- Protection of endangered and vulnerable species such as turtles, dolphins and albatrosses.
- Sorting catches and discarding bycatch can be expensive and dangerous. Fishing crews are also safer through keeping out large, thrashing and potentially dangerous animals, such as sharks and stingrays.

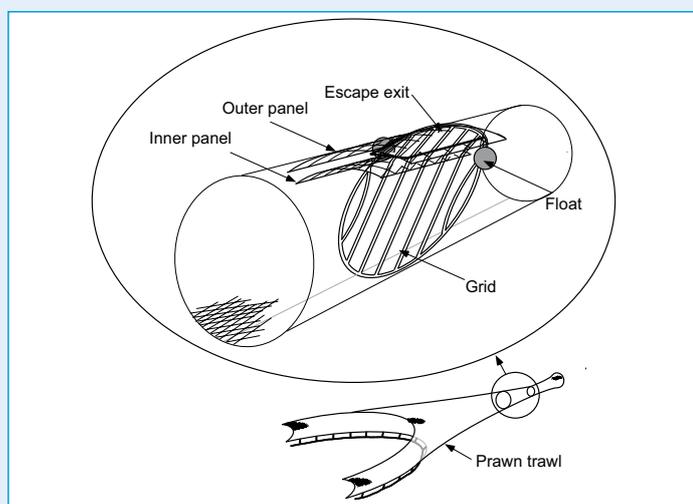
## Bycatch reduction devices and modified fishing equipment

Some species can be either blocked from entering fishing gear or guided out through escape hatches or wide meshes. Some bycatch, however, just can't be excluded as it is the same size and behaves the same way as the wanted catch. Nevertheless, damage to bycatch species can be reduced with careful handling.

### Bycatch Reduction Devices (BRDs)

BRDs are any device incorporated into fishing gear to reduce or exclude unwanted catch; for example, grids and mesh panels installed in trawl nets to channel the bycatch out through an escape hatch while retaining the prawns. BRDs come in several different types depending on the fishery they are being used in and the potential bycatch.

High-tech BRDs are being tested, such as bright lights mounted on the front of prawn nets, and 'pingers' and other sonic (sound) devices that emit audio signals to warn dolphins and whales away from fishing nets.



**i** The use of BRDs is compulsory in many trawl fisheries, including WA's prawn and scallop fishery. BRDs in prawn fisheries have been shown to reduce bycatch of turtles by up to 95 per cent, sharks by up to 87 per cent, rays by 88 per cent and tailor by 50 per cent.

### Grids and FEDs

Grids and fish escape devices (FEDs) are examples of bycatch reduction devices used in trawling.

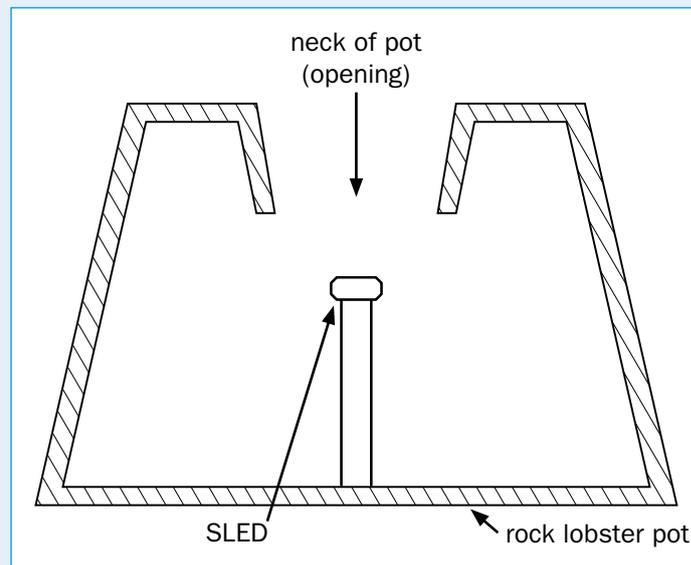
A grid is a frame containing vertical bars that is fitted into the net at an angle to stop larger animals passing through the net. Turtles, sharks, rays and other large fish cannot pass through the bars and are instead channeled out of an opening flap in the trawl net. The use of grids in Western Australia's prawn trawl fisheries was made compulsory in 2002.

Square mesh panel sections at the cod-end (back end of a trawl net where the catch is retained) allow smaller fish to escape.

**i** When grids were adopted in Australia's Northern Prawn Fishery, a CSIRO study reported the catch of all species of turtles dropped from 5,500 in 1999 to less than 50 turtles in 2000.

### Sea Lion Exclusion Devices (SLEDs)

In Western Australia, Australian sea lion pups can squeeze into rock lobster pots for a free feed and may become trapped and drown. SLEDs (an upright bolt) keep the pups out of the pots without affecting the catch and are now required when using rock lobster pots around sea lion breeding colonies along the west coast.



## What's a hopper?

Large hopper (in water hopper systems) are used on most prawn trawlers around Australia. These holding tanks retain the catch in seawater, keeping most of the catch alive until it is removed for sorting. The bycatch is then released back to the ocean; the time the bycatch spends out of the water is minimal, therefore increasing the animals' likely survival.



## Not just a fishing problem

Some popular swimming beaches in Australia and around the world have been ringed by protective nets to keep out sharks, but a bycatch of large fish, harmless sharks, and sometimes dolphins and turtles have made this controversial.

Researchers are trying to find more specific repellants, testing acoustic 'pingers' to deter dolphins and whales, using electromagnetic posts that are unpleasant to sharks, replacing nets with other types of gear and advising swimmers to take safety precautions.

## Researching bycatch

The first step towards finding a solution to the problem of bycatch is determining the scale of the problem. There are several methods used to research bycatch:

- Researchers go aboard fishing boats and examine the catches – what and how much is being caught?
- Commercial fishers keep log books of their catch and record any encounters with protected animals, such as turtles, seasnakes, seahorses and pipefishes.
- Researchers examine catches landed when discarding at sea is prohibited.
- Researchers also use submersible (underwater) video cameras to watch any new equipment at work.

Once this information has been collected, researchers and the industry can devise ways to reduce bycatch. These may include adapting fishing equipment or new management arrangements. Researchers then continue to study the catch and determine whether the bycatch has been reduced.

## Longlining and sea birds

Longline fishing is a technique where fishing boats lay kilometres of rope or nylon with baited hooks on the surface or the bottom of the ocean floor, depending on the fish being targeted. This method of fishing is particularly used for tuna, swordfish, Patagonian toothfish and hake fisheries.

Some seabirds dive for the bait as the longlines are deployed and retrieved. The birds can become hooked or entangled in gear and then dragged underwater by the line and drowned.

Several methods are being used to reduce the mortality of sea birds, such as albatrosses.

These include:

- fishing at night;
- towing tori lines (a curtain of streamers dangling from a piece of rope positioned over longlines) where the lines enter the water to scare the birds away from baits;
- increasing the weight on longlines to enable them to sink faster to take the bait down quicker;
- setting the lines using equipment under the water beyond the birds' reach;
- improving methods of disposing of fish offal (waste) and bait on board and expelling it so it doesn't attract seabirds to the boats; and
- changing the colour of the bait so it's harder for the birds to see (for example, around Hawaii, bait is dyed blue).

## Ghost fishing

Another threat to marine life is lost or discarded fishing gear (called 'ghost fishing') and rubbish, such as plastic bags and balloons, which can be eaten and cause a slow painful death for sea creatures.



Incidental catches can still be valuable. Species that are kept and sold but are not necessarily targeted are called 'byproduct' rather than 'bycatch'.

## Have you ever come in contact with bycatch?

Most recreational fishing techniques are not very size selective and capture a range of fish, some of which are unwanted to the fisher. Even the average recreational fisher will find it difficult to prevent bycatch, which may be fish that you can't keep because it's the wrong size, more than your bag limit, out of season, or that you just don't want to eat.

The good news with angling is that you deal with one fish at a time and that gives it a better chance of survival if you handle it gently and return it to the water quickly.

- Using the right rig for your target species and barbless hooks will improve the chances of your bycatch swimming away unharmed.
- Carry a blade or scissors in case you can't haul the fish in without causing damage or distress and have to cut the line.
- Handle bycatch with care – watch out for spines and claws, and use damp gloves or a damp towel to hold the fish firmly while you remove hooks, then support the fish upright in the water until it swims away.
- If the fish is dead when you retrieve it, you can keep it if it meets size and bag limits. If not, return it to the water where something else will eat it.
- If a seabird dives and takes your bait, try and reel the bird in gently, cover its head and remove the hook. If you can't do it yourself, contact a wildlife rescue service.

- Prawning nets and crabbing scoops will catch seagrass and algae (seaweed), but this too is part of the ecosystem's biomass and should be returned to the water, not dumped. Do short hauls and clear the net often – saving your time and the environment.
- If you catch rubbish or floating fishing gear, please dispose of this properly. Don't leave it in the water to harm marine animals.

### Those pesky 'blowies'

Everyone gets annoyed when all they catch is blowies, and the fish often bear the brunt of that frustration. Blowfish are a normal and important part of our estuarine systems and should be returned to the water. Never kill them or leave them on the beach or riverbank to poison wildlife or somebody's dog.



## References

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## Glossary

### Bycatch

Accidental capture of unwanted or non-targeted species.

### Bycatch Reduction Devices (BRDs)

Devices such as grids and larger mesh incorporated into fishing gear to reduce or exclude unwanted catch.

### Byproduct

Non-targeted species that are nevertheless caught, kept and sold.

### CSIRO

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) – Australia's national science agency

### Ghost fishing

Discarded or lost fishing gear that continues to remain in the aquatic environment, potentially trapping and killing fish and other species.

### Longline fishing

A fishing technique where long lengths of rope or nylon (sometimes several kilometres) are set with multiple baited hooks.

### Trawling

A method of fishing in which large nets are towed behind one or more boats.

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## FURTHER INFORMATION

Visit the Department's website at [www.fish.wa.gov.au](http://www.fish.wa.gov.au) or contact:

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