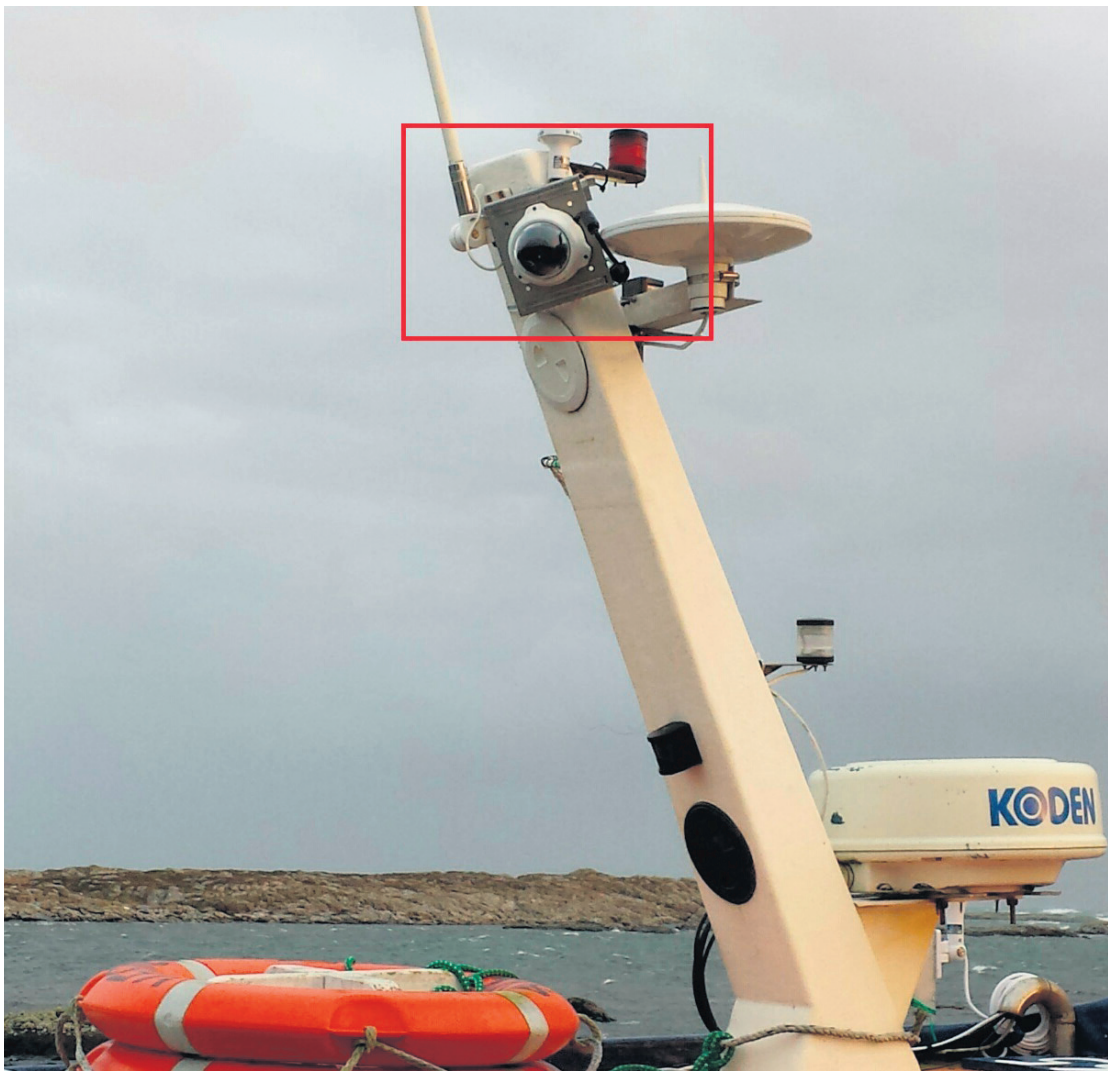

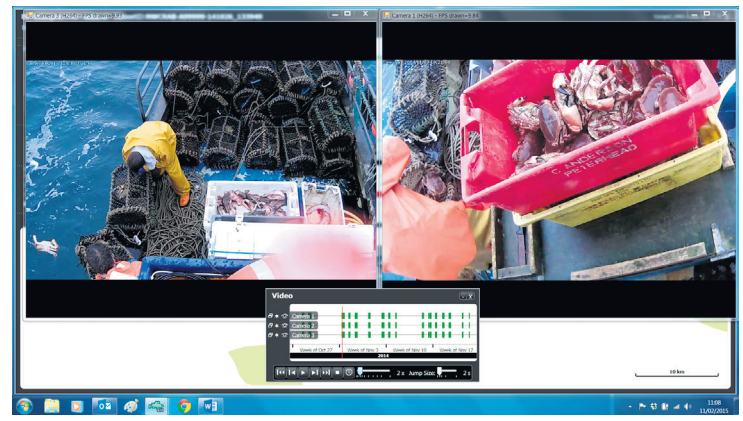

Further information and updates on the innovative programme can be found at http://www.masts.ac.uk/masts-research/centres-of-expertise/scottish-inshore-fisheries/

Monitoring supports fishermen's estimates

The technique of using video for monitoring fish catches and the accuracy of on-board catch estimates is a tested method, proved on longliners in Canada andthe UK on otter trawls in the North Sea, and beam trawlers in South West England, but has never been employed in inshore crustacean and mollusk fisheries.

Now, **Kelvin Boot** reports on a pilot project which has installed equipment on inshore crabbers and potters as well as an inshore scalloper, for the first time producing useable data.

The research project is one of seven brought forward by Marine Scotland and is being carried out through the Marine Alliance for Science and Technology for Scotland (MASTS), by Seascope Fisheries Research Ltd., and has been funded as part of the £1.4 million project through the Scottish Government and European Fisheries Fund.

Using this technology fishing activities can be monitored constantly with the data being collected for analysis at monthly intervals, or even more frequently if necessary.

The advantage of this technology, produced by Archipelago Marine Research, is that it enables the fishermen to self-sample catches and report back where necessary, now and in the future, with the confidence that their estimating methods on sex ratios and discard rates, for example, have been verified. Previously such estimates have been regarded as anecdotal and while fishermen accepted them as accurate, the rigours of the scientific community could not.

NO REAL UNDERSTANDING

From the fisherman's point of view this has led to there being no real scientific understanding of the stocks of such things as crab, lobster, velvet crabs and inshore scallops on the North west coast of Scotland. So, the few measurements of stocks that have been made have resulted in a precautionary approach, reflecting a worst-case scenario, while the fishermen might be witnessing something very different out on the water. Fishermen want the science to reflect what is actually happening in the fishing grounds and they want it to be more instant, not reflecting situations that may be many months or even a year out of date. Until now there has been a time lag when data might take twelve months to be processed and analysed before it gets back out, this approach can reduce that lag to one month, and may be even quicker if there is a particular need – the data can be examined almost on request.

"I can't emphasis enough that the data the fishermen are producing is excellent," said Grant Coursethe leading researcher from Seascope Fisheries Research.

"They want to be involved and be part of the process, but unless their data can be verified it is unlikely to be used in any calculations concerning stocks. They are also concerned that they should all be working on a level playing field. There's nothing worse than trying to do your best to preserve your stocks, only to see the guy beside you doing something which undermines this.

"The cameras are a tool for verification but they also provide a bonus with the opportunity to level things out, so the fishermen can have confidence that everyone is abiding by the rules, not just them."

MAJOR INCREASE IN QUALITY AND QUANTITY OF DATA

11 vessels are taking part in this initial pilot study: nine are targeting crab, velvet crab and lobsters with pots; one vessel is an inshore scallop dredger and there is also an inshore Nephrops trawler. Amongst the data being collected are details of the number of strings of pots and the bait being used. Soak time is recorded as well as actual catches being brought on board, so an accurate estimate of catch per unit effort can be assessed. The software allows on screen measurement of individual animals as they are brought on board allowing length frequency to be captured at the same time. Of great importance to the fisherman is bycatch, often predators that enter pots and destroy the catch before it is landed, the cameras record this too. All of this amounts to a major increase in the amount and quality of data that can now be obtained

Cameras are positioned so that crews don't have to do anything extra to their normal activities. Skippers are asked to jot down some notes as the catch is being brought in, which takes only seconds for each haul, and crew are asked to collect data on sex ratios from box counts, achieved by turning each animal towards the camera in the case of lobsters and crabs.

Already the advantages are being seen. Whereas on board observers might, at best and weather depending, manage between six and eight trips each year on one boat, this technology could allow for a full 365 days of monitoring if necessary and easily covers active fishing times, adding an extra data dimension of seasonal coverage providing crucial information on life-cycles and habitat changes throughout the year. GPS measurements and hydraulic and winch sensors record exact position of shooting and hauling with all information kept confidential and great care is taken to avoid any identifying landmarks in images used in reports.

The project, which draws to a close in July, has already proved that the technology performs beyond expectation providing detailed information that exonerates the skippers' own catch estimates as well as a mass of other data on stocks and their future management. And for once the skippers are in at the start, helping to get the systems up and working to provide quick and accurate verified information so that they can manage their own local stocks based on accurate data and before any additional regulations may be suggested.

"This equipment proves we're not making the catch figures up, the scientists and conservationists don't always get it right," said Kenneth MacKinnon, one of the fishermen taking part in the study

"For us it's always handy to know what's there and what's about, and it helps if our fishing grounds are threatened, we can show what's there and how much it means to us in money terms. We're in it for the long term we want the fishery to be sustainable and this can only help. If there was another project, I would definitely encourage others to take part."