

FISHERIES RESEARCH & DEVELOPMENT CORPORATION NEWS

# F I S H

**Our ocean ghost-busters**

**Candid cameras come of age for monitoring**



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# Eyre supply

Management Group, on the frontline in the fight against ghost nets.

Started in 2004, GhostNets Australia is an alliance of indigenous ranger groups and it has removed more than 8000 ghost nets washed up across approximately 1500 kilometres of coastline.

While tackling the clean-up, the program is also working to prevent nets appearing in the first place through a suite of projects with CSIRO. Oceanographic modelling indicates that the source of most Gulf of Carpentaria ghost nets is the Arafura Sea. To further hone in on the source, Riki Gunn is developing a database of fishing equipment used in particular fisheries. She hopes this will help identify from which fishery a ghost net has come.

“If you identify the fishery you have a better chance of resolving the issues because you can work with that fishery,” she says. “They will each have different reasons for why gear is being lost so there will be different solutions for fixing the problem.”

A major breakthrough in that research is the recent agreement of Indonesian authorities to be involved. Riki Gunn is developing a survey for regulated Australian and Indonesian fishers to provide information on their fishing gear, including net samples.

“We know that less than 10 per cent of nets we find are from Australian fishing vessels, so if we find a similar percentage are from regulated fisheries in the Arafura Sea then that opens the question of ‘Where are the nets coming from,’” she says. “That then helps us direct our search because we may have to extend our oceanographics further and possibly look at IUU (illegal, unidentified, unregulated) fishing more closely.”

The federally funded GhostNets Australia program has recently been extended from the Gulf of Carpentaria to include the entire northern Australian coastline from Broome to Cairns. This makes it one of the biggest community-based programs of its kind in the world. Riki Gunn says the CSIRO research partnership has taken the program to the next level. “We have gone from being just a ‘softly, softly’ clean up program to actually being part of the solution,” she says. **F**

# INNOVATION ENDS SPECTRE OF GHOST TRAPS



Geoff Liggins, Giles Ballinger and Scott Westley examine the ‘at call’ acoustic release system for lobster traps.

Lost and stolen traps will be a thing of the past for NSW rocklobster fishers who are taking up new acoustic release devices that bring their traps to the surface, on demand

PHOTO: PAUL JONES

**W**hen Scott Westley lowers his rocklobster traps down to the edge of the Continental Shelf off Jervis Bay this summer fishing season he will become a world leader.

Equipped with novel acoustic releases to prevent them being lost or stolen, the traps are a breakthrough against ghost fishing, which has significant environmental and economic implications.

NSW Department of Primary Industries fisheries scientist Geoff Liggins says that, to his knowledge, Scott Westley and fellow NSW rocklobster fisher Ron Firkin will be

the first in the world to use acoustic releases as part of routine commercial fishing operations.

By preventing trap loss, the technology both combats the detrimental environmental effects of ‘ghost traps’ that continue to fish after they break from their floats and maximises the fishers’ returns. But the advance almost didn’t happen.

In the final stages of their three-part FRDC-funded project to combat lost traps and ghost fishing in the NSW rocklobster fishery, Geoff Liggins and his research team faced a major problem. Their traps, set with



acoustic-release technology 120 metres deep in the water column, could not be retrieved from the sea floor.

The experimental traps were fixed with a short rope attached to a sealed bag containing the electronic acoustic-release unit, a much longer rope and depth floats – designed to release when summonsed by a control unit from the water's surface.

This 'at-call release' system using submerged headgear is a departure from the traditional way traps are set, with headgear floating on the surface or set underwater to release after a predetermined time. This submerging of headgear deep underwater until specifically released is designed to eliminate the major cause of lost traps – the accidental or deliberate severing of floats and ropes by vessels or poachers.

But in the final stages of the project, when the researchers signalled for the headgear to release, the floats failed to surface. This perplexed Geoff Liggins, whose team had exhaustively pre-tested the acoustic release unit's elements for potential problems including leakage, battery life, detection range, electronic and mechanical integrity and biofouling.

Eventually, after grappling for the traps manually, the researchers found their culprit: faulty heavy-duty depth floats that had imploded. "Relief is probably the most polite word I could use when we found out what the problem was," he says. "It would have been a very negative result if it had been a failure of the release unit's electronics or of our rigging."

The faulty depth floats have set the research back, because some parts of the project will have to be repeated to satisfy the rigours the research process demands.

Geoff Liggins says while it prevents him from drawing some conclusions, such as a thorough cost-benefit analysis, other findings are already clear. "We can conclude that this technology and this particular release unit model is suitable for use in this application," he says.

It was certainly enough for Ron Firkin and Scott Westley, who are co-investigators on the project. Even without the final conclusions they will employ the technology – the ARC-1XDf acoustic release unit produced by US company Desert Star

Systems – in their commercial operations this season. "Ron Firkin and I have both decided to bite the bullet and do it," he says.

At a cost of about US\$100,000 for 60 units, the on-boat command centre and support gear, it is no small investment. But after being involved first-hand in the research, Scott Westley is confident of its merits.

First, he says, are the benefits of submerging the headgear deep underwater. This will prevent loss or theft, bringing clear economic benefit, and is particularly pertinent for Ron Firkin, who fishes at Botany Bay in front of one of Australia's busiest ports and sees his headgear severed on a regular basis.

Second, and not to be underestimated, are the benefits of a system that puts fishers in control of when their traps' headgear will surface, he says. Traditionally, the East Australian Current dictates fishing activity. Racing down the coast throughout the NSW rocklobster season, it determines when fishers can locate and access their traps.

This means it is impossible to plan social events between December and April; fishers must be ready to retrieve their traps when the current eases. Scott Westley has missed Christmas, his wife's birthday and holiday activities with his children as a result. But the new technology means that will change. "I've never had a summer holiday and I probably still won't but I like being a little bit social and having time for my family," he says. "I just don't believe you can put a price on that."

Scott Westley says having traps 'at call' will also help his business by allowing him to time retrievals in line with market peaks. It will also improve occupational health and safety standards by allowing retrievals to coincide with good weather conditions rather than the whim of the current.

Geoff Liggins says with a pricetag of about \$1600 per device, and with catches of rocklobsters valued up to \$7500 per trap lift, the system should readily make its money back.

While lost or stolen rocklobster traps have a major economic impact, the technology will also have a positive effect on the environment and fishery management. Rocklobster stocks will be more accurately monitored with fewer lost or stolen traps and rocklobsters spared prolonged deaths from starvation. The submerged gear will also prevent any potential interaction between

traps' headgear and whales. Although such an incident is yet to be reported, there are increasing numbers of whales along the NSW coast, increasing the risk.

"This is both a positive result for the protection of whales and an extremely positive result from what would be a massive public relations problem for the fishery. And that is something the rocklobster industry has recognised up front. They want to be on the front foot."

Geoff Liggins says the NSW rocklobster industry was key in designing the objectives and the content of the project as well as assisting with the three different sets of experiments undertaken.

The first experiment – a proof-of-concept study simulating lost traps in northern NSW – replicated findings from an earlier Jervis Bay pilot study that found rocklobster traps continued to fish even when they were not baited and there were very low escape rates from large deepwater traps.

These consistent results from two different locations in two different years, combined with fisher survey data that about 20 per cent of traps go missing each season, confirmed the issue was one worth exploring further, Geoff Liggins says.

A following study tested sacrificial doors on traps designed to wear away in time to allow rocklobsters to escape should the trap be lost. An optimal model was determined and has good potential for practical application in the fishery, he says.

But it was the third part of the project, the acoustic-release technology, that is the most groundbreaking part of the research and offers the most potential for long-term significant change, he says.

Further research is planned to repeat the experimental trial that was affected by the faulty depth floats.

Combined with the experiences of Scott Westley and Ron Firkin using the devices in the coming season, data will be collected to develop manuals and information on using the gear. Future tests using the technology at lesser depths where biofouling has been a problem is also slated.

"This is one of the biggest changes I've seen in the fishery in 25 years considering how 'state of the art' it is," Scott Westley says. "It is exciting." ■