

MARINE BYCATCH MATTERS



Department of
Fisheries

What is bycatch?

Bycatch is the accidental capture of unwanted or non-targeted fish or other animals.



Marine bycatch can include:

- species of little or no commercial value;
- protected or endangered species, e.g. fish, sharks, turtles, dolphins, seals and sea birds;
- species caught 'out of season', in closed waters, the wrong size (too big or too small) or too many;
- plants and animals such as corals, seagrass, algae and sponges which are floating or have been dislodged from the bottom of the ocean floor; and
- debris such as rocks and rubbish.

Benefits of reducing bycatch:

- Bycatch takes food away from other fish-eating species.
- By reducing bycatch, we help to protect endangered and vulnerable species such as turtle, dolphins and albatross.
- Sorting catches and discarding bycatch can be expensive and dangerous. Fishing crews are safer through keeping out large thrashing and potentially dangerous animals such as sharks and stingrays.

Say goodbye to bycatch!

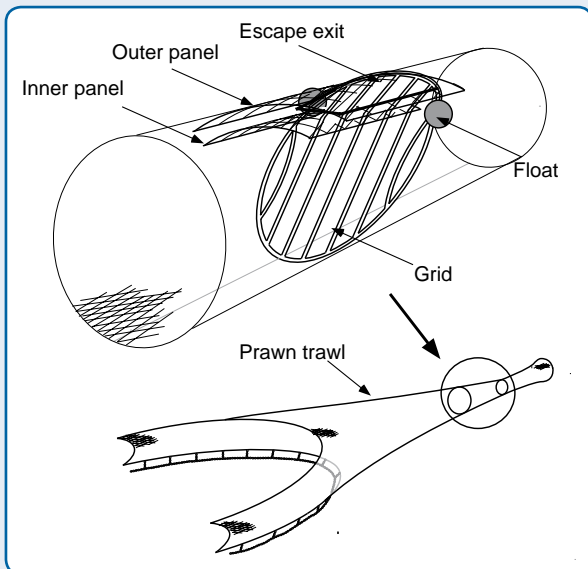
- Scientists and the fishing industry have worked hard in recent years to develop methods that will prevent as much bycatch as possible. These methods to stop or reduce bycatch depend on the type of fishing gear employed, the animals in question and their behaviour.
- Methods can include changing management arrangements for a fishery such as fishing at night to stop the catch of animals which are active during the day, or closing certain areas to fishing at certain times of the year to protect breeding aggregations (groups) of fish.
- Some fisheries have a total bycatch allowance (called a trigger limit) for the fleet or individual boats and once this is reached, fishing must stop.
- Many clever modifications that are tailored to the biology or behaviour of unwanted animals have become available and are mandatory in some commercial fisheries.

Bycatch reduction devices and modified fishing equipment

Most creatures can be either blocked (as is debris) from entering or guided out if they will swim through escape hatches or wide meshes. Some bycatch, however, just can't be excluded – it may be the same size and biology as the wanted catch – but damage can be reduced with careful handling.

Bycatch Reduction Devices (BRDs)

BRDs are any device incorporated into fishing gear to 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.



i **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, tailor by 50 per cent and sponges by up to 100 per cent.**

Turtle Exclusion Device (TED)

A TED is a grid, which channels turtles out of an opening flap in a trawl net.

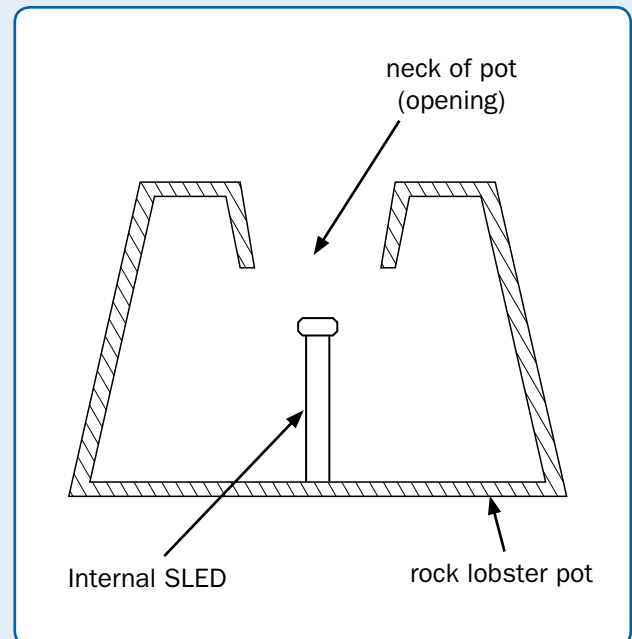
i **When TEDs were adopted in Australia's Northern Prawn Fishery, a CSIRO study reported the catch of all species of turtles dropped from 5,500 in 1999 to less than 50 turtles in 2000.**

Fish Exclusion Devices (FEDs)

- FEDs can take several forms.
- The size of the target species is known so grids or meshes are fitted to the mouth of trawl nets to stop larger fish passing through and direct them through escape hatches.
- Square mesh panel (fish-eye) sections at the fish collection point of the net (or cod-end) are used to release smaller bait fish.
- Fishing nets can be designed to catch fish in a certain size range by altering mesh width. For example, demersal nets can be a mesh size small enough to allow large fish to bounce off if they swim into them. Or conversely, a large mesh size allows small fish to swim through.

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 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 hoppers (back deck water tanks or sorting devices) are used on most prawn trawl fishing boats around Northern and Eastern Australia so the whole catch can be kept alive in seawater while it is being sorted. Unwanted fish are removed and released back to the ocean alive.

Other methods of reducing bycatch...

- High-tech devices are being tested, such as pingers and other sonic devices that emit audio signals to warn dolphins and other whales away from fishing nets.
- Fish trappers can reduce bycatch by using traps of a size and design to target certain species. Unwanted fish are released when the traps are cleared.

i **Although reporting systems for bycatch around the world are inadequate, fisheries agencies agree that bycatch of fish and marine mammals drops quickly when fishery management, gear and fishing practice improvements and public pressure are applied to the problem.**

Bycatch or byproduct?

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

Bycatch is 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 detract dolphins and whales, using electro magnetic posts that are unpleasant to sharks, replacing nets with drumlines (which are essentially floating fishing lines with large baited hooks) 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?
- Professional fishers keep logbooks of their catch and record any encounters with protected animals such as turtle, seasnakes, seahorse and pipefishes.
- Researchers examine catches landed when discarding at sea is prohibited.

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.

i **Researchers may also use submersible (underwater) video cameras to watch the new equipment at work.**

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 causes a slow painful death for sea creatures.



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 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 albatross.

These include:

- fishing at night;
- towing tori lines (a curtain of streamers dangling from a piece of rope positioned over longlines) where they 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. Around Hawaii, bait is dyed blue.

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 is that with angling, you deal with one fish at a time and that gives it a better chance of survival if you handle it gently and get it back in the water quickly.

- Tune up your gear by using the right rig for your target species and barbless hooks. You'll improve the chances of your bycatch swimming away unharmed.
- Carry a line-cutter 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 can survive difficult years of low water flow. Never kill them and leave them on the beach or riverbank to poison wildlife or somebody's dog.



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FURTHER INFORMATION

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