Quality of trawled *Nephrops* using the coverless trawl

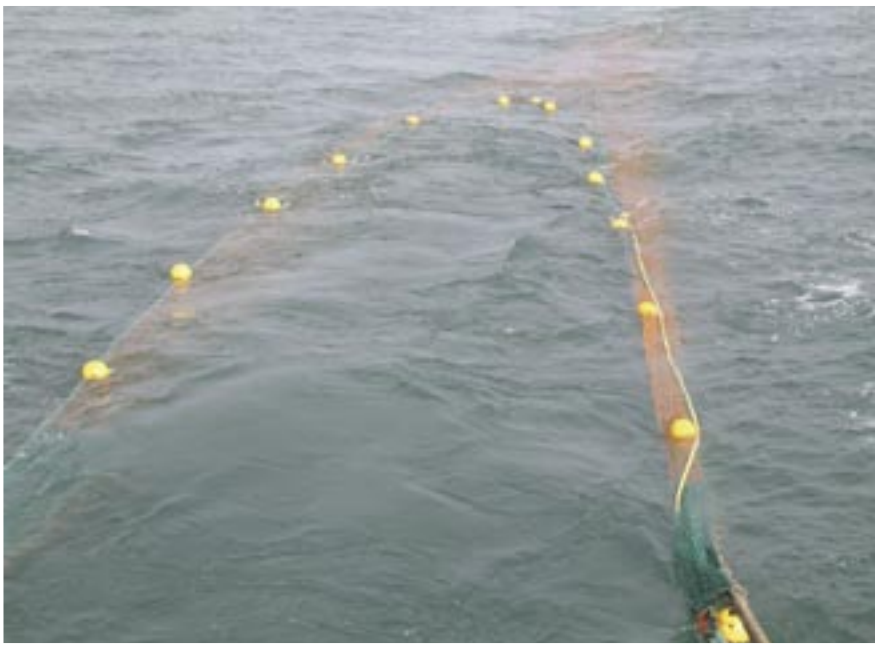
Targeted trawl fisheries for *Nephrops*[1] can cause high levels of damage to the target species and frequently involve high by-catch rates of finfish. Damaged product can lose 60-80% of its original value, and the finfish by-catch is usually unmarketable due to small size, poor quality or lack of quota. With increasing pressure on limited resources the industry needs to maximise quality and reduce environmental costs. Recent trials have shown that the coverless trawl[2] reduced the by-catch of whiting by 70%, reduced severe *Nephrops* damage by 18%, caught 10% more *Nephrops* and increased earnings.

Introduction

Trawling for *Nephrops* occurs extensively around the UK. Annual landings for the main UK fisheries can exceed 29,000 tons. These fisheries discard substantial levels of unwanted by-catch despite fishermen adhering to mandatory technical measures aimed specifically at reducing discards.

Seafish has been working closely with the industry to reduce unwanted by-catch in *Nephrops* fisheries. The coverless trawl has been developed recently to reduce the whiting by-catch without affecting the catch of *Nephrops* and groundfish.

Seafish has also been working with the industry to improve the quality of trawled *Nephrops*. This work demonstrates that by reducing the levels of physical damage, the value of the catch can be increased. Previous work using a standard *Nephrops* trawl showed that shorter tow times reduced *Nephrops* damage and improved the survival of live animals[3].



Hauling a coverless *Nephrops* trawl

Presented here are the results of a study into the effects of the coverless trawl on *Nephrops* quality, beyond the environmental benefits of discard reduction. The purpose of the research was to collect quantitative data that could be used to guide future harvesting strategies.

[1] *Nephrops* are also known as langoustine, scampi and prawns.
[2] The coverless trawl is a modified *Nephrops* trawl design in which the upper panel of netting known as 'the square' or 'cover' has been removed to encourage the escape of certain species of roundfish. More details are provided in the following guidance notes: 'Evaluation of Technical Conservation Measures in UK Nephrops Fisheries – New Trawl Designs.'
[3] Seafish Key Features document 'Quality of Trawled *Nephrops*.'

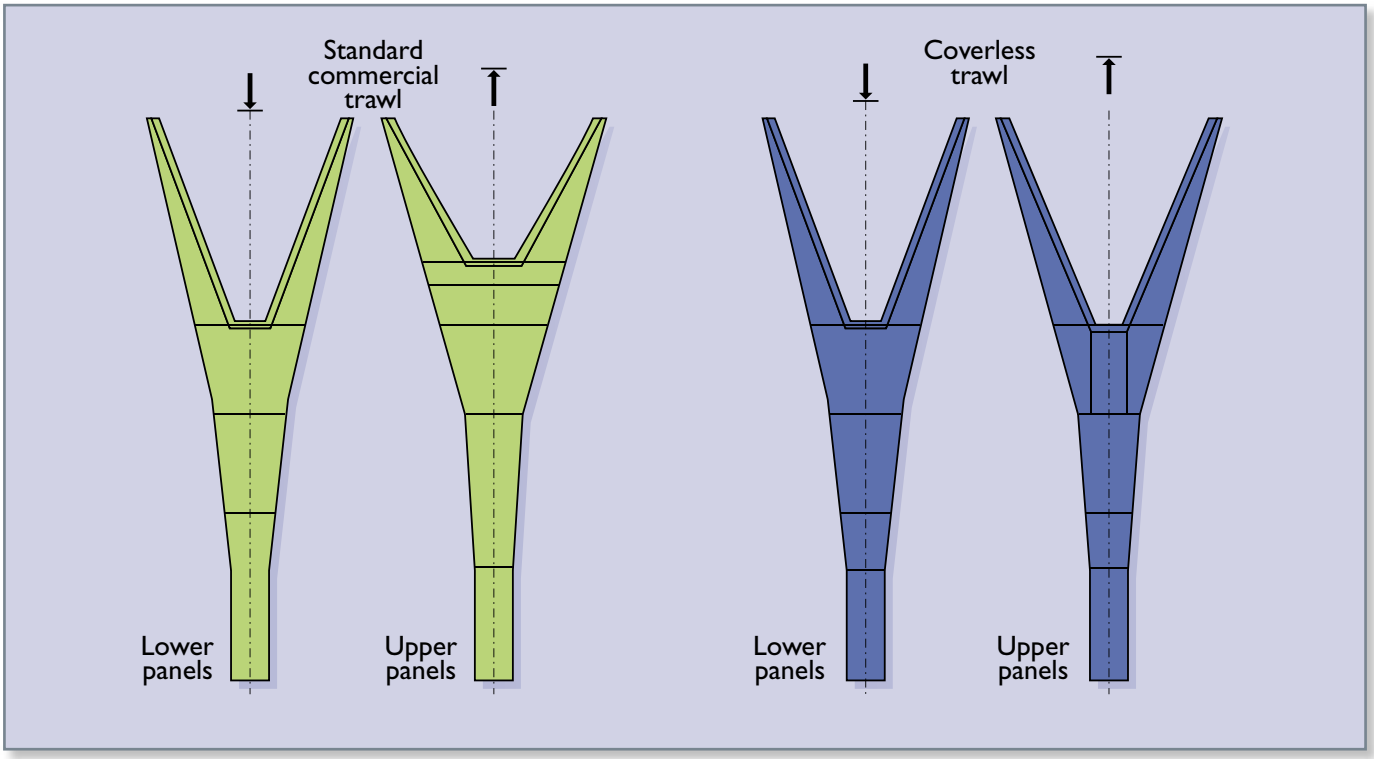
Objectives

The main objectives of the work were to:

- compare damage caused by the coverless trawl with damage using a standard unmodified commercial trawl; and
- compare the catching performance of the coverless trawl with standard unmodified commercial trawl.

The trials

The trials were carried out aboard a typical single rig *Nephrops* trawler, operating from the north east coast of England during 2005. The trials were conducted using the 'matched pair' technique, whereby each trawl was towed under commercial conditions once per day for a total of eight consecutive days.



Comparison of standard commercial trawl (L) with the coverless trawl (R).

RESULTS

Damage

Nephrops were examined for visible damage as soon as they came out of the cod end.

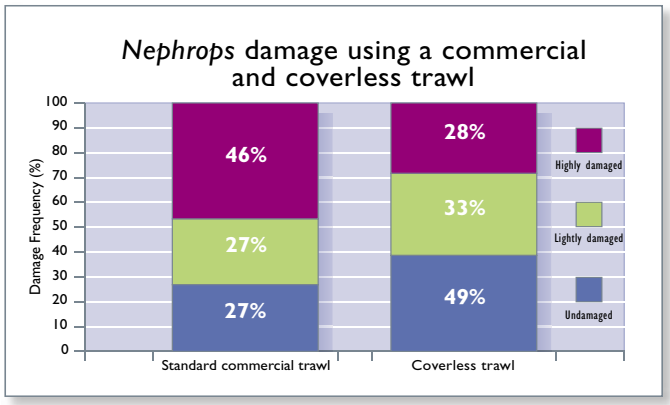
Undamaged animals showed no visible damage to their body and had lost no limbs, whereas lightly damaged animals had lost one or two legs, or a claw, or had small puncture holes in the body. Highly damaged animals had lost more legs or both claws, or had compressed or cracked body parts, or major soft tissue damage.

Undamaged *Nephrops*

Lightly damaged *Nephrops*

Highly damaged *Nephrops*

The results showed that the coverless trawl caused significantly less damage than the standard commercial trawl. It produced 12% more undamaged animals and 18% less highly damaged animals – see graph below.



Catch differences

The coverless trawl caught 10% more *Nephrops* than the standard commercial trawl. It reduced whiting discards by 70% and discards of other fish species by 33%. It caught 26% less commercial ground fish (cod, haddock and flat fish) than the standard commercial trawl.

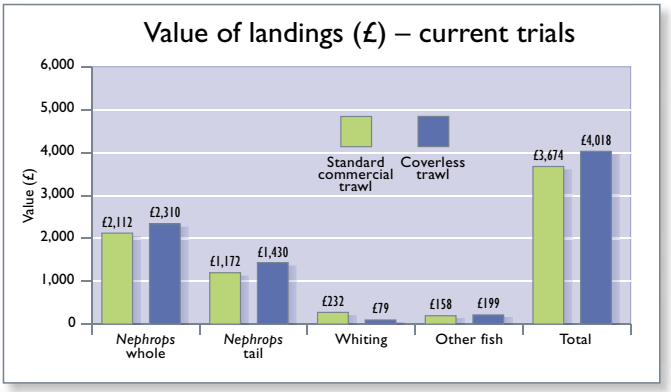
Catch with coverless trawl

Catch with standard commercial trawl

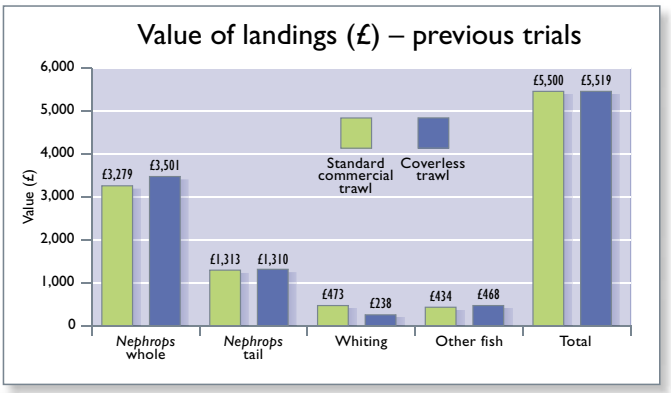
The coverless trawl therefore demonstrated that it was more species selective, catching more of the target species and resulting in less discards.

Economic/industry considerations

Over the course of the trials, the coverless trawl produced higher earnings despite catching less discards. The increased *Nephrops* catch was less damaged and more than compensated for the reduced fish catch. Comparative values of landings are summarised below.



These findings agree with other work that examined the economic implications of using the coverless trawl[4], the results of which are shown below.



Further benefits of using the coverless trawl include reduced damage to gear; reduced catch sorting times; easier handling; competitive costs with a commercial trawl; and potential for reduced fuel costs, since the coverless trawl can be towed with smaller trawl doors.

Confidence in the coverless trawl is being demonstrated commercially. It is being used successfully off the north

[4] Seafish Key Features document 'Bycatch Reduction in the *Nephrops* Fishery of the Farne Deeps'

coast of England, and in Scotland where it is also being used effectively to source live *Nephrops*. The higher proportion of undamaged catch means that more animals should be suitable for the live trade, particularly when caught using short tows (1.5 hours) and long onboard immersion times. This 'best practice' provides maximum survival of live trawled animals[5].

Conclusions/findings

This work has established that the coverless trawl causes less damage to *Nephrops* than a conventional trawl and produces better quality animals. It operates best with short tows and is effective for sourcing live trawled animals. Fishermen using the coverless trawl have also gained financially through higher prices for their catch.

The coverless trawl can also help improve environmental impact. It produces much less discards and catches less species that are deemed slow – maturing and 'at risk', such as cod. The coverless trawl enables fishermen to operate in an environmentally responsible manner.

[5] Seafish Key Features document 'Quality of Trawled *Nephrops*.'

Further information

Further information on this area of work, this project and Key Features describing other work will soon appear on the Seafish website.

www.seafish.org

You can also get more information on this and other projects by contacting:

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Fisherman sorting catch from coverless trawl