

Fact Sheet: Deepwater prawn trawl – Authorised modifications to trawl gear

July 2024



Introduction

Department of Primary Industries and Regional Development (DPIRD) research demonstrates that minor modifications to trawl gears have the potential for substantial benefits including improving catches of target species, while reducing bycatch, drag (and therefore fuel use) and habitat impacts, culminating in fewer overall environmental impacts.

Opportunity is available to voluntarily use these and other modifications, some of which are already lawful, and others authorised by a section 37 order. A copy of the section 37 order may be found on the DPIRD website.

The opportunity to modify and trial new net configurations and Bycatch Reduction Devices (BRDs) is part of an ongoing collaborative approach between DPIRD and industry in anticipation of an upcoming process to review and modernise all trawl gear requirements in NSW.

In response to netting material shrinkage and availability issues, DPIRD has approved additional BRDs for use to relieve fishers the cost and inconvenience of urgently replacing the affected BRDs and to accommodate available materials.

Authorised modifications and potential benefits

Note: The modifications authorised by the section 37 order are identified with “*”.

Otter boards: Smaller or more hydrodynamic otter boards may be used to reduce drag/fuel use. Note that changes to otter-board size and design may affect catches of prawns.

SAFE (simple anterior fish excluder): A SAFE may be used. A SAFE is a narrow banner of PVC type material attached between the otter boards. Trials demonstrated that fitting a SAFE can reduce the bycatch of fish.

***Sweeps:** Sweeps up to 274 m (150 fathoms) in length may be used on single-gear only, noting that shorter sweeps can dramatically reduce the bycatch of finfish. Shorter sweeps can also increase wing-end spread.

Ground chain: Less or smaller-gauge chain may be used to reduce drag/fuel use.

***Soft-brush ground gear (dangler chains):** Multiple short lengths of chain, up to 10 links each, may be attached directly to the footrope, including by the centre link of the chain such that both ends of the chain hang free (called ‘soft-brush ground gear’). If soft-brush ground gear is used, the net must not also be fitted with other chain.

***Gauge of chain:** In response to issues with the availability of chain, ground chain and soft-brush ground gear may be constructed of chain with links of material up to 13 mm in diameter (instead of 12 mm), noting that less or smaller-gauge chain will reduce drag/fuel use.

Net hanging ratio: Alternate hanging ratios may be used to change the lateral opening of the meshes in the net to enhance selectivity.

Double- or dual- and triple-rigs: Two or three nets of any headline length may be used at any one time subject to the total headline length of all nets combined not exceeding 60 metres. Trials show that triple- and quad-rigs had the greatest spread ratios, lowest drag and least fuel consumption.

The triple rig could represent the most suitable configuration from an environmental perspective given smaller and fewer otter boards and reduced bottom contact.

***Larger-mesh (trawl body):** Mesh not exceeding 100mm may be used throughout the body of the net (including the belly, wings and extension piece).

Wing heights: Reduced wing heights may be used to reduce drag and fuel use. Lower wing heights can also reduce the length of the trawl, which has also been shown to reduce bycatch.

***Square-shaped mesh to wings and side panels:** The mesh of the wings and side panels of a net may be constructed of mesh not less than 38 mm if the mesh is hung on the bar so that the meshes are square-shaped. Research shows that square-shaped mesh wings and side panels reduce the bycatch of small prawns.

Net taper: Steeper net tapers may be applied to reduce drag (fuel use) and bycatch.

***Larger-mesh (codends):** Codends may be constructed of larger mesh, up to 60 mm in the case of a diamond-mesh codend and up to 50 mm in the case of a square-mesh codend.

***Bycatch reduction devices (BRDs):** Nets not fitted with a BRD may be used.

***Strengthening ropes:** Strengthening ropes may be fixed to a net to help a BRD and the meshes of the BRD retain their shape, but only if the strengthening ropes are orientated vertically in the net and not around the net.

***Nordmøre grid BRD:** Nordmøre-grids with bar spacing greater than 30 mm may be used to reduce bycatch and improve product quality. Fishers are encouraged to use and refine the Nordmøre-grid, particularly if modifications such as lifting bags and longer sweeps are to be permitted into the future.

***Modified big-eye BRD:** The big-eye BRD may be fitted with rigid material or a frame to keep the escape gap open instead of fitting floats to the rear panel and chain to the front panel.

***Novel BRDs:** Any other novel fisher-designed BRD, such as a fish-eye BRD, may be used (to enhance bycatch reduction) if:

- a. the device includes an opening or escape hole that is not less than 300 mm wide (with a single support, rigid or soft, for strength if needed); and
- b. the posterior most part of the device is positioned not more than 1.5 m forward of the codend drawstring.

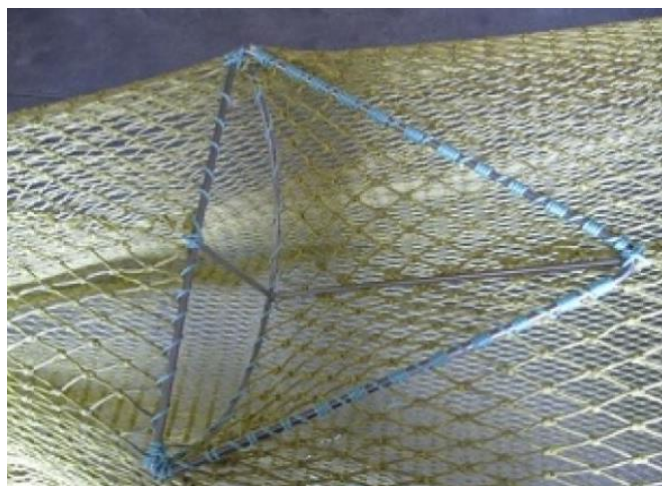


Figure 1: The fish-eye BRD is an example of a novel BRD that may be used, with a single rigid support if needed (right)

***Large-mesh panel BRD:** A panel of square-shaped mesh constructed of any type of material (hard or soft) may be used subject to the following:

- a. the panel being not less than 350 mm wide and 500 mm in length;
- b. the posterior most part of the panel being positioned not more than 1.5 m forward of the codend drawstring;
- c. if the panel comprises soft netting material;
 - i. the mesh must be not less than 85 mm;
 - ii. the mesh must be hung on the bar so that it is square shaped;
 - iii. the twine diameter of the netting must be not more than 5 mm; and
 - iv. the panel must be sewn into the net using the bating rates (top and bottom only) for mesh sizes set out in Table 1;

Bating rate	Mesh size
At least 4 points to each bar on the panel	85-125 mm
At least 6 points to each bar on the panel	>125 mm

Table 1: Bating rates.

- d. if the panel comprises rigid mesh material:
 - i. the mesh is not less than 50 mm in size (inside mesh measurement) from one bar to the opposite bar in both directions; and
 - ii. the diameter of the bars of the rigid mesh panel must not be more than 5 mm; and
- e. if a rigid frame is applied to the outside of the BRD the rigid frame must be not less than 350 mm wide and 500 mm high along the inside edge of the rigid frame.

The main difference between the large-mesh panel BRD and the approved ocean square-mesh panel BRD is that the large-mesh panel BRD must be constructed of larger-size mesh and the overall size of the panel may be slightly smaller.

***Lifting bags:** The codend of a net may be encompassed with an outer cover of mesh not less than 90 mm throughout with lifting straps attached. Lifting bags support the codend and may help maintain product quality when large catches are taken.

Authorised BRDs in response to material shrinkage and availability issues

The following three variations to the ocean square-mesh panel BRD are now authorised for use by holders of a deepwater prawn endorsement:¹

¹ Holders of an inshore prawn or offshore prawn endorsement are also authorised to use these BRDs.

Shrinkage affected ocean square-mesh panel BRD

The BRD in Attachment A has been approved in response to the high number of ocean square-mesh panel BRDs in use that have a surrounding panel known to be subject to extraordinary shrinkage and sediment induced increased twine diameters (Figure 2). It is approved on a temporary basis to relieve fishers the cost and inconvenience of urgently replacing these BRDs.

Fishers making new BRDs should not make them to these specifications – you are encouraged to use one of the other BRDs approved for use in the Ocean Trawl Fishery.

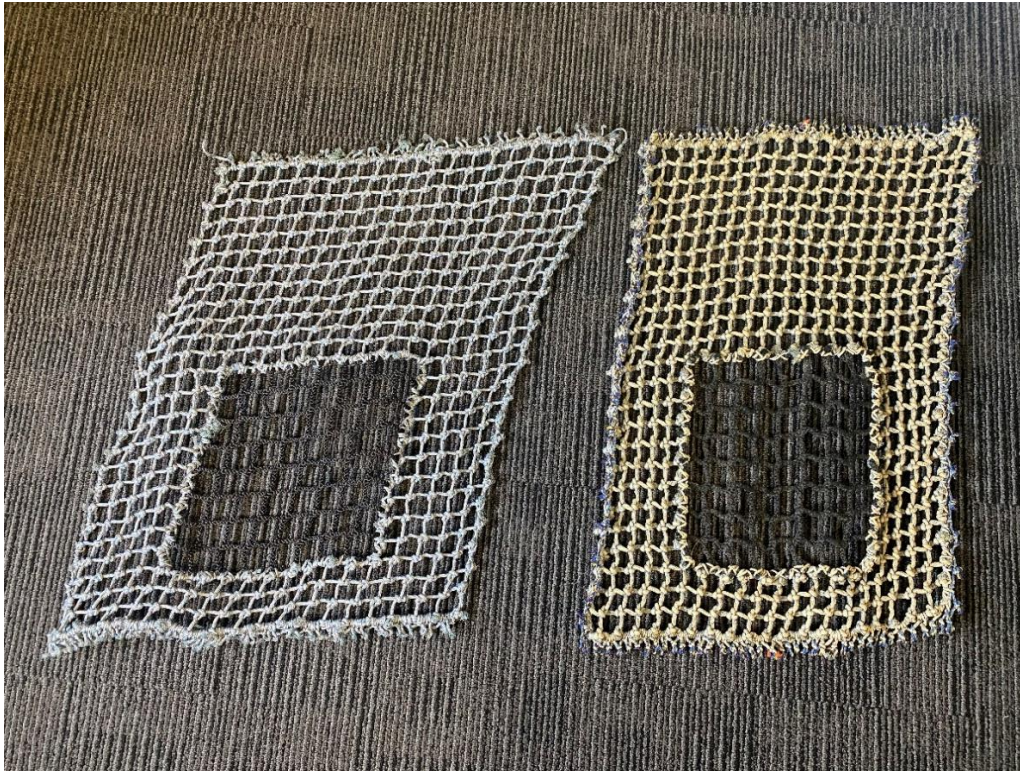


Figure 2: New Ocean square-mesh panel BRD (left) and another ~6 months old affected by extraordinary shrinkage (right).

Smaller-mesh ocean square-mesh panel BRD

The BRD in Attachment B has been approved for use in response to material availability issues. The main differences between this BRD and the approved ocean square-mesh panel BRD are:

- smaller size mesh (minimum 42 mm instead of 45 mm) to the surrounding panel due to material availability issues, and
- a centre panel that is greater in surface area (minimum 30 cm wide instead of 25 cm) to offset the smaller-size mesh to the surrounding panel.

Rigid-mesh ocean square-mesh panel BRD

The BRD in Attachment C has been approved for use in response to material availability issues and interest in rigid mesh, including stainless steel mesh, to avoid shrinkage issues.

The section 37 order specifies minimum bar lengths instead of mesh sizes and caters for available rigid materials including stainless steel mesh manufactured and advertised as 50 x 50 mm and 25 x 25 mm stainless mesh.

All minimum bar lengths specified in Attachment C are inside mesh measurements, from the inside of one plain bar to the inside of the opposite plain bar.

[More information](#)

Management and section 37 order

Commercial Fisheries Management hotline 1300 726 488

Research and gear construction

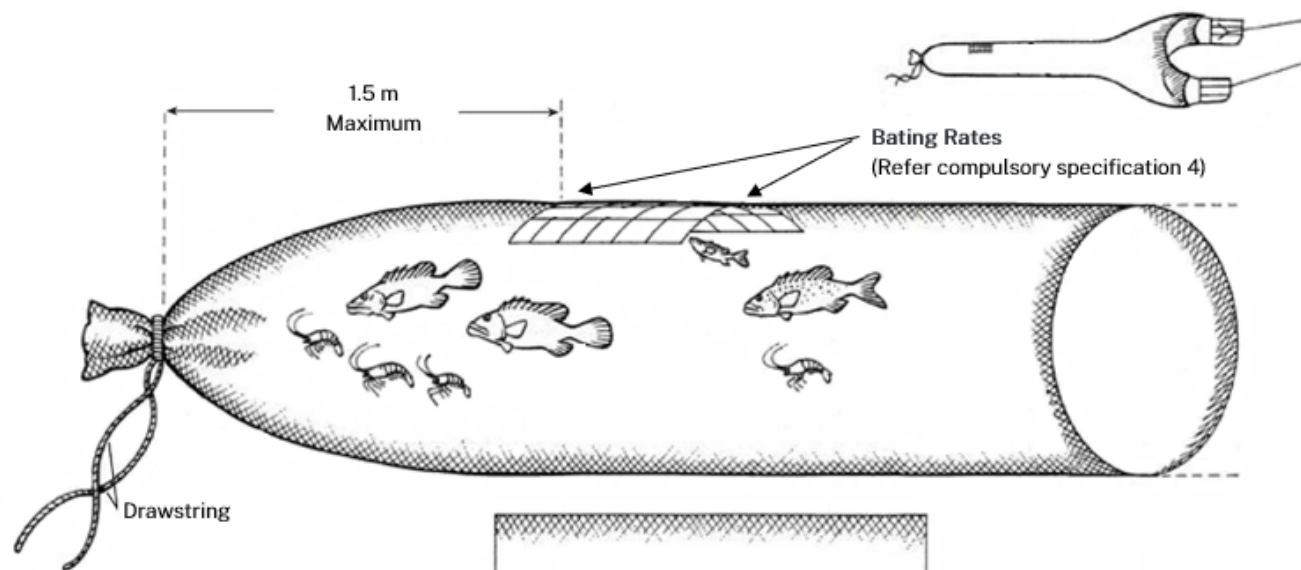
Matt Broadhurst, Senior Principal Research Scientist (02) 6656 8905 or 0408 110 448



NSW Ocean Trawl Fishery

Shrinkage affected Ocean Square-Mesh Panel Bycatch Reduction Device (BRD)

(for use in NSW Ocean Waters)



Compulsory specifications:

- 1) Maximum distance from drawstring 1.5m (stretched when not in use)
- 2) **Panel A (surrounding panel):**
 - a. Minimum 30 mm mesh hung on the bar (i.e., hung square)
 - b. Minimum 45 cm wide and 70 cm long
 - c. Maximum diameter twine of 6 mm
- 3) **Panel B (centre panel):**
 - a. Minimum 55 mm mesh hung on the bar (i.e., hung square)
 - b. Minimum 25 cm wide and 30 cm long
 - c. Maximum diameter twine of 5 mm
 - d. Maximum 1.6m forward of codend drawstring and inserted into Panel A
- 4) **Bating Rates (top and bottom of Panel A only)**
 - a. If square-mesh panel 30-60 mm mesh - at least 2 points to each bar on the panel
 - b. If >60-75 mm mesh - at least 3 points to each bar on the panel
 - c. If >75 mm - at least 4 points to each bar on the panel

Panel A
(Refer compulsory specification 2)

Purpose of approval (for information only):

This BRD is now approved for use. The purpose of this approval is to authorise the high number of BRDs in use in the NSW Ocean Trawl Fishery with a surrounding panel (Panel A) known to be subject to extraordinary shrinkage and sediment induced increased twine diameters. Refer compulsory specifications underlined for the variations made in response to these issues. **If making a new BRD, do not build it to these specifications.**

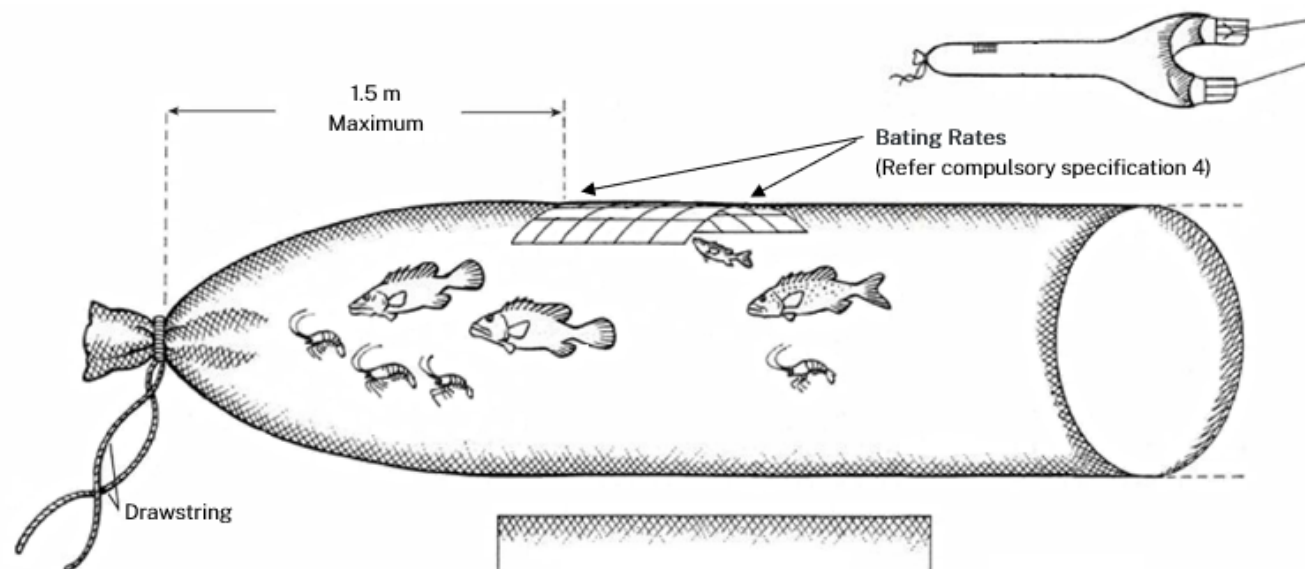
Diagram provided by QLD Department of Primary Industries & Fisheries



NSW Ocean Trawl Fishery

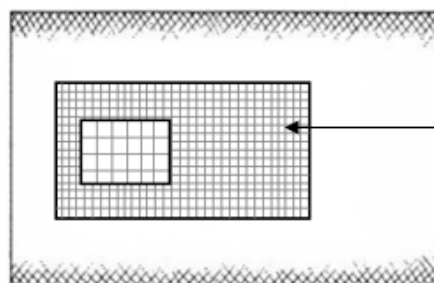
Smaller-mesh Ocean Square-Mesh Panel Bycatch Reduction Device (BRD)

(for use in NSW Ocean Waters)



Compulsory specifications:

- 1) Maximum distance from drawstring 1.5m (stretched when not in use)
- 2) **Panel A (surrounding panel):**
 - a. Minimum 38 mm mesh hung on the bar (i.e., hung square)
 - b. Minimum 50 cm wide and 65 cm long
 - c. Maximum diameter twine of 5 mm
- 3) **Panel B (centre panel):**
 - a. Minimum 55 mm mesh hung on the bar (i.e., hung square)
 - b. Minimum 30 cm wide and 30 cm long
 - c. Maximum diameter twine of 5 mm
 - d. Maximum 1.6m forward of codend drawstring and inserted into Panel A
- 4) **Bating Rates (top and bottom of Panel A only)**
 - a. If square-mesh panel 38-60 mm mesh - at least 3 points to every two consecutive bars on the panel
 - b. If >60-75 mm mesh - at least 3 points to each bar on the panel
 - c. If >75 mm - at least 4 points to each bar on the panel



Panel A
(Refer compulsory specification 2)

Purpose of approval (for information only):

This BRD is now approved for use. The purpose of this approval is to authorise the use of a modified version of the ocean square-mesh panel BRD consisting of smaller mesh to the surrounding panel (Panel A) due to material availability issues, subject to the centre panel (Panel B) being larger in overall surface area. Refer compulsory specifications underlined for the variations made in response to this issue.

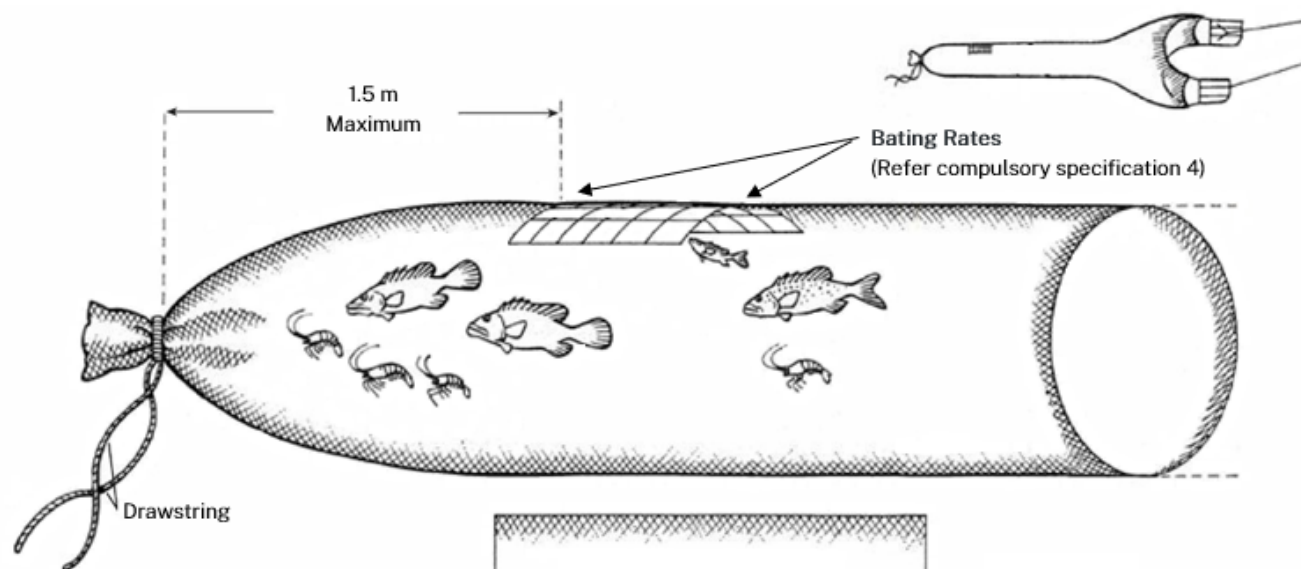
Diagram provided by QLD Department of Primary Industries & Fisheries



NSW Ocean Trawl Fishery

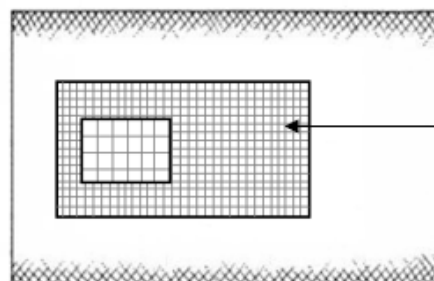
Rigid-mesh Ocean Square-Mesh Panel Bycatch Reduction Device (BRD)

(for use in NSW Ocean Waters)



Compulsory specifications:

- 1) Maximum distance from drawstring 1.5m (stretched when not in use)
- 2) **Panel A (surrounding panel):**
 - a. Minimum 20 mm bar length (i.e., inside bars)
 - b. Minimum 55 cm wide and 70 cm long
 - c. Maximum diameter bars of 5 mm
- 3) **Panel B (centre panel):**
 - a. Minimum 28 mm bar length (i.e., inside bars)
 - b. Minimum 25 cm wide and 30 cm long
 - c. Maximum diameter bars of 5 mm
 - d. Maximum 1.6m forward of codend drawstring and inserted into Panel A
- 4) **Bating Rates (top and bottom of Panel A only)**
 - a. If square-mesh panel 20-30 mm bar length - at least 2 points to each bar on the panel
 - b. If >30-38 mm bar length - at least 3 points to each bar on the panel
 - c. If >38 mm bar length - at least 4 points to each bar on the panel



Panel A
(Refer compulsory specification 2)

Purpose of approval (for information only):

This BRD is now approved for use. The purpose of this approval is to authorise the use of a modified version of the ocean square-mesh panel BRD consisting of rigid mesh material (e.g., stainless steel) in lieu of soft-mesh netting material due to material availability issues. Refer compulsory specifications underlined for the variations made in response to this issue.

Diagram provided by QLD Department of Primary Industries & Fisheries