

project **50%**

Devon beam trawlermen reduce discarded juvenile fish by over 50%

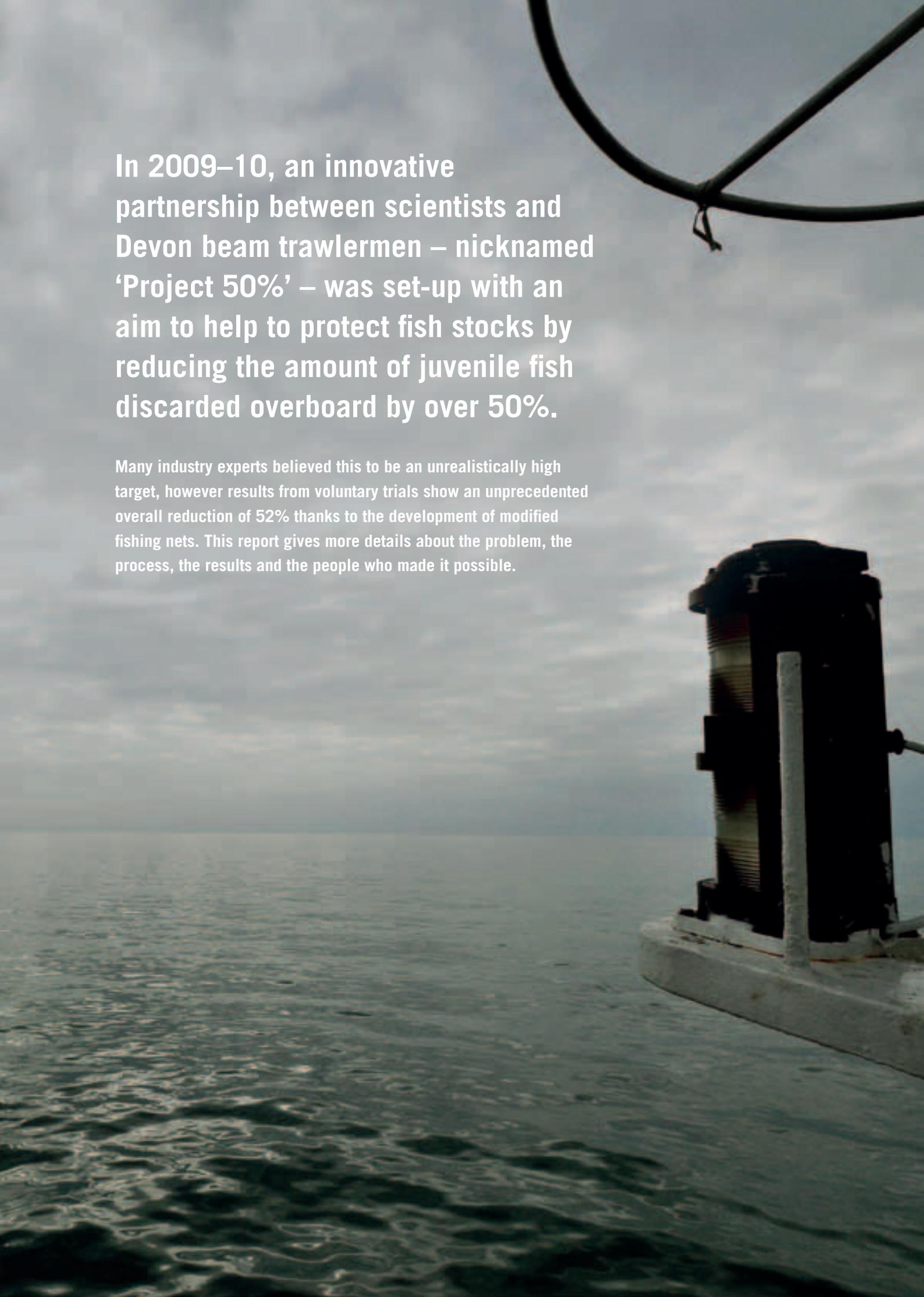




"Fishing has been carried out from Brixham and Plymouth for almost 1,000 years, with the area being famous for its high-quality deep sea fish such as sole, turbot and plaice together with wonderful cuttlefish and scallop. I am really proud of the way fishermen have volunteered to reduce their catches of juvenile fish to protect stocks."

Michael Caines 2009

Michael Caines, the Devon-based celebrity chef (right), discusses Project 50% with local vessel owner Alex Philips (left) and net-maker Darren Edwards (centre). Michael is an enthusiastic supporter of the project.

A photograph of a fishing vessel's deck. In the foreground, a large black metal structure, possibly part of a trawler's beam, is visible. To the right, a white cylindrical container, likely a fuel tank or storage drum, is mounted on the deck. The background shows a vast expanse of the sea under a cloudy, overcast sky.

In 2009–10, an innovative partnership between scientists and Devon beam trawlermen – nicknamed ‘Project 50%’ – was set-up with an aim to help to protect fish stocks by reducing the amount of juvenile fish discarded overboard by over 50%.

Many industry experts believed this to be an unrealistically high target, however results from voluntary trials show an unprecedented overall reduction of 52% thanks to the development of modified fishing nets. This report gives more details about the problem, the process, the results and the people who made it possible.

The problem

Globally, around 7.3 million tonnes of fish are discarded every year. Discards are unwanted fish caught in fishing gears, which are subsequently thrown away (discarded) at sea. The fish are typically discarded because they have no market value or because legislation forbids their landing and sale. Discarding is widely regarded as a waste of natural resources, disruptive to marine ecosystems and ethically undesirable as most fish don't survive discarding.



In the UK, fishermen and scientists are leading the way by working in partnership to reduce discarding.

In 2009–10, volunteers from the Devon beam trawl fleet took part in Project 50% with an aim to reduce discarding by 50%. Cefas* scientists worked closely with Devon trawlermen to drastically reduce the number of juvenile fish discarded overboard. Before the project, the Devon beam trawl fleet had one of the highest discard rates of English and Welsh fisheries.

The key to Project 50% was understanding the reasons for discarding. The fishermen were extensively consulted on their views and beliefs, and they described the problems and barriers to reducing discarding. They identified the measures needed to overcome these barriers.

One solution that was identified to minimise discarding was to develop more selective trawl nets. Working alongside local net-makers, skippers of the vessels involved developed 11 modified nets with different configurations and mesh sizes. (Some skippers had already started to develop new trawl designs before the project commenced.)

Two baskets of discards from the new trawl



* Centre for Environment, Fisheries & Aquaculture Science



Working together

While Project 50% was funded by Defra (a government organisation), and scientists from Cefas coordinated the project, the fishermen were very much at its core.

After the consultation at the onset of the project, the Devon fishermen clearly identified the barriers that existed to reducing their discards. The project offered the trawlermen support by reducing these barriers, thereby creating the right incentives needed to reduce discards. It was not about the government imposing measures on fishermen.

Throughout the project, Cefas provided observers onboard to work alongside the fishermen and record changes in discard patterns. Scientific jargon was minimised in all communications, and the results from the project were publicised so others could learn from them.

The volunteers were provided with support to undertake the trials by covering the cost of the new modified trawls, but the project was entirely voluntary and no charter payments, additional quota or extra days at sea were given to the fishermen involved.

Recognition was given to the fishermen for the positive steps taken to reduce discards in their fishery, and the media soon became interested in the project.



Five baskets of discards from the traditional trawl

The Project 50% Devon beam trawlers

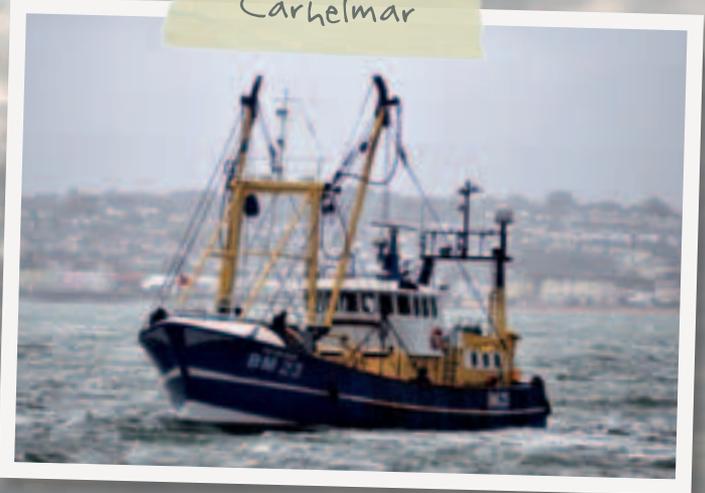
Korenbloem



Kerrie Marie



Carhelmar



Admiral Grenville



Lloyd Tyler



Christina



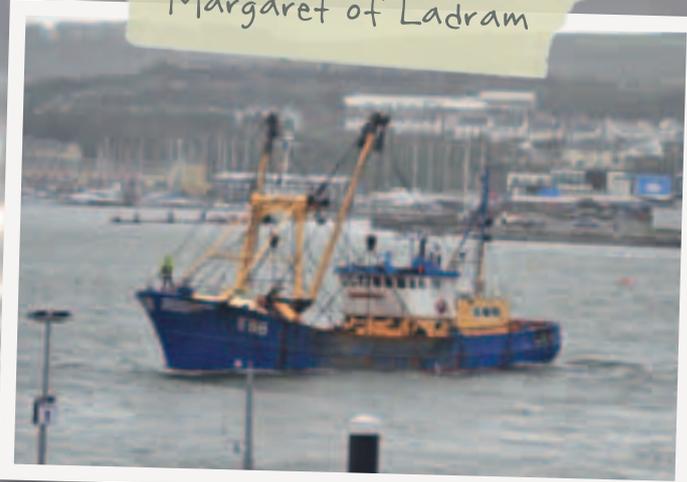
Geeske



Barentszee



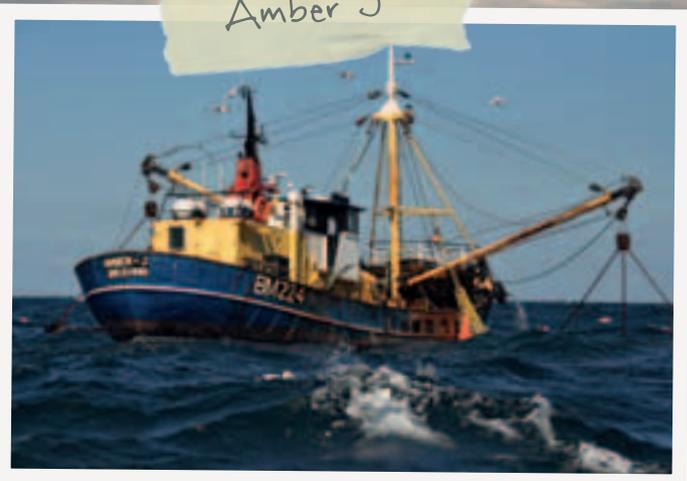
Margaret of Ladram



Emilia Jayne



Amber J*



* Fishing trials with the Amber J are due to be completed after this report is published.

The Project 50% trawlermen





Local Devon net-makers built the new trawls and helped with their design



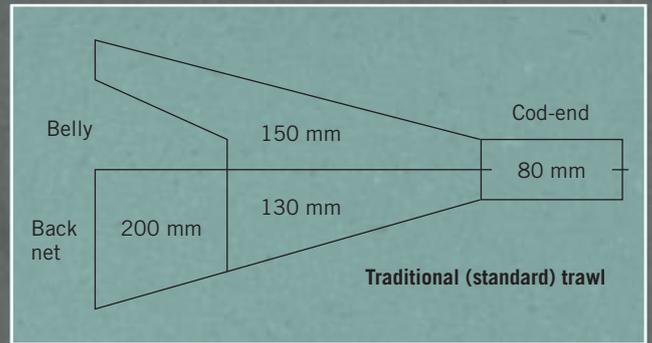
Steve Simons



Darren Edwards

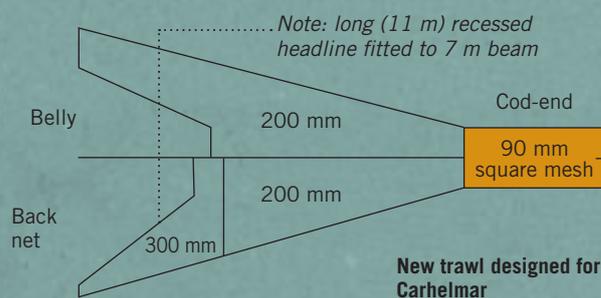
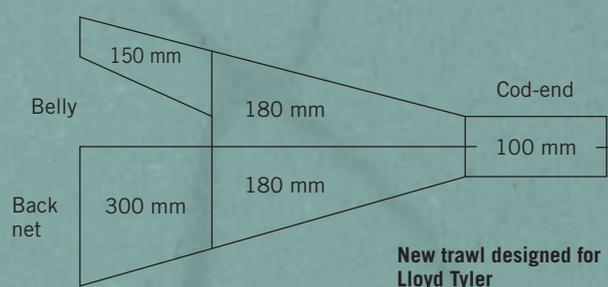
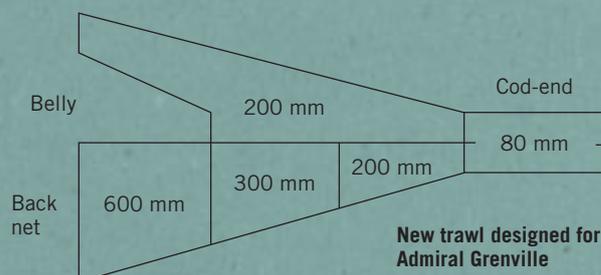
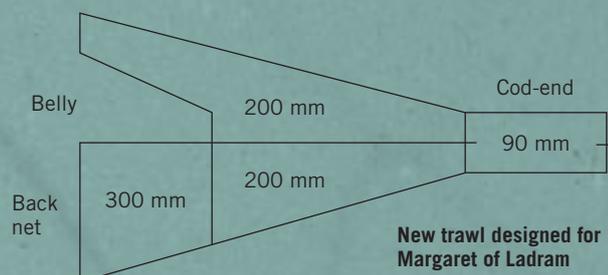
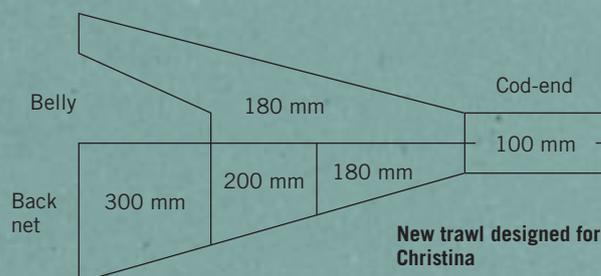
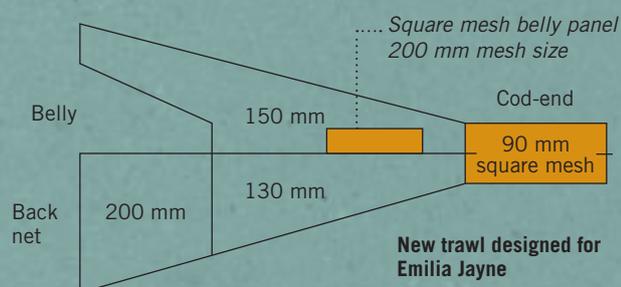
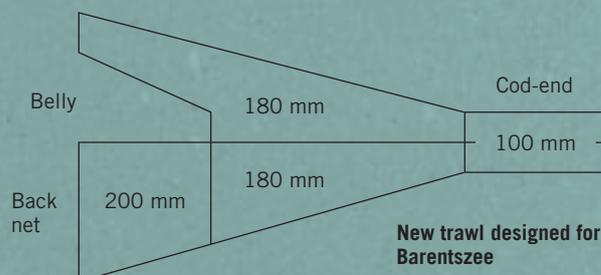
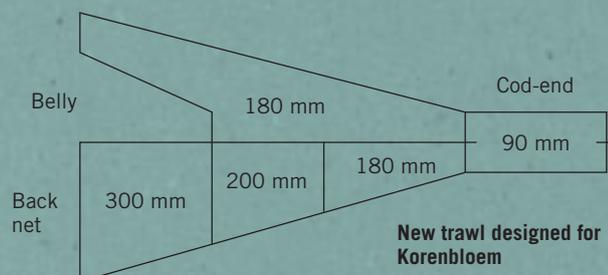
The trawl nets

The new trawl nets incorporate features such as larger meshes, square mesh escape panels and novel headlines in their construction, which allow young fish to escape. Each skipper designed their own new trawl, tailored to their individual fishing patterns.



The new trawl net designs allow many more juvenile fish to escape

The new net designs

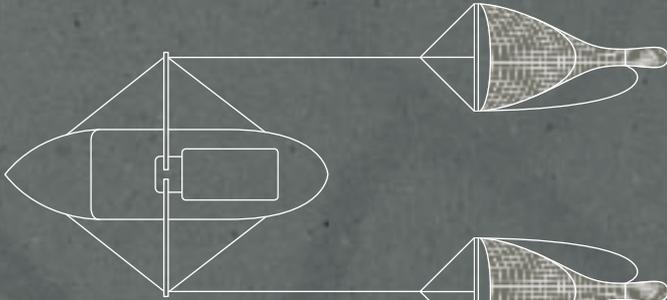


The trawls

Both the new trawl and the traditional trawl were repeatedly towed alongside each other, providing the data for good comparisons to be made by the scientists. The new trawls were designed for use in the beam trawl fishery in sea area '7e'.



Traditional (standard) trawl net



New trawl net



The nets in action



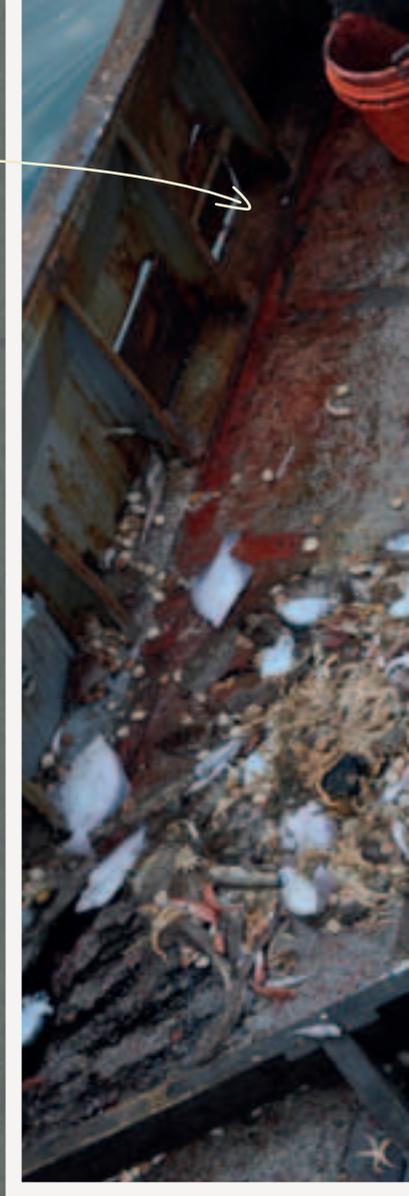
Bringing in the catch



Consistently fewer small fish were caught in all of the new trawls

Comparing catches

The new trawl designs typically caught fewer small fish, and discarding was reduced by over 50%. As well as producing benefits for fish stocks, fewer discards can mean less work for the crew, improved catch quality, lower fuel costs and reduced drag.



Catches from the new and old trawl nets were kept separate

Sorting the haul





Fewer small fish caught
in the new trawl



More unwanted small
fish caught in the
traditional trawl



2 1/2 baskets
of discards
from new nets

4 baskets of
discards from
old nets



3 baskets of
discards from
new nets

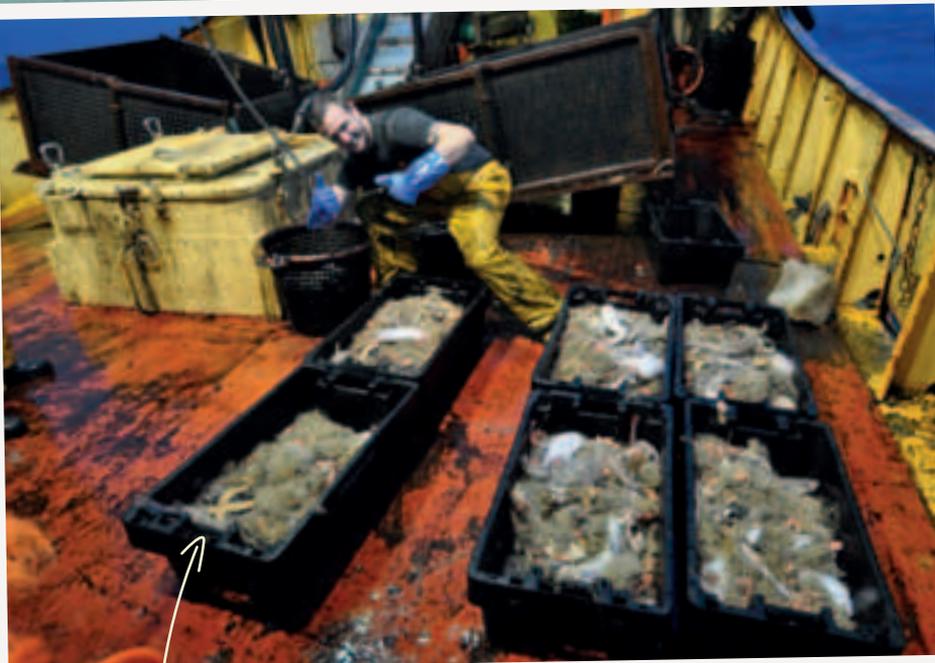
6 baskets of
discards from
old nets



Fewer small fish caught in the new trawl



More unwanted small fish caught in the traditional trawl



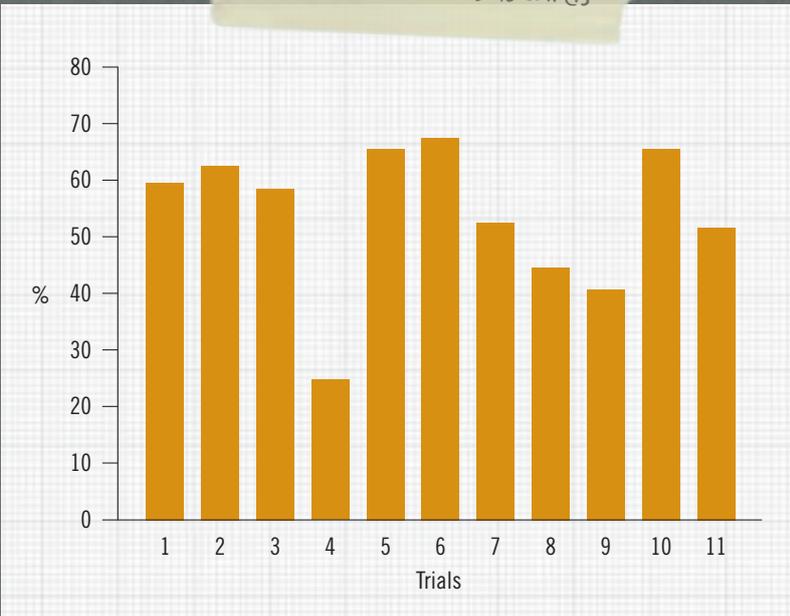
Crewman Mike happy with fewer discards from the new trawl (boxes on left)



Mike not so happy with abundant discards in the traditional trawl (boxes on right)



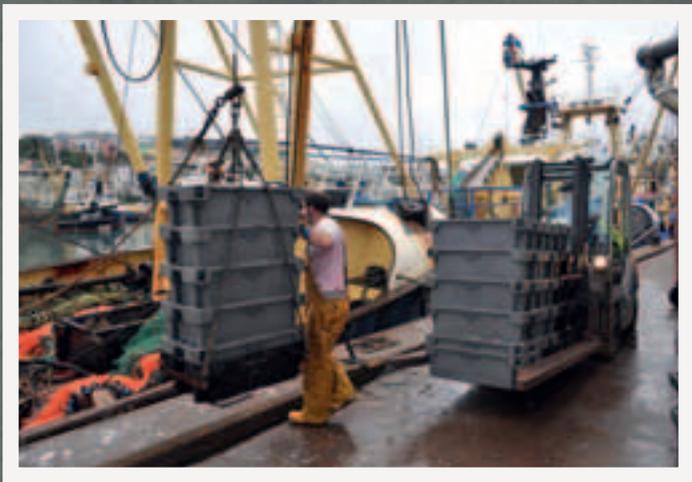
% Reduction in Discards

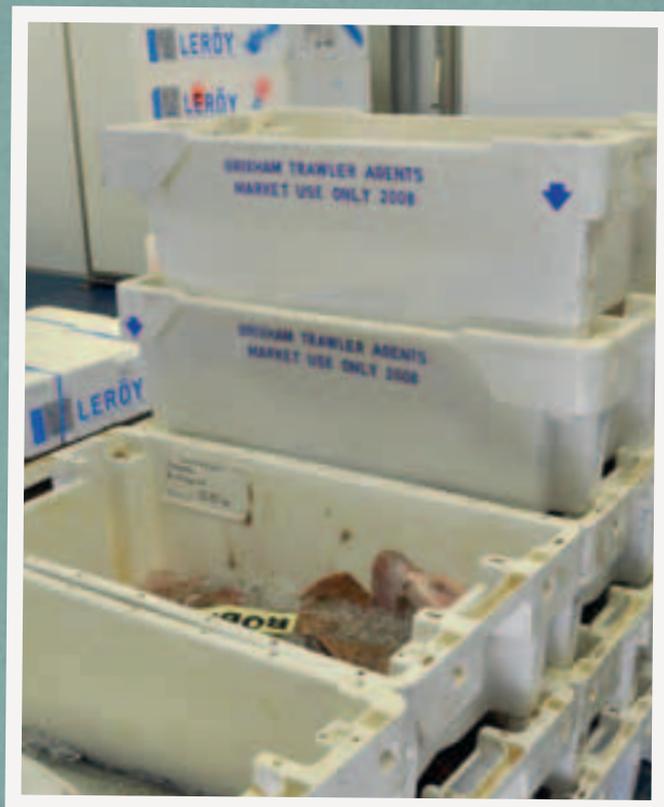


Cefas scientists recorded the differences in discard patterns between the two catches. In total, 11 different designs of new net were evaluated, and each one caught fewer small fish and reduced discarding. Overall, discarding was reduced by 52% across the trials (details in the Appendix).

The end of the fishing trips

The trials have shown that reducing discarding can improve the quality of fish that are landed at the market.





Communication

It was identified early on that there was a need to improve communication between all groups involved in the project, so several publications were produced during the project. Newsletters helped to raise public awareness of the positive steps the fishermen have taken.



Meet the crew

Helping to change fishing for the better

The 4075 Beamtrawler
 An innovative design of
 4075 tonne, 100m beamtrawler
 designed to catch
 sole, plaice and turbot.

David - *Chief Officer*
 David is the Chief Officer of the 4075 Beamtrawler. He has been on the boat for 15 years and has a wealth of experience in the industry. He is currently in charge of the crew and the day-to-day running of the boat.

Andy - *Deck Hand*
 Andy is a Deck Hand on the 4075 Beamtrawler. He has been on the boat for 10 years and has a wealth of experience in the industry. He is currently in charge of the deck and the day-to-day running of the boat.

Mark - *Chief Mate*
 Mark is the Chief Mate of the 4075 Beamtrawler. He has been on the boat for 15 years and has a wealth of experience in the industry. He is currently in charge of the crew and the day-to-day running of the boat.

Steve - *Deck Hand*
 Steve is a Deck Hand on the 4075 Beamtrawler. He has been on the boat for 10 years and has a wealth of experience in the industry. He is currently in charge of the deck and the day-to-day running of the boat.

*Project Fifty Percent

Giving smaller fish a fighting chance

Beam trawlermen in Plymouth and Brixham are famed for their catches of sole, plaice and turbot.

New initiative

The local crews have now volunteered to take part in a new initiative called Project Fifty Percent, which aims to reduce the level of juvenile fish discarded (or thrown back overboard) by half. The first trials, using modified net designs, began early in 2009 and will come to an end in December this year.

Reducing discards

Beam trawler nets tend to have a mesh size of at least 90mm, which catches a high degree of bycatch (typically larger starfish, decaying mussels, shells, plants and debris). The bycatch is ecologically important but has no commercial value, so it is an unnecessary component of the catches. There are also substantial catches of juvenile and non-commercial fish, for which there is no market or landing and sale is forbidden by legislation. There is some debate about whether many of these

smaller fish live to grow bigger after discarding or die as a result of being landed on deck. Either way, discards can make up almost half of the total catch.

Seeking the benefits

To address this issue, South West trawlermen are working in close partnership with expert scientists from Cefas to understand the best gear modifications needed in order to achieve a reduction of discards by 50%. These modifications include bigger mesh sizes on nets to let juvenile fish escape. The two large "beams" on the boats are ideal for trials as one side can be fitted with a standard net and used as a control, while the other side is fitted with the new net design. Catches can be directly compared, including the amount of bycatch on deck and the number of juvenile fish discarded.

Results so far show a clear reduction of over 50% in juvenile discards, surpassing the target set by those involved. This is a positive development in the drive to cut discards, and most

of the crews are keen to continue using the nets after the trials have finished. Dr Andy Revell of Cefas, who is leading the project, comments "This is an innovative partnership project. We have worked closely with fishermen, who voluntarily want to help minimise the number of juvenile fish caught. We are keen to ensure the nets continue to be used and that other fishermen plainly see the benefits - not just to them but for the sustainability of the industry and the fishing grounds, too."

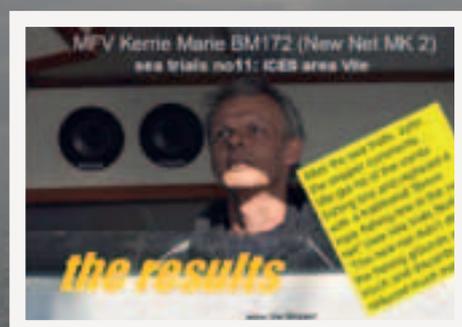
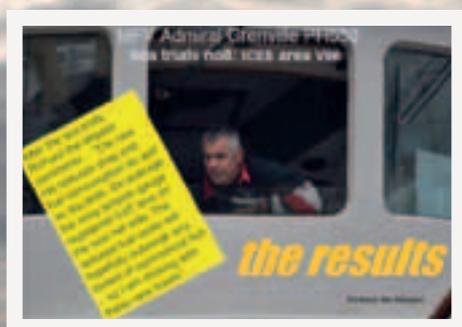
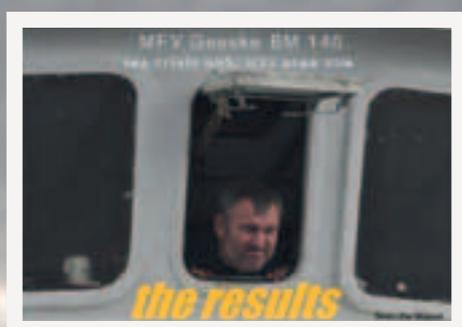
A promising future

UK Fisheries Minister, Hilary Benn, has been following the progress of the trial. He said "The problem of discards has long been an issue for the industry. Projects such as this could help us reduce the amount of fish that are thrown back. I'd like to thank all those that are taking part in this valuable project. The results are promising and I look forward to seeing the final analysis of the figures in December."

Cefas is the Centre for Environment, Fisheries and Aquaculture Science. It is the UK's largest and most diverse applied marine science centre, working in partnership with government, industry and academia. www.cefas.co.uk
 If you have comments or queries please call 090 7500 9416.



Fact sheets were produced after each set of sea trials detailing the new trawl designs and the associated discard reductions obtained. These were widely distributed amongst the fishing industry and other interested parties.



Sole

trader

Sainsbury's works with more than 1,200 British fishermen around our coastline to bring sustainable, local fish to its stores when they are freshest and in season.

Nutritional advice changes all the time, but one thing remains the same - eating fish is an essential part of a balanced, healthy diet. It's also a delicious, versatile and easy-to-cook food that's as good for sizzling summer barbecues as for easy fish suppers around a roaring fire. If you're worried about overfishing, don't be - local fish is now easy for customers to buy because Sainsbury's has carefully sourced a fantastic selection of fresh, sustainable, seasonal, local fish throughout the year at your local store. Sainsbury's fish counters stock a wide range of great-value fresh fish, including the best of British, caught in season from around our shores and transported quickly to stores for the ultimate in freshness. In fact, Sainsbury's is one of the UK's largest fish retailers, with almost 400 fish counters and more than 19 million customers a week. Its fish-counter staff are highly trained and understand where the fish; they sell scores from and how to cook it. They even provide customers with free marinades, batters and foil bags to help them cook their fish to perfection.

We all want to eat local and seasonal food these days, and Sainsbury's prides itself on the seasonal selection on its fish counters - 100 per cent fresh, never frozen. Look out for "best in season" and "catch of the day" promotions and monthly campaigns that encourage customers to try different fish. This also helps take the pressure off more traditional species that are at risk of becoming depleted.

Selling sustainable fish is top of Sainsbury's agenda, and last year it was voted the top-rated major supermarket in the Marine Conservation Society (MCS) fish survey. Sainsbury's now sells more than 25 MCS-certified species of fish, more than any other UK retailer, and introduced own-label MCS-certified haddock in 2006.

Where it's not possible to get an MCS certification, Sainsbury's uses its own fish-sustainability rating system, which was developed in consultation with the MCS. Green-rated fish are scientifically verified to be in plentiful supply; amber rating indicates concerns about sustainability, but remedial action is being taken; and a red rating suggests there are major concerns about sustainability.

This traffic-light system shows Sainsbury's is on track to convert the top five fish



98 The Independent Magazine

A good example of the interest and support shown by the commercial retail sector and participating fishermen



Each of the fish over the Cachelmar crew's catch is landed, it's taken to market, where it's sold day after day for Sainsbury's.



LEMON SOLE WITH CAPERS

- Serves 4*
- 4 fillets of sole or plaice, skin-on (about 140g/5oz each)
 - 6 tbsp plain flour
 - 1 tbsp light olive oil or sunflower oil
 - 85g butter, ideally unsalted
 - 1 lemon, juice only
 - 2 tbsp small capers (optional)

1. Check the fish for small bones, and pull any out with tweezers. In a large shallow bowl, season the flour with a little salt and black pepper. Toss the fish in the flour, coating well, and shake off any excess.
2. Heat the oil in a large frying pan. Add the fish and cook, skin-side down, for 2 mins. Use a fish slice or large spatula to turn, then cook the other side for 1-2 mins until golden.
3. Remove the fish to a warmed plate, then season. Wipe out the pan with kitchen paper. Return the pan to the heat, then add the butter. Heat until it melts and begins to turn a light brown, then mix in the lemon juice and capers, if using. Swirl in the pan for a few secs, return fish to the pan and spoon over any juices. Serve immediately.

fish buyer. "It is abundant during the summer and autumn in the waters around the south west of the country, and we buy it every day, fresh from fishermen in Devon and Cornwall. Within 24 hours the fish - 100 per cent fresh, never frozen - is delivered to Sainsbury's fresh fish counters across the country."

Sainsbury's ensures a constant supply of a wide variety of 100 per cent fresh fish by working with more than 1,200 British fishermen. One of them, Gerry Poduchies, is the skipper of the Plymouth-based trawler Cachelmar and has been beam trawling for 30 years. He and his crew only target premium quality flatfish when they're in season, and move to seasonal fishing grounds at other times of the year. He works with government scientists to improve their understanding of fish stocks, and uses square-shaped mesh nets so that only the fish they are targeting are caught.

Once the Cachelmar crew's catch is landed, it's taken to market, where much of it is bought for Sainsbury's fresh fish counters. "Helping scientists get a proper assessment of quotas is good for us, because there has been a lot of hearsay on the subject," says Poduchies. "We get the same catches year in, year out, from the lemon and Dover-sole fisheries we target, so we know those fish have reached a sustainable level."

We get the same catches year in, year out, from the lemon and Dover-sole fisheries we target, so we know those fish have reached a sustainable level

species sold - salmon, cod, haddock, prawns and tuna - to green status by the end of this year. Sainsbury's doesn't sell any red-rated fish and is working with its suppliers to move any amber-rated to green. For example lemon sole, which features prominently along our south-west shoreline at this time of year, is in plentiful supply and passes Sainsbury's sustainability guidelines.

"Lemon sole is sustainable, flavoursome, versatile and easy to prepare," says Russell Crowe, Sainsbury's



Sainsbury's
Try something new today

Celebrating Success

Television chef Michael Caines hosted an event in Exeter to recognise the achievements of the Project 50% partnership. It was attended by vessel owners, skippers, fish producer organisations, Seafish, local councillors, trawler agents, net-makers, MPs, Cefas scientists, fish retailers, members of the press and representatives from the MMO, Defra, NGOs and the seafood industry.



Guest speaker Michael Caines



Listening to the speeches





District Marine Officer Julian Roberts and Dr Keri Torney (Defra). Defra provided the funding for Project 50%.



Andy Pillar (Interfish), Ally Dingwall (Sainbury's) and Emily Howgate (Seafood Choices)



Paul Trebilcock (CFPO) and Rick Smith (Brixham Trawler Agents)



Councillor J Baverstock and Michael Caines



Dr Sarah Wollaston MP and Dr Andy Revill*



Representatives from Corporate Culture

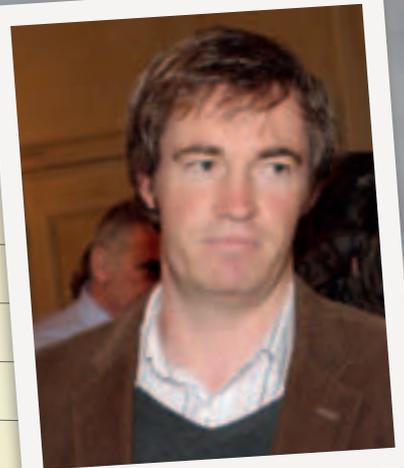
* Project 50% Manager, Cefas

Comments from the fishing industry

COMMENT

"Skippers are now working with the scientists and we are sharing information, so that the public can understand the modern fishing industry and the fact that we're working in a responsible way. The benefits are twofold: we deliver more sustainability to more species and we deliver better quality in terms of the fish we do actually take from the stock."

Andrew Pillar, Interfish Plymouth



COMMENT

"We have seen a big decrease in the amount of stuff getting thrown back overboard. Nobody has ever listened to the fishermen before, but that's starting to change. This last year has been 100% better."

Dave Langdon, Langdon & Philips trawler owners, Brixham



COMMENT

"We've had massive savings in terms of the work we do, it's not hard to sort the catch and there's less maintenance of the nets needed. The amount of discards that used to be in the cod-ends compared to what's there now with the new net was clear for us all to see. I'm very happy with the results."

Sean Irvine, Skipper and co-owner of the Geeske

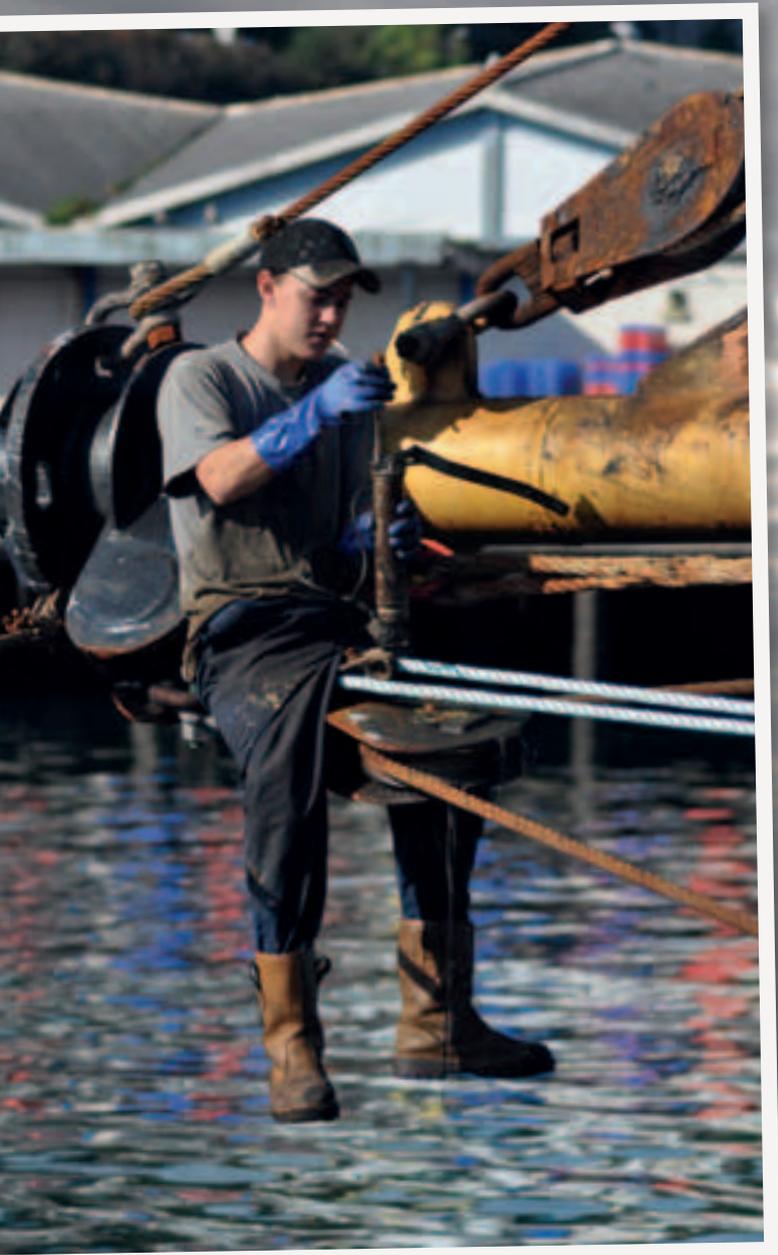
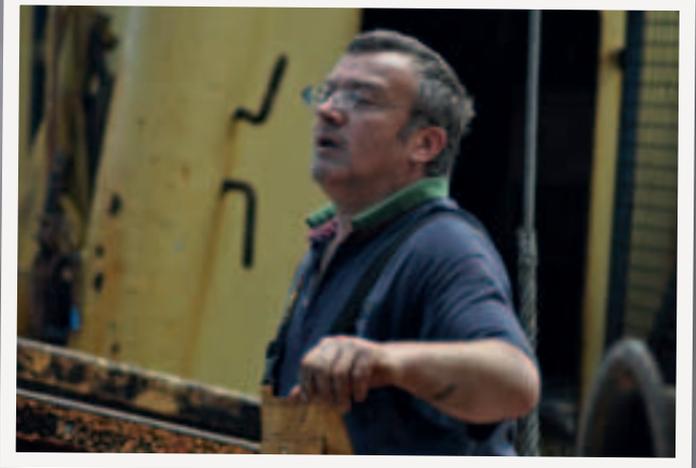


Gallery

Life onboard the Devon beam trawlers during Project 50%.



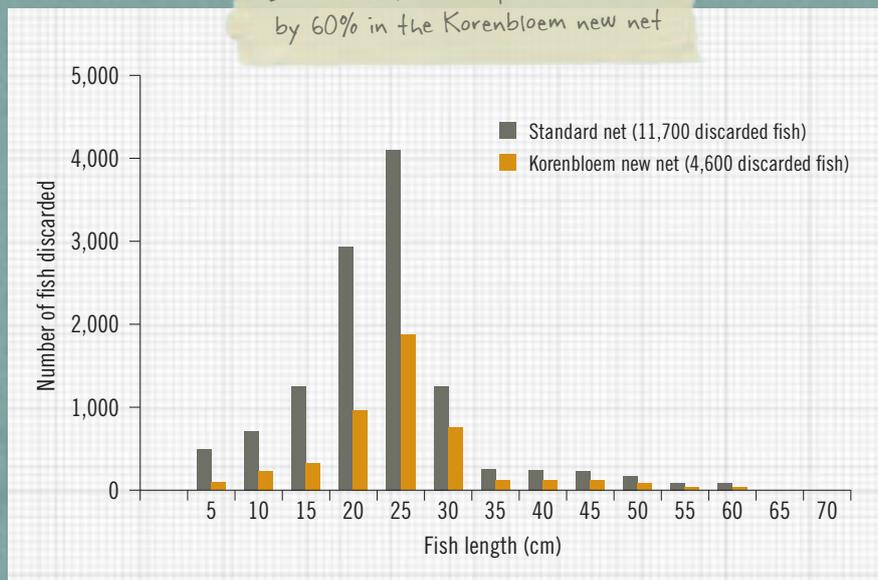




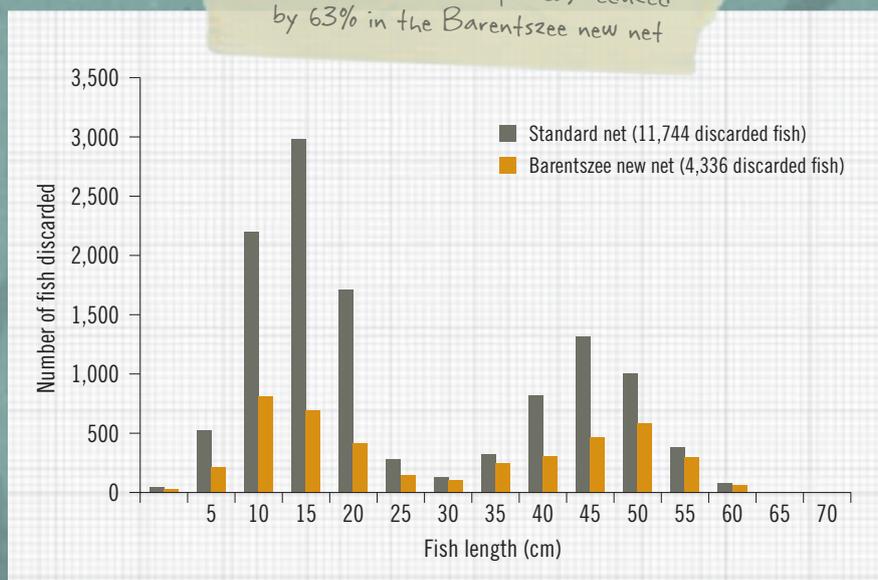
Appendix

Length–frequency graphs on the discard reductions obtained with the new trawl nets.

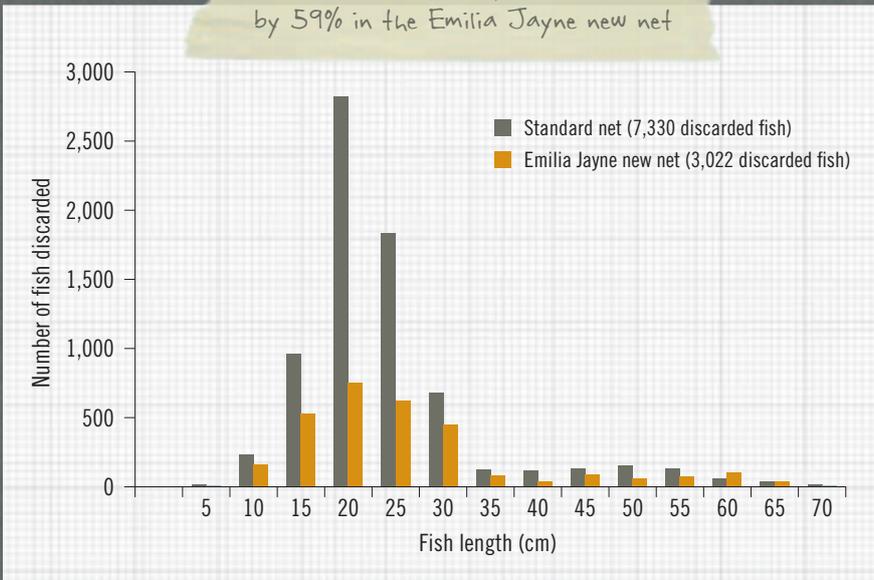
Discarded fish (all species) reduced by 60% in the Korenbloem new net



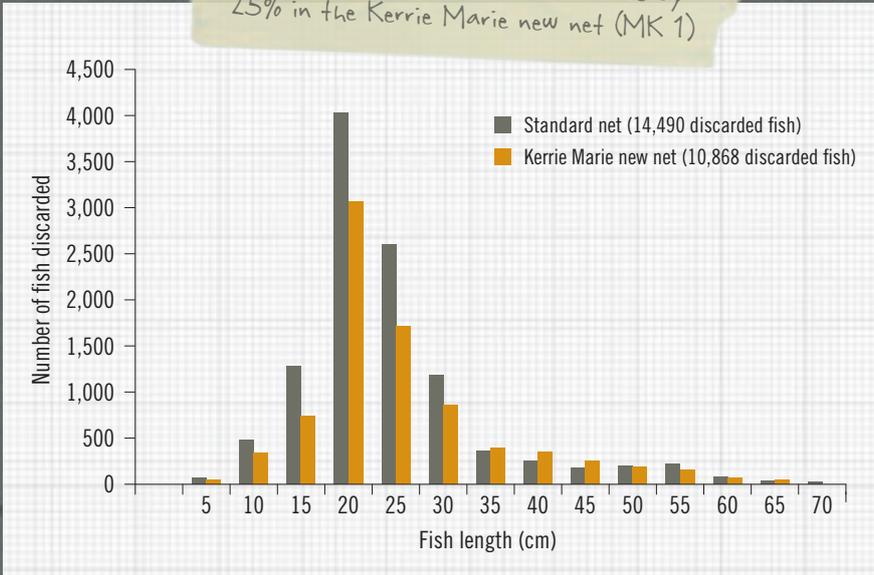
Discarded fish (all species) reduced by 63% in the Barentssee new net



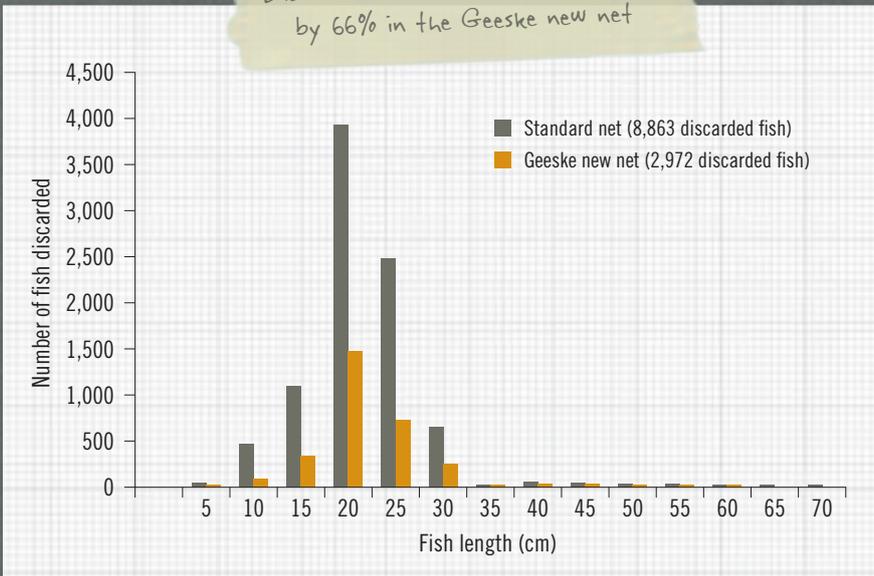
Discarded fish (all species) reduced by 59% in the Emilia Jayne new net



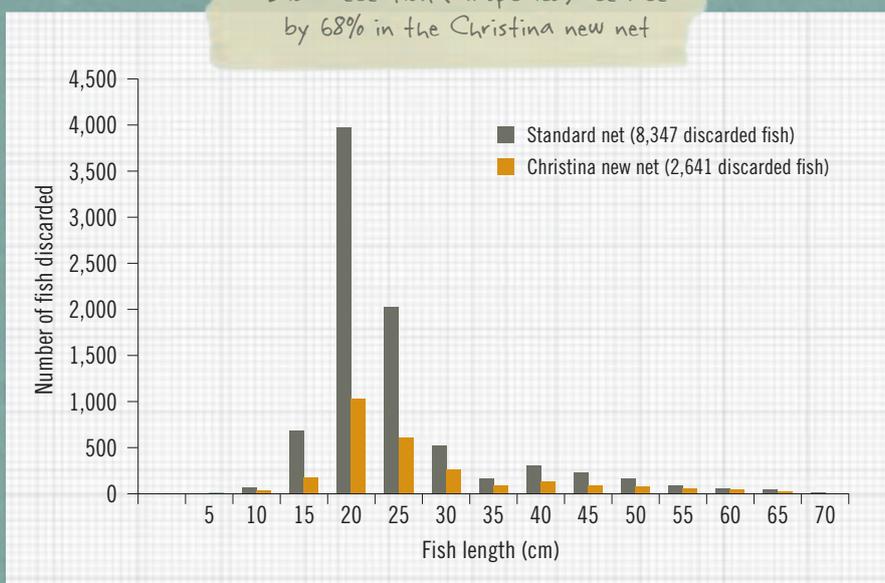
Discarded fish (all species) reduced by 25% in the Kerrie Marie new net (MK 1)



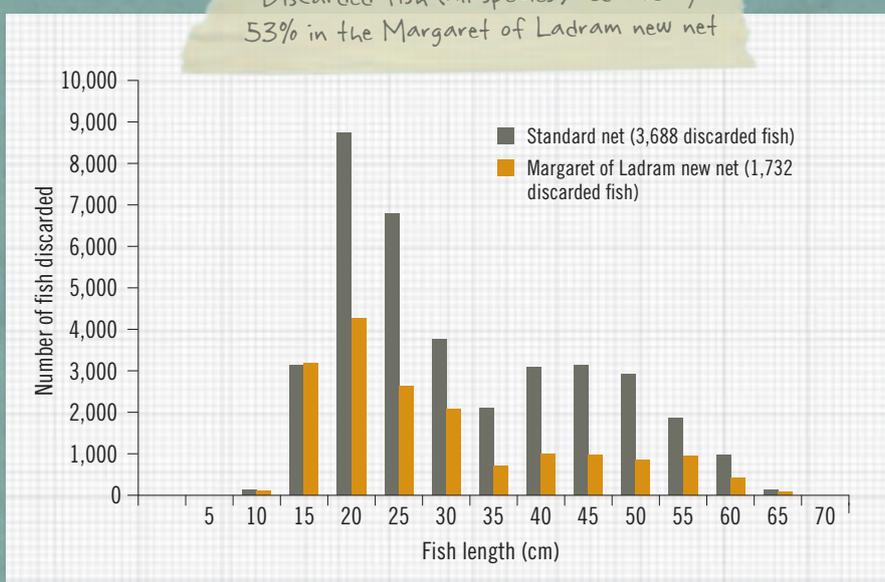
Discarded fish (all species) reduced by 66% in the Geeske new net



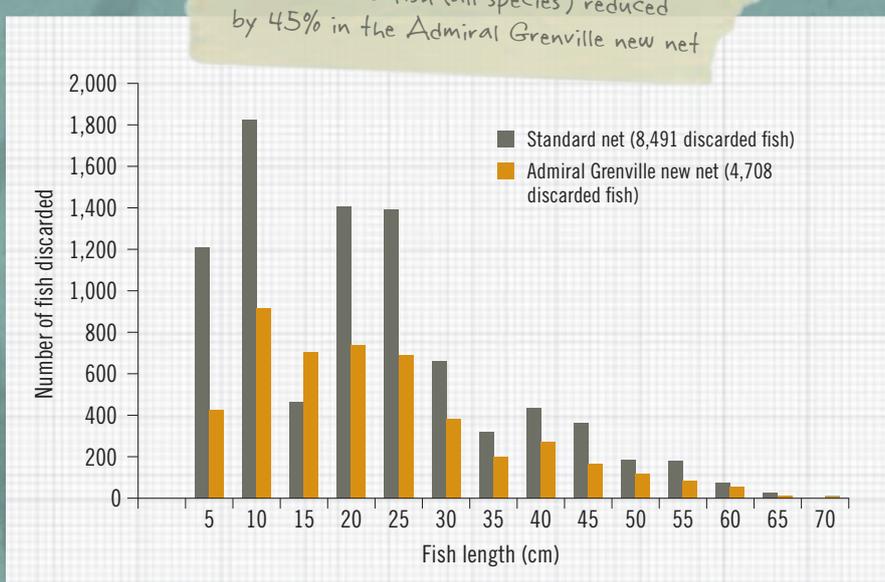
Discarded fish (all species) reduced by 68% in the Christina new net



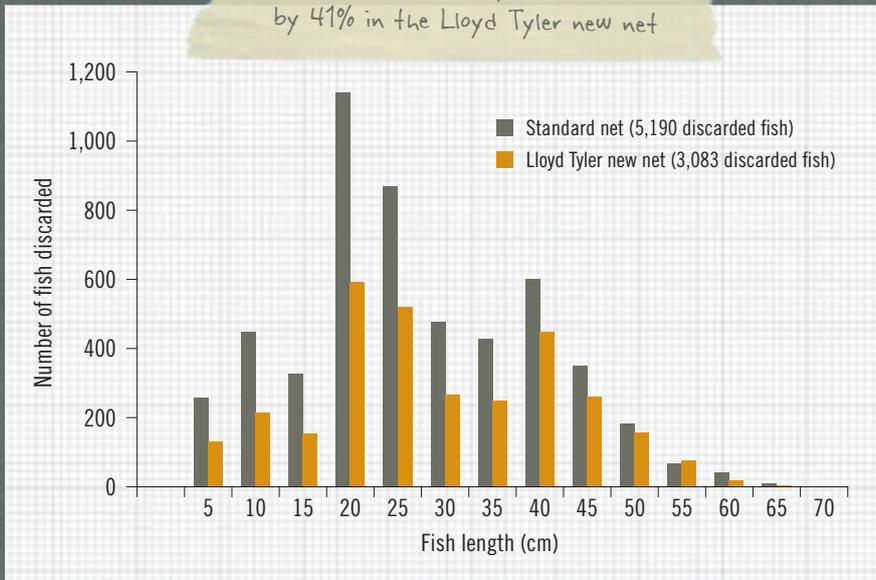
Discarded fish (all species) reduced by 53% in the Margaret of Ladram new net



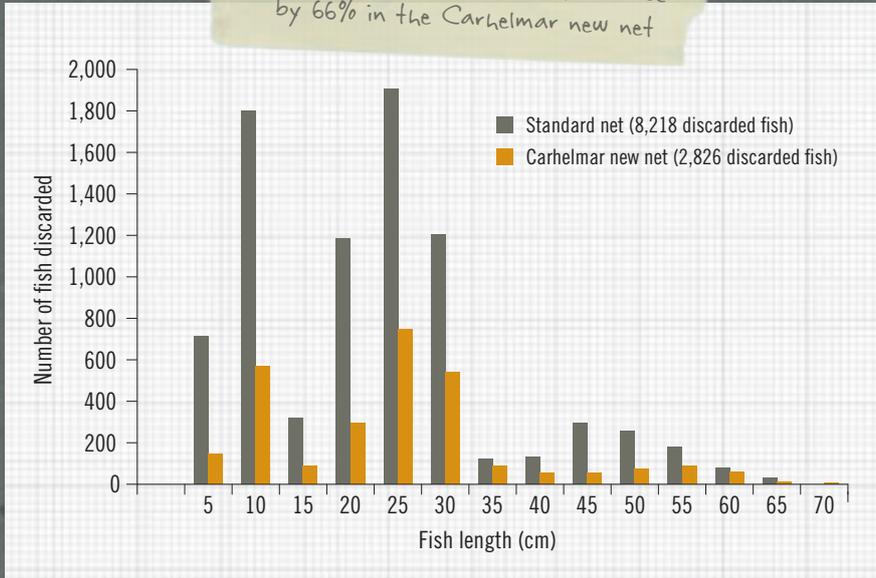
Discarded fish (all species) reduced by 45% in the Admiral Grenville new net



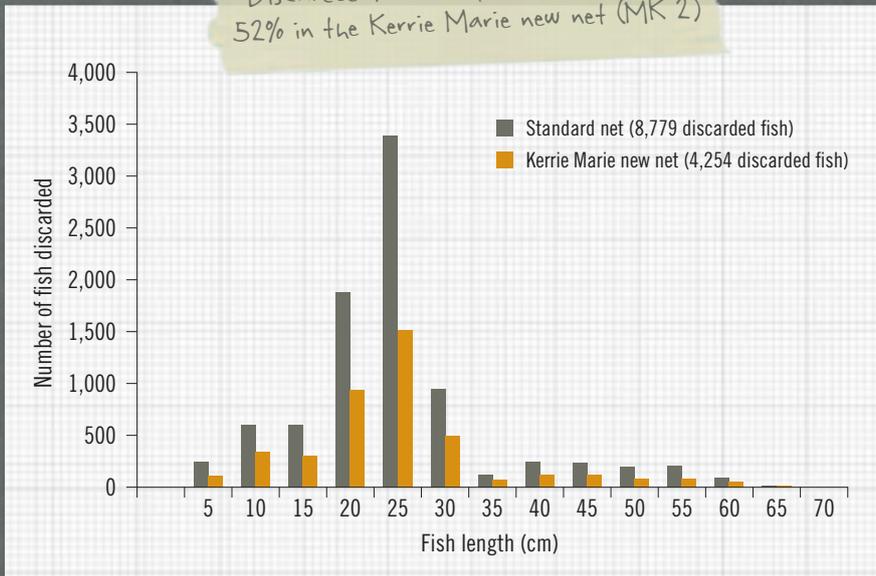
Discarded fish (all species) reduced by 41% in the Lloyd Tyler new net



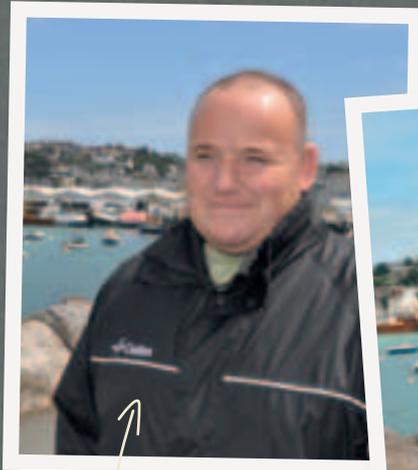
Discarded fish (all species) reduced by 66% in the Carhelmar new net



Discarded fish (all species) reduced by 52% in the Kerrie Marie new net (MK 2)



This report has been compiled by Dr Andy Reville and Simon Armstrong (Cefas)



Simon Armstrong



Dr Andy Reville

The Centre for Environment, Fisheries & Aquaculture Sciences (Cefas) is the UK government's foremost source of marine evidence and impartial expert advice. Its internationally renowned applied science helps to shape and implement policy and to manage risks to the environment, people and businesses. Its primary focus is to support the sustainable management of UK inshore and shelf seas, and the associated food, energy and environmental resources. Cefas' capabilities extend into freshwater systems (including aquaculture), estuarine environments and oceans. Cefas is an executive agency of the Department for Environment, Food and Rural Affairs (Defra).

www.cefas.co.uk

Project 50% was funded by Defra.
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Project 50% partners



**Interfish Ltd
Plymouth**



project **50%**