

Andrew Safer

Three Norwegian fisheries scientists and one fisherman are recommending that a baited cod pot designed and used in Newfoundland be tried in Norwegian waters.

Representing SINTEF, the Norwegian College of Fisheries Science, NOFIMA (the Norwegian Institute of Food, Fisheries and Aquaculture Research), and the Fisherman's Union, the team visited St. John's last November. Their host, the Centre for Sustainable Aquatic Resources (CSAR), brought them out to sea on an inshore vessel and hauled five cod pots from the North Atlantic from a depth of 45 metres.

"I'm more positive now than ever that this should be possible in Norway," SINTEF Research Scientist Lasse Rindahl said. "No one in the Faroe Islands, France, Norway, or Iceland has tried this design." He was surprised to see an average of 36 cod per pot, as he had expected an average of 10. The fish were between 50 and 110 centimeters in length.

In addition to Rindahl, the team included Edgar Hendrickson, Resource Economist, NOFIMA; Roger Larsen, Assistant Professor, University of Tromsø; and fisherman Oyvind Bolle from Batsfjord.

Design

The cod pot design was developed over a 10-year period by the Centre for Sustainable Aquatic Resources (CSAR) at the Fisheries and Marine Institute of Memorial University in St. John's. In September and October, seven fishermen on Fogo Island, off northeastern Newfoundland, caught their 3,125-tonne quotas of Northern cod using the baited pots.

The fish remain alive in the pots until they are hauled, are bled onboard and packed in ice, and are processed separately from cod caught using conventional methods. The fishermen received \$1.25 (C) per pound for the high-quality product, compared to a range of 46 to 56 cents for cod caught using gillnets. The fish was pre-sold to selected restaurants in Newfoundland.

The collapsible cod pot is made of poly netting on a metal frame, a circular nylon funnel for the entrance, two non-return devices to prevent the fish from escaping, and a floating roof that significantly increases the interior volume.

The unit is 6ft x 6ft x 41in. The floating roof adds a maximum of 8ft in height. The 170lb unit is installed on 28 to 34ft longliners equipped with a pot hauler and boom. Each cod pot costs CAD\$300 (€229) for materials, or CAD\$700 (€534) including labour.

"It's a clever design," Rindahl said of the circular-funnelled pot. "The entrance is one of many good solutions. Ten years was a long time to keep their interest! Hard work was the main key to their success." He added that "a lot of fishermen in Norway will be interested in trying this because of their experience with crab pots."

Rindahl cited two more reasons there is interest in cod potting in Norway: gillnet ghost fishing can be "a very big problem", and quality is very



POT: Cod in a special pot being hauled into Rod Budden's vessel. Photo: Centre for Sustainable Aquatic Resources, Marine Institute

Norwegian study on NF cod potting



CATCH: Cod pot being hauled into Dennis Ivany's 28-foot vessel in Petley off Random Island, Newfoundland. Photo: Centre for Sustainable Aquatic Resources, Marine Institute



GROUP: Representatives from Marine Institute, Department of Fisheries and Aquaculture, Fisheries and Oceans Canada, Canadian Centre for Fisheries Innovation, Food, Fish and Allied Workers and Norwegian guests. Photo: Andrew Safer

important. He said he would also like to test the pots for other species such as haddock, tusk, and mulva mulva.

Method

Fisherman Oyvind Bolle said the cod pots are easier gear to handle than gillnets. "Gillnets are very physical work in the shoulders and arms, and you have to untangle the fish. The pots can be left in the water for a long time, the fish can be delivered alive, and I like the quality (of the product)."

After they returned to Norway, the team reported their findings to SINTEF, the Norwegian College of Fisheries Science, and NOFIMA who are "very interested in going further with this", reports Rindahl. Their findings will be presented to the Fisherman's Union Research Section at Lofotfishing 2011 in April.

In the mid-1990s, CSAR began looking into developing a sustainable alternative harvesting method for cod. "All gears can be fished responsibly," explains CSAR Director Paul Winger, "but it's hard to get out to haul the gear in bad weather, whether it's with a longline, baited hook, or gillnet, and there can be a high level of destruction of the fish you've caught. If you can't get out for four to six days, the fish you caught the first day are not worth eating."

Research

CSAR fisheries technologist Philip Walsh visited Alaska to investigate the pots that were being used there to catch Pacific cod. "We thought it was a 'slam dunk' – we'd simply use their pots," said Winger.

"But it didn't work. Atlantic cod didn't like going inside those designs." They began modifying the design and tested the pots at different times of the year. "We learned that cod won't chase bait into a trap when they can forage", said Winger. "If you place it on

cod feeding on capelin, it won't work." The pots, which are baited with squid, mackerel or herring or a combination of these, work best in the autumn when the cod are feeding heavily in preparation for spawning and food is scarce.

Walsh designed 12 prototypes, using the flume tank at the Marine Institute to see how the pot reacted to currents, and testing them at sea. He used an underwater camera mounted inside the pot and an ROV stationed outside to monitor the cod's interaction with the pots. He also developed the circular-funnelled entrance and the floating roof, and incorporated biodegradable twine in one row of mesh which rots in 50 to 100 days to prevent ghost fishing.

CSAR's cod-pot initiative received CAD\$250,000 (€191,000) in funding from the provincial Department of Fisheries and Aquaculture, Fisheries and Oceans Canada, Marine Institute, and the Canadian Centre for Fisheries Innovation.

Success rate

Ron Budden was the first Fogo Island fisherman to catch his quota, setting and hauling 15 pots from his 35ft longliner. "The pots catch all different sized fish – unlike the 5 1/2" gillnet mesh which targets four to five-year-olds. With the gillnet," he said, "you're targeting all the prime spawners, and also the prime males," he said.

When he used gillnets, high winds would prevent Budden and his wife, Beverly, from going out to haul the nets. After two days, if they hauled in 1,200lbs, they'd have to discard 800lbs. In the last two years, using cod pots, he hasn't had to discard one fish because they remain alive, and also because bycatch don't get tangled in the net.

Budden learned from a CSAR technician how to properly bleed the fish – taking care not to cut the heart, which is needed to pump out the blood – before gutting and packing it on ice.

The pots have proven to be effective at a depth of 125m on an experimental basis, reports CSAR fisheries technologist Philip Walsh.

Additional benefit

Fisheries and Oceans Canada Research Scientist John Bratney has found another use for cod pots. When it is used to capture fish for tagging, there are fewer mortalities than when other methods such as otter trawls are used. (The season was over when CSAR brought Rindahl's team to see the cod pots hauled in. The fish caught were tagged by a Fisheries and Oceans technologist and released into the water.)

"We've tagged cod-pot cod in Areas 3K and 3L and we have more confidence about the number of these tagged fish available for subsequent recapture," said Bratney, in "Ocean technology and science: a partnership" [2011]. *Journal of Ocean Technology*, Vol. 6, No. 1.

"This should give us better estimates for fishing mortality. Since there are more tagged fish available to the fishery, this should improve scientific estimates of the fraction of the stock removed by fishing."