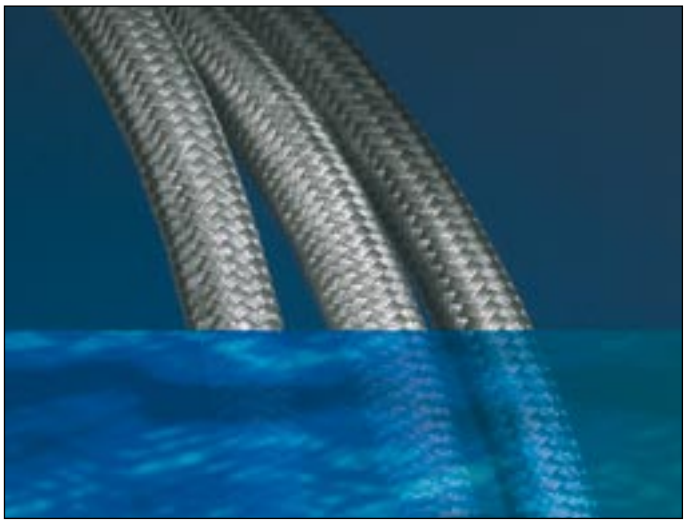
CATCH ON
HAMPIDJAN'S NEWSLETTER ABOUT FISHING AND FISHING TECHNOLOGY
DECEMBER 2007

Dynex Trawl Warps a stroke of genius!



Dynex Warps

Say brothers on Hug-inn VE-55.

"In September 2006 we took on board 700 metres of Hampidjan Dynex warps onto each winch drum for a test run. We were concerned when the trawl was shot away the first time, but it wasn't long before we simply stopped thinking about them and after having these ropes on board for nine months, we decided to go for the full set."

Better trawl control

"There are plenty of advantages to the Dynex warps. We get a better trawl opening, the ship is in direct contact with the gear as the Dynex warps lie direct to the trawl instead of in a deep arc as normal wire trawl warps do, which makes it much easier to steer the trawl towards marks. This is a particular advantage on herring and mackerel. As well as that, the ship is quite simply 22 tonnes lighter at the stern with Dynex warps instead of steel wire ropes, giving us improved seakeeping qualities and better speed."

A phenomenal sight to see

"Fishing up on the surface with Dynex warps is simply unbelievable. They are up in the air from the trawl blocks down to the doors, like a pair of washing lines strung out behind us. We use a 1600 metre pelagic trawl with 80 metre sweeplines and 15 m^2 doors when we are fishing on the surface. Normally we have 460 metre of Dynex warps out on the surface and that length keeps the trawl squared nicely." As can be seen in the left bottom corner.

Better fishing off track

"We can control the balance of the trawl by keeping a close eye on the picture from the trawl sonar so that we can make an adjustment if we need to by paying out or hauling some Dynex warps. It's easy to keep the trawl out of the propeller water, which herring and mackerel avoid. It's clear that we do better by keeping the trawl out of the track of the propeller and we feel that as the warps lie more or less straight up to the ship, there is less chance of spooking the fish."

Good trawl door balance

"So far we haven't seen the doors out of balance. This is probably because there is much less weight in the Dynex warps than in wire, so the doors are less susceptible to being pulled over onto one side, as can easily happen with trawl wire."

Longer lifetime.

"The Dynex warps don't rust or corrode and we expect they should last a lot longer than wire. Our initial impression is that they should be a more cost effective option than wire when the lifetime of the ropes is taken into account, but time will tell.

Skipper Gudmundur Huginn and Gylfi Thor Gudmundsson

NEW
BOTTOM TRAWLING WITH DYNEX WARPS
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New twine sizes in Dynex netting

Hampidjan's Dynex netting has been consistently popular in various fishing gear types, especially in instances where fishing gears need to have lower towing resistance so that less powerful vessels can fish effectively. But at the same time the netting needs to be able to withstand the tensions placed on it when it is brought onto the trawl deck, where there can often be a risk of snagging and causing some damage. Netting frequently starts to look ragged after being used for a while and the challenge is to produce netting that lasts better, while still maintaining that low towing resistance. This problem. is especially true of the deep sea redfish fishery in the Irminger Sea south-west of Iceland. Here we have seen Dynex netting in twine diameters of 1.10mm used in the aft

sections of pelagic trawl bellies to reduce the overall towing resistance of the gear. However, netting this twine is susceptible to damage and needs to be replaced at the end of the season. For this reason, Hampidjan has introduced a 1.40mm twine size to bridge the gap between the 1.10mm and 1.70mm twine sizes that have normally been used in these pelagic trawls for redfish. The new twine size gives the twine a 30% greater strength than 1.10m twine and has performed well on the vessels that have tried it this season.

Cosmos introduces new semi-pelagic model to the Baltic region

– Initial results from Silva look very promising!

The Comos base in Kaskö

Danish Hampidjan group member Cosmos Trawl A/S has recently developed a new semi-pelagic trawl model for its customers in Finland, and the first results are giving high hopes for an even stronger market share with the Finnish fleet as well as within the Baltic region.
The new model, named "Fin Combi 2007" is a successor to the company's bestseller, the "Fin Fly" model, and is an all-round trawl suitable for both bottom and semi-pelagic fishing targeting Baltic 'Strømming' herring.
There are several main differences between the old and new models. The new model is made with larger meshes, ultra-light materials such as PE/PA ropes in the front section, a totally different belly design and last but not least a different way of placing the tension within the trawl, Cosmos area sales manager and trawl designer Arne Olesen says.
Trawler Silva, owned by brothers Ralf and Mats Hellstrøm, is fishing with a 793 metre trawl, and general comments from skipper Kristoffer Rønberg are very clear:

Midwater trawl hauled back on the floor in Hirtshals

"The trawl is fantastic! It's easy to tow, it reacts quickly and fishing is good. We are very satisfied with it."
The new trawl is reported to give a vertical opening of 37 metres in open water and 29 metres when being used on the bottom. Spread between the wings is approximately 65 metres when towing on the bottom.
Beside the trawl for Hellstrøm Fisk, Cosmos has already supplied the same model but in a 640 metre configuration to *Olympus,* and more is expected to follow based on the number of inquiries from other clients about this model, Arne Olesen concludes.
Cosmos's sales to Finland go back more than 25 years, and since 1994 Cosmos has had permanent facilities in Kaskö, the largest fishing port in Finland. A stock of materials and spare parts is kept at the Cosmos warehouse, which also on ad-hoc basis is used for carrying out gear repairs etc. In between, repair jobs are trucked down from Finland to the Cosmos main net lofts in Hirtshals and Skagen, which also is where all new trawls and equipment are made up.

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Cosmos wins contract for yet another Danish newbuild

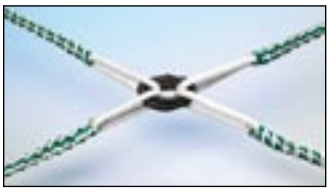
The latest addition to the Danish pelagic fleet, the new 62.60 metre *Strømegg,* built at Karstensens in Skagen for Hirtshals company Skagerak Fiskeeksport AS, will be fitted out with a complete fishing gear package from Cosmos Trawl on delivery in November 2007.
Designed as a combined purse seiner/pelagic trawler, *Strømegg* has a set of gear similar to those already delivered by Cosmos Trawl to the *Cattleya* and to Skagerak Fiskeeksport's other two vessels.
The mackerel and herring purse seine is a 640 metre long by 110 metre deep made in standard nylon with the body of the gear in 17.50mm half mesh, while trawl gear is a 1024 metre Gloria Helix pelagic trawl, made using the latest techniques to splice Helix bars with Dynex legs.
Strømegg is also taking codends, a pair of Poly-Ice Apollo trawl doors, and backstrops and bridles in Dynex rope.
Cosmos would like to take this opportunity to wish the owners, skipper and crew of the new *Strømegg* good luck and good fishing, and we look forward to future business.

The Gloria Helix pelagic trawl and the large purse seine being taken on board Strømegg.

New mesh construction method for Helix ropes

Breaking tests have also shown that ropes spliced using this method lose none of the strength of the Helix Material.

Hampidjan has a constant programme of research and development, making every effort to improve its products to make them as effective and easy to use as possible.
We have been concentrating on our Helix ropes in particular, as these have presented a few problems in the past. The best way to make the large meshes used in pelagic trawls is to use spliced ropes, but due to the construction that gives these Helix ropes their self-spreading potential, they are not easy to splice. Originally, the method used was to knot the ropes to produce the meshes, but the knots were large and heavy, so the next method took over. This was to clamp the ropes in the same way as is used for steel wires, using aluminium clamps. This method has worked well and has been used for some years. But the newest and best method to date is for each bar in the netting to be measured and produced with an eye spliced at each end with a protective jacket to give it a longer working life, as can be seen in the accompanying picture.
This method has proved to be highly popular with those skippers who are already using trawls constructed in this way.



Breaking tests have also shown that ropes spliced using this method lose none of the strength of the Helix material. The bars are then joined using small-gauge Dynex rope with a Dynex lock, which does not come apart if it has been carefully closed. The result is that this connection is stronger than the eyes of the ropes that it links together.

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Bottom trawling with Dynex Warps

The new Vestmannaey on arrival in Vestmannaey harbour last March.

Catch-On spoke to Birgir Thor Sverrisson, skipper of Vestmannaey VE-444 and we discussed his experience with the new trawler that was delivered in March this year.

We have done well in the five months up to the end of August since the boat was delivered. In that time we have landed 1700 tonnes with a catch value of 3,3 million euros. Most of what we land is shipped to the UK in containers. Trips are short – from a few days up to a week. The boat has performed extremely well in every way. It's a good sea boat and it's comfortable for the crew in bad weather. We are gradually getting to grips with all of the equipment and it is very well fitted out for fishing in our waters.

The Dynex warp runs smoothly through the towing block.

How many of you are there in the crew?

There are twelve of us altogether and we try to arrange things so that everyone can work two trips and then have one trip ashore. Watches on board are 16 hours on and 8 hours off.

What fishing gear do you have on board?

We are towing an 84 metre Seastar bottom trawl of the kind that has done well with the Westmann Islands fleet. We're using a pair of 4.50m^2 Injector doors and 2000 metres of Hampidjan's 25mm Dynex trawl warps on each trawl drum instead of steel wire trawl warps. We were careful to keep our fishing gear light and easy to manoeuvre compared to the 12 tonne towing power we have. This size of fishing gear has performed well in every way on both soft and hard ground. We also use a Hampidjan Albatros footrope trawl, which works well on good ground with the fish close to the bottom.

There has been a lot of interest in the fact that you were the first skipper in Iceland to choose Dynex warps instead of conventional wires. What was the reason for this decision?

I've always had a lot of faith in Hampidjan's Dynex, ever since I started using it in gilsons and then in sweeplines when we were fishing on deep sea redfish, when the Dynex really proved its worth on the old *Vestmannaey.* The low weight of the sweeplines made it a lot easier to handle the pelagic gear, and in fact we still have the Dynex sweeplines from 2002. There's nothing wrong with them and they are still usable. All of the gilsons and cable runs on the deck for handling the fishing gear are in Dynex, with the exception of the crane, which is fitted with steel wire. We also had an anchor cable in Dynex as well, but that had to be changed, as according to the rule book, there is nothing that allows new materials to be used. We

are hoping that this will be changed, as an anchor cable made up of wire and chain is always going to rust and lose its strength.

Wasn't this something of a risk, buying 4000 metres of Dynex warps? Surely this was a big outlay, considering Dynex warp cost three to four times more than comparable steel wire?

Of course. But there were several reasons that made the decision go the way it did. The breaking strengths of the Dynex warp and wire are the same, but the advantages are all in lower weight, excellent abrasion resistance, expectation that the working life of the rope will be longer than wire, and Hampidjan's development of the rope. There had also been some trials with shorter lengths of Dynex warp on top of wire trawl warps that were successful enough to show that Dynex warp could be used with bottom trawls as well as pelagic gear. Vestmannaey's owner Magnús Kristinsson and I discussed this at great length and we decided to go for it.

And how have the Dynex Warps performed?

They have performed extremely well right from the start. We were concerned that they would tie themselves up on the drums by pulling themselves under the outer layers of warp under tension, but that didn't happen. They spool very nicely onto the drums and appear to be able to cope with more rough handling on the drums than wire does. When we started using Dynex in gilsons, we saw that the Dynex lasted longer than wire, and the same thing appears to be happening here.
The warps have gone from 25mm to 23mm in diameter with use, but they are as strong as they were to start with and present a smaller profile in the water. We noticed straight away that the warps lie from the trawl blocks at a 45° angle, instead of the 30° angle you expect with wire. We feel that this is an advantage in bad weather and when taking a turn, as there's less chance of the warp scraping against the ship's side

Is there less tension on the winch now that you have got rid of ten tonnes in the weight of the steel wire warps?

Birgir Thor Sverrisson skipper on Vestmannaey checking the catch.

There has to be more tension on the winch with 4000 metres of wire weighing 12 tonnes than with 4000 metres of Dynex warp weighing two tonnes. The lower weight means that there's less maintenance needed on the winches, the wire spooling mechanism and the trawl blocks, which lengthens the life of the deck equipment as a whole. The boat is ten tonnes lighter at the stern, which gives us better stability and improves our towing capacity.

As with any fishing vessel, the focus is on catching fish. Do you feel that

The warps show 45° angle from the towing blocks

The Dynex warp coils very well on the winch.

the Dynex warps have improved your catching capacity?

It seems so. Our door spread is ten fathoms better than other boats with the same trawl gear are getting and it's easy to get more spread by shooting more warp. We have measured the distance between the tips of our top wing tips and our rockhopper ends, and this is all in proportion with the doors spread, so it seems that we are getting 20% better spread than with wire warps.
It's not a problem to take a turn and under some conditions, it's possible to turn practically on the spot. We don't lose much door spread in a turn, the trawl keeps its shape well and squares away as soon as we're on course again. It all works well, from the warps down to the codend knot.
One thing that we have noticed is that there's not much difference in towing at 50 fathoms or 250 fathoms in terms of tension. The Dynex is 40 times lighter in the water than the same size of steel wire, and it shows..

Is the gear lighter to tow with Dynex warps?

Certainly. We normally tow with a 4 tonne tension on each winch and with the engine at 75% of full power, which we feel is about right for a vessel of this size. Fuel consumption is around 140 litres per hour, which is about 25 to 30 litres less than Smáey, which is roughly the same size and using the same fishing gear, but with steel wire warps. So this is a difference of 15-20% in fuel consumption.

You would imagine that you would need to use a higher proportion of Dynex warp than steel wire warp for the depth. How has this worked out?

We are fishing with a depth to warp length ratio of 1:3.20, instead of between 1:2 and 1:3 that we would use with wire. We are using between 30 and 60% more warp with Dynex than with wire, although this isn't the full story, as on shallow grounds we can shoot out a lot more Dynex warp to allow the trawl to open better. In deep water we can do the same, shooting out more Dynex warp to give the trawl a better chance to open fully. But as I said already, we don't see much of a difference in tension on deep or shallow grounds and we can be sure that this has given us some fine fishing on both deep and shallow grounds. The Dynex warps lie straight out from the ship and down to the doors instead of in a curve, as steel warps do, which allows them to lie on the bottom. We see less tendency for this to happen with the Dynex warps. They tend not to lie on the bottom unless the doors lie flat, which is easy enough to put right by hauling in some warp.

Any problems?

No, nothing that we can attribute to the Dynex warps themselves. We did some damage in that we managed to cut open the protective jacket but without damaging the main warp inside, but this is something that can always happen, regardless of whether we're using rope or wire for warps.
We got the doors wrapped around each other after coming off a difficult fastener. The jacket was damaged, but there was nothing wrong with main warp. If we had been using steel wire warps, we would probably have had to cut off 50 fathoms each side. But apart from having to fix the jacket, there was no damage. The protective jacket is an excellent buffer and takes a lot of the punishment when this kind of thing happens.

Do you have any comments to end with?

In my opinion the future is in using Dynex warps instead of steel wire for warps. They have performed extremely well for us and we are very satisfied with how well this has gone on board *Vestmannaey*. I've taken 400 hauls since we started in the winter and in terms of fishing capacity and how well the warps last, it looks very positive. The warps themselves are as good as new after being used for five months, apart from a few minor incidents when we did some damage, which is normal at sea. It is important to fix the jacket immediately if there is any damage and to take care around the stern area of the trawler so that there are no sharp edges that the ropes can rub over.
I'm gradually getting used to having more Dynex out than I would with wire and I'm sure we have an advantage with all of the points that I've mentioned already. We have been caught up in plenty of fasteners and always managed to get out of them without doing any major damage to the gear.
There were a few doubts raised when we started out with this, but they're pretty quiet now. I'm sure that we took the right decision in choosing Hampidjan's Dynex for our trawl warps.

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Hampiðjan at the flume tank

Seeing is believing.

Annual event

Over the years Hampidjan has made regular use of the SINTEF flume tank at Hirtshals in Denmark, with the December tank trip having become a regular high point on the company's calendar. These flume tank sessions have become extremely popular, with eighty to ninety people attending each one. Those attending come from every corner of the world, spending three days in Hirtshals and ending their visit with two days in Copenhagen.

Latest R/D

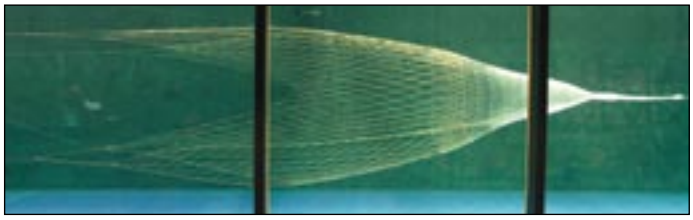
The reason for the tank sessions is to show the latest developments from Hampidjan in fishing gear technology and to test items or ideas that have been shown to work well. The tank sessions can also be seen as a melting pot of ideas, with fishermen, vessel operators and fishing gear technologists from around the world all sharing ideas and speaking to others with a different view of the same business.

The social part

In spite of all the technical advances that have taken place, it is still not possible to watch a whole trawl gear in action live, so the flume tank is still the nearest approximation we have that allows the complete gear, from vessel to codend, to be viewed as a whole.

The social side of the tank sessions is no less important

Something very interesting to see in the flume tank!



Gloria HiFlow.

than the practical aspects of the flume tank trials. In many ways, skippers are isolated, while also working in a highly competitive environment.

First time meeting

More than once skippers have met face-to-face for the first time at one of our tank sessions, recognising each other by the voices that are familiar from VHF or mobile phone.

Concentrated fishing gear study

One of the effects of the Hampidjan flume tank sessions is to take these skippers out of their daily working environment, allowing them to concentrate for three days on the fishing gears that are the basis of any fishing company remaining successful.

Tough magnet gray

A good bag of mackerel in Mauretanian waters

Factory trawler Athena owed by Thor fishing co in the Faroese Islands.

It's clear that the single Magnet Gray netting used in pelagic codends on board former Athena is extremely tough and copes easily with gigantic mackerel hauls on the trawl deck. Protective cover netting is not permitted on a codend in Mauritanian waters, and there is also a requirement that only single netting can be used. So it's important that the netting is strong enough to handle bags of at least 100 tonnes, such as the one shown here, without bursting under the tension. Trawl master Árni Hrafnsson on Athena rigged the codend from single Magnet Gray netting with very favourable results as can be seen in top left corner of the article.

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Research into pelagic trawling for capelin



Haraldur Arnar Einarsson, Einar Hreinsson and Sigurður Jónsson of the Marine Research Institute.

Reserch report from the Marine Research Institute (MRI) in Iceland.

Research into pelagic trawls for capelin has been carried out over the last three years using underwater cameras and sonars. A total of 32 tows have been filmed, with 68 hours of film shot, alongside material collected from fish finding and navigational instruments, as well as numerous trawl sensors. This research was done in close co-operation with Hampidjan, who provided midwater gear and technical support. Companies active in capelin fishing have been very helpful by providing midwater trawl gear for the project such as H.B. Grandi hf, Skinney Thinganes hf, Sildarvinnslan hf, and Runólfur Hallfredsson hf. The aim of this research is to establish the shape and efficiency of these trawl gears, the behaviour of the capelin in reaction to trawls, and when and where fish tend to escape through open meshes. This article describes the methods used for this research and the main results so far obtained.

Research methods

Filming takes place once the trawl has stabilised at the required towing depth, when the undersea camera, attached to an independent cable, is lowered and steered to the parts of the trawl that are to be examined. Fig. 1. The camera sled also houses sonar that scans in vertical plan, and this is used to locate warps so that the gear can be followed all the way to the end. This sonar has a 300 metre range and provides a picture of the fishing gear, as well as the capelin shoals around it. There is also a second sonar on the trawl, the normal headline trawl sonar that scans in both horizontal and vertical planes to give the skipper essential information on the shape and performance of the fishing gear.

Capelin reacting to the trawl

Capelin are a specie of fish that react quickly to light, as has been seen when the lights on the camera are switched on, as after a few seconds the fish respond

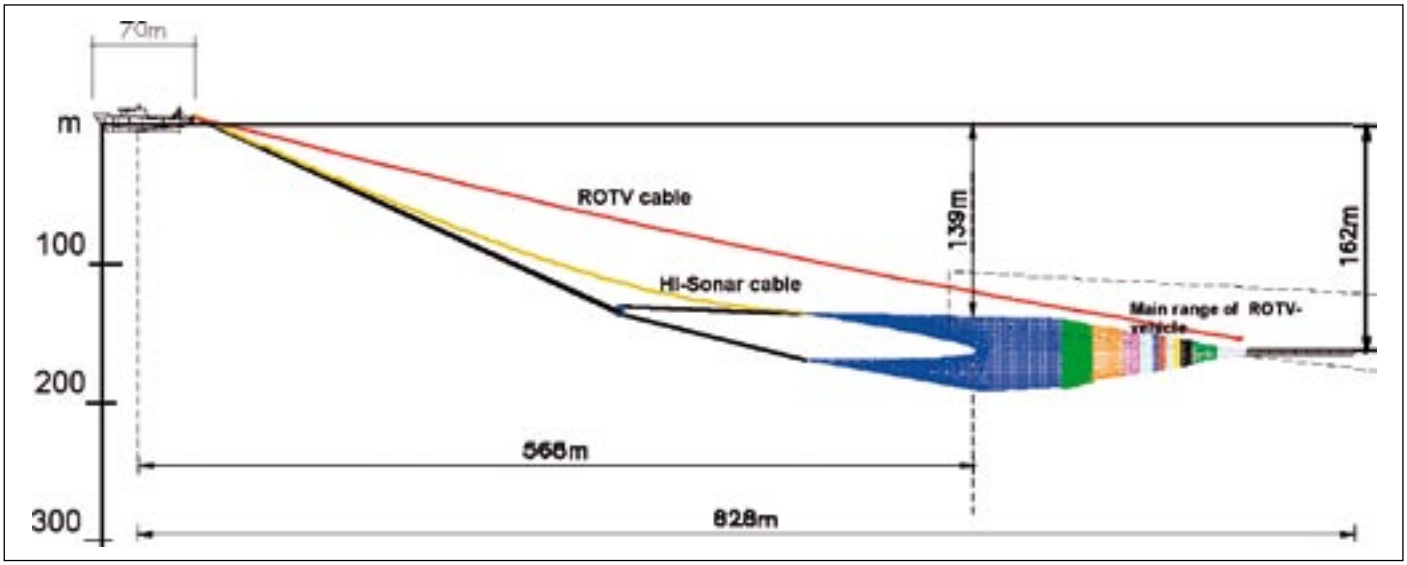

Fig. 1. A profile drawing showing the relationship between the catching vessel, the trawl and the undersea camera. The dotted line shows the area that the camera system is active over.

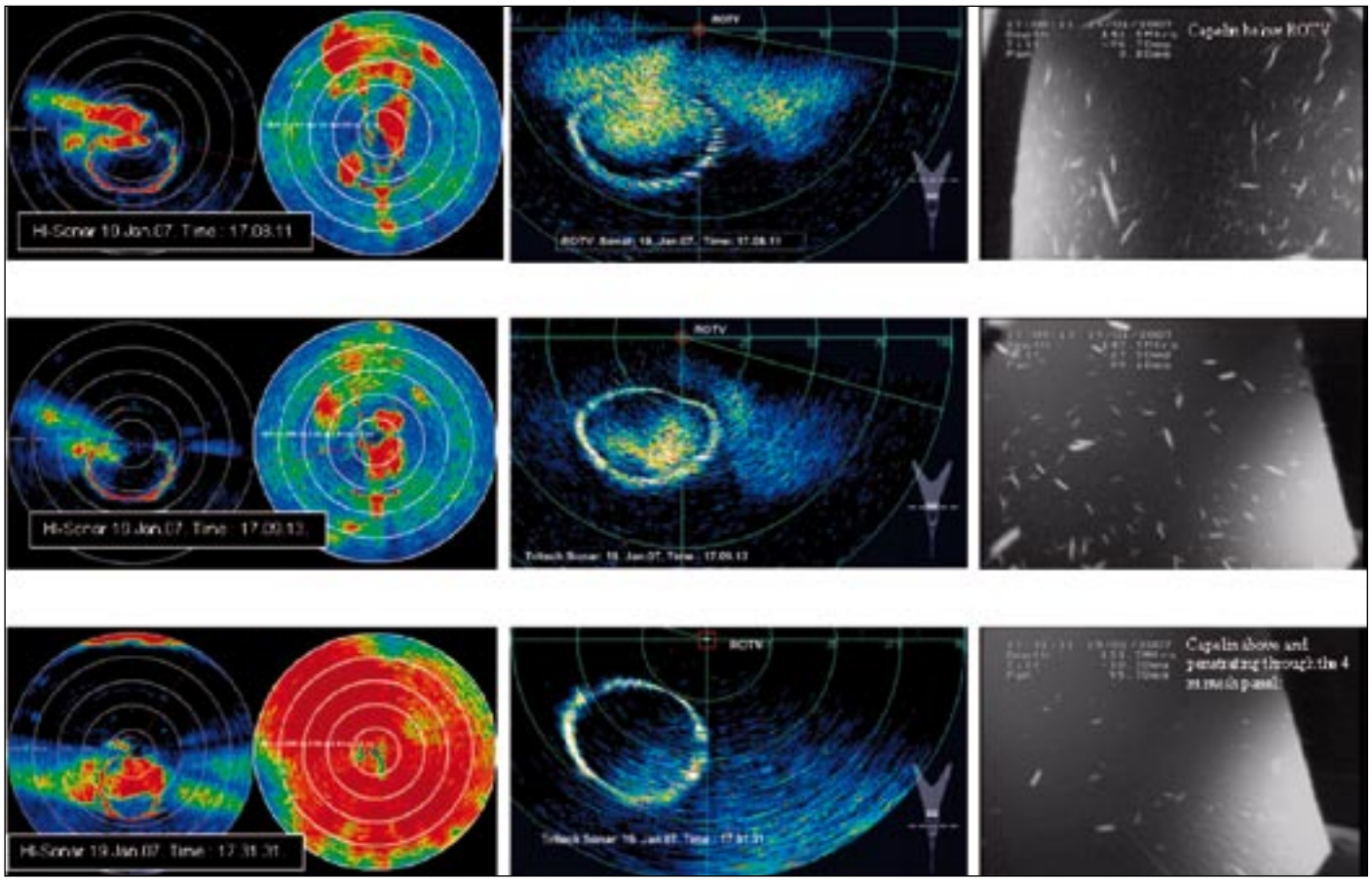

Fig. 2. Information from trawl sonar imaging of the fishing gear (left), compared to sonar images from the sonar mounted on the camera sled (centre) and images obtained form the camera (right), obtained while the trawl was passing through fairly heavy marks.

by swimming downwards to escape. This presents problems in observing the capelin's reaction to the trawl, so more often we have had to rely on sonar images for this. A snapshot can be obtained by switching on lights for three or four seconds. Capelin does not appear to have any particular reactions to an approaching trawl, and their swimming speed is low compared to the towing speed of the trawl. Fig. 2. We can estimate that a 15 cm fish can swim at a rate equivalent to 1.5 to 2 times its body length per second, or around 0.4 to 0.6 knots, while the towing speed is considerably faster at 2,5 to 3,5 knots. It has been

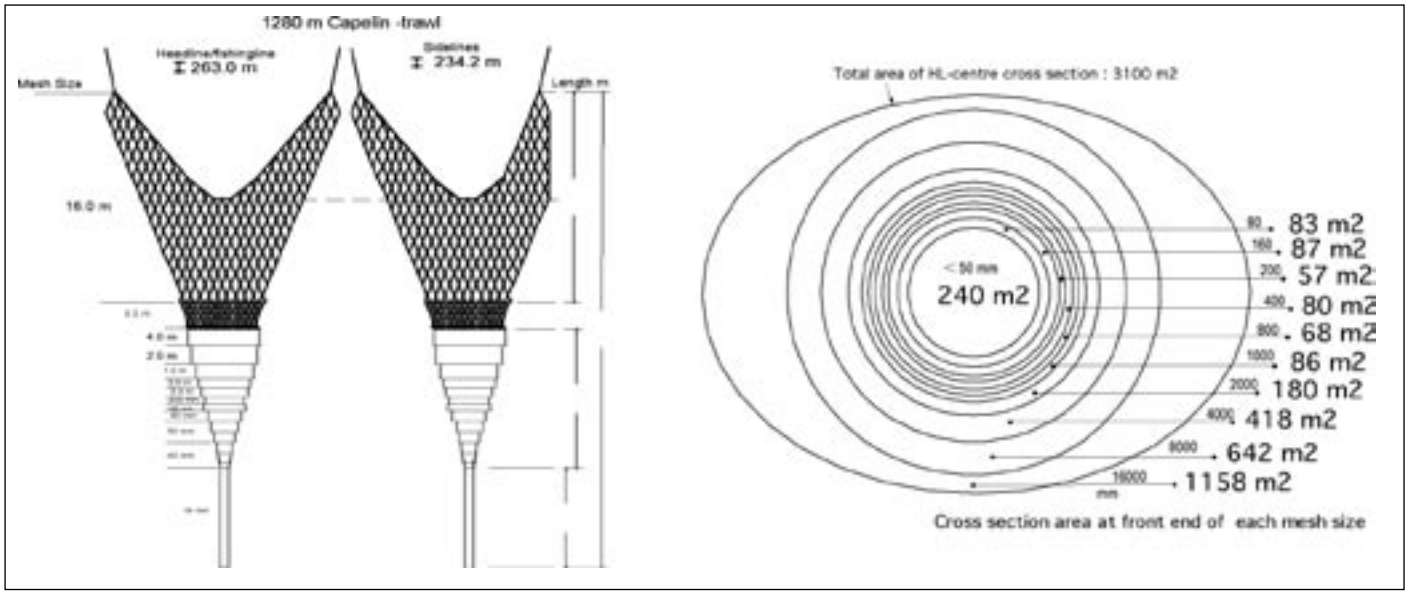

Fig. 3. A Gloria 1280 capelin trawl. The cross section on the right shows the relative sizes of the various mesh size sections.

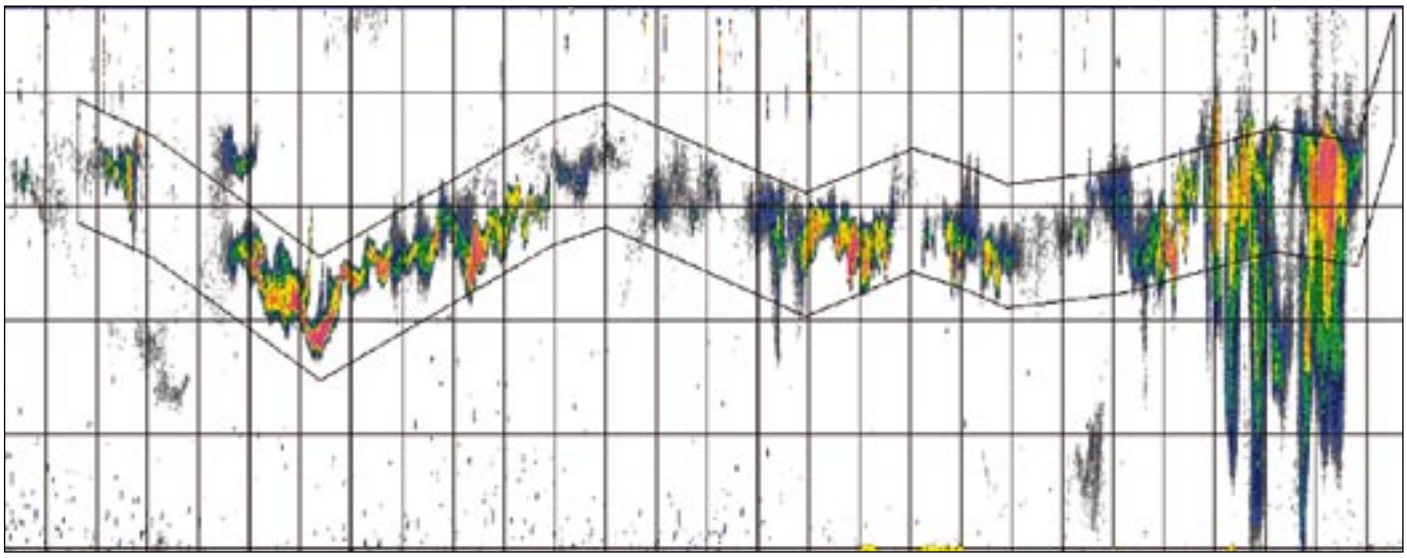

Fig. 4. One of the 27 measurements of capelin marks obtained from echo soundings. The average number of capelin in the volume of water filtered during the tow was calculated based on the track of the fishing gear with a 50 metre vertical opening. This 'tow' as a length of 27 miles, with an average density of capelin of 0.27 fish per cubic metre. Each square on the graph is 50 metres deep and one nautical mile wide.

established that capelin can be meshed in netting with a mesh size of more than 60 mm. No aggregations of capelin have been observed blocking the trawl belly. The gilled fish seen when the trawl is hauled is not due to the fish streaming out through the meshes, but rather due to the fish colliding directly with the meshes and individuals hitting the belly netting on their way down towards the codend. Gilling occurs gradually through the tow as more and more individual fish encounter the netting. It should be remembered that today's capelin trawls are made with very large meshes, as is shown in the accompanying drawing.

Gilled and escaping fish

Gilling occurs in mesh sizes from 80 to 1000mm. There is relatively little in 400 to 1000 mm meshes, but this increases as the meshes become smaller and is greatest in meshes between 80 and 160mm. Fig.3. The area of this netting is fairly small at approximately 5.5% of the total trawl opening area, which makes gilling a relatively minor problem. It should be noted that this is due to individual fish colliding with the netting on their way down the trawl rather than to amounts of fish escaping through these meshes. The capelin escape through the larger meshes, especially if a large shoal has been split by the trawl. It has not been observed that the fish contact the larger meshes and are unlikely to be damaged by this. Gilling in the 80 to 160mm meshes can be avoided by replacing these sections with 60mm netting. This has already been tried out in Hampidjan's 1907 metre Gloria HiFlow midwater trawl and in r/v *Árni Friðriksson's* new 1024 metre Gloria Helix midwater trawl with very good results as regards gilling and improved catchability in both trawls than with standard types of capelin bellies. Now we need to address the question of whether or not to use larger meshes, as these have been shown to not be effective in containing capelin when they are dense or in large schools.

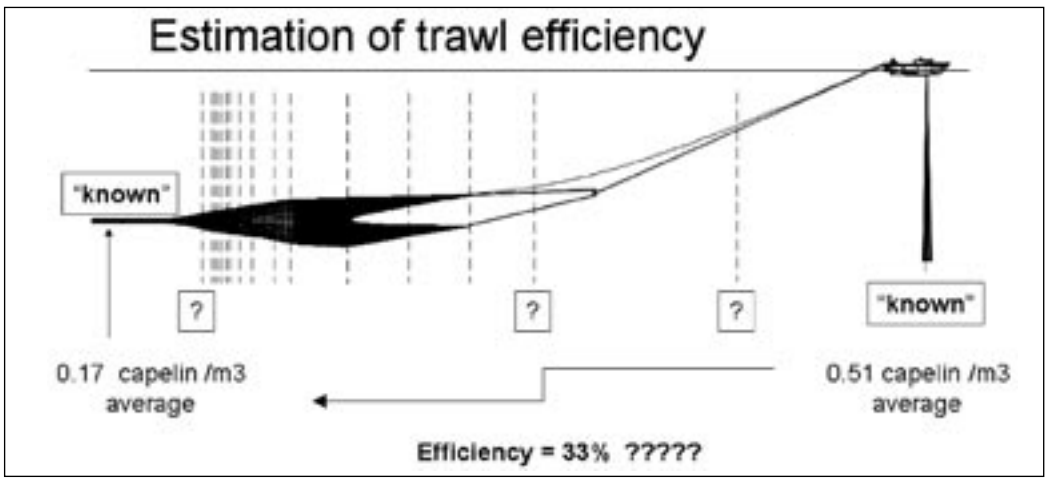

Fig. 5. Initial estimates of the efficiency of pelagic trawls in catching capelin. This compares the density of fish per cubic metre under the vessel across 27 marks with the density of the actual catch per cubic metre of water filtered b the trawl across 337 hauls taken at the same time and in the same area. But a lot can happen between trawler and trawl.

School density and trawl efficiency

The observations raised questions on trawls efficiency. By examining echoes of capelin and estimated the average density of capelin in a volume of seawater in the path of a trawl with a vertical opening set at

50 m. Fig. 4. We carried out 27 such estimations on data obtained on r/v *Árni Friðriksson* between 2003 and 2007, the average density was highly variable both between and within the echoes, with densities of between 0.1 and 1.6 fish per cubic metre, with an overall average of half a fish per cubic metre, or one fish in every two cubic metres of water. Catch records from fishing vessels also include information on volumes, positions and tow length. To compare the 27 marks, we selected the catches taken within 24 hours and 10 nautical miles of each examined mark, giving a total of 337 commercial hauls for comparison. The volume of filtered seawater was calculated for every haul and divided into the catch taken to give average density of capelin per cubic metre of seawater filtered. This never exceeded 0.4 capelin per cubic metre and was on average 0.17 capelin per cubic metre. The graph below shows the average density of each mark compared to the average density of hauls taken at the same time and location. This comparison indicates that the pelagic trawl never catches everything that passes under the fishing vessel, with the exception of occasions when capelin concentrations are low and little is recorded.

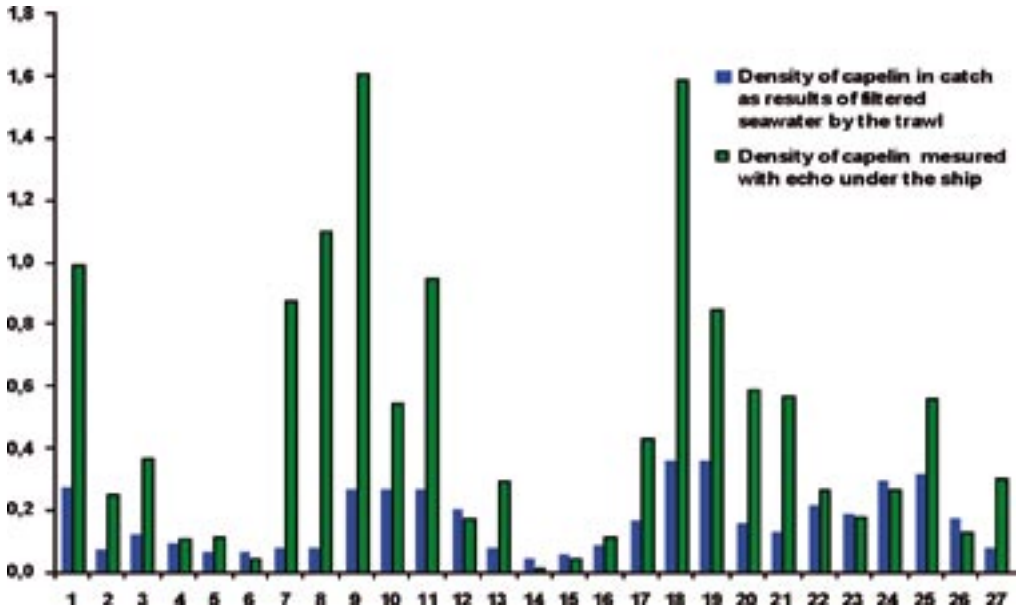

Fig. 6. Comparison of the density of capelin marks (in green), against the density of the actual catch factored against the volume of water filtered by the trawl.

Variable school behaviour

As every capelin skipper knows, the school behaviour is different during the towing. Very often there is very little coming into the trawl and then suddenly the concentration is 3-5 capelin in m^3. If the estimations above are put into tons per hour based on 2,5-3,0 knots towing speed with a regular capelin midwater trawl, the catch effort would be 206 tons/hour if no capelin escaped at all, with an indicator of 0,5 capelin per cubic metre under the vessel. In reality the catch would be much less or about 70 tons per hour, resulting in 0,17 capelin per per cubic metre return in the codend. Fig. 6. We would like to stress that this is a rudimentary method of calculation and it's important to be wary of drawing too many conclusions from this, but the indications are that the capelin trawl actually catches a relatively small proportion of the volume of fish that is seen on the vessel's fishfinders. A great many factors have not been part of the reckoning in our estimates, and some factors that are variable have been fixed to simplify the analysis.

To make this method of assessment more accurate, we would need to produce a more accurate density measurement in the trawl opening, and preferably at other points in the trawl as well to produce truly precise results. There is a considerable distance between the trawler and the codend, and a great deal can happen between the two points that affects the density of shoals of fish. Fig. 5. On the other hand, the results of our measurements approximately concur with the results of other research into the effectiveness of fishing gears.

Effects of fishing on school behaviour of capelin

It is still uncertain whether or not pelagic trawls have an effect on the behaviour of shoals of capelin, and we still do not know how well escaping fish survive. This is far from being a simple subject to research and the methods needed are still not fully developed. However, work on this is in progress and numerous ideas have been floated as to how to proceed. There are also suggestions that purse seine fishing on spawning fish can have harmful effects on the migration, behaviour or spawning of capelin. This is an interesting subject and an important set of tasks that deserve further research in the near future.

There is a great deal of interest for midwater trawling within our neighbouring nations in the north-east Atlantic. The Marine Research Institute and other Scandinavian institutes have begun a combined effort in midwater trawling research. The aim is to study and develop midwater trawl technology in order to increase knowledge on this sophisticated type of fishing method in nearest future.

Authors: Haraldur Arnar Einarsson, Einar Hreinsson and Sigurður Jónsson

CATCH ON
HAMPIDJAN'S NEWSLETTER ABOUT FISHING AND FISHING TECHNOLOGY
DECEMBER 2007

Knockout Apollo Xstream doors in Alaska

33% more squaring power

Earlier this year experiments were carried out to increase the flow of water through Apollo pelagic doors on board the trawler *Aurora,* which fishes for pollock in Alaskan waters. The results were so positive that Hampidjan is now receiving enquiries every day and there is a great deal of interest from fishermen in the area.

Unusual design

We took the decision to test this revolutionary techology in Alaska where trawlers are normally working in fairly shallow waters at around 50 to 60 fathoms. We are constantly trying to get a better horizontal opening in the HiFlow self-spreading trawls that are made with wide top and bottom panels, and comparatively narrow side panels. Hampidjan USA has seen success with these self-spreading trawls and there are steadily increasing numbers of trawlers using these trawls that give a better opening than anything else on the market, Gudmundur Vigfússon says.

Broader catching area

As already mentioned here, the emphasis is placed on getting as wide a spread as possible and this is frequently between 40 and 70 fathoms, depending on the size of the gear. On the other hand, skippers want to avoid having a vertical opening of more than 12 fathoms, as this result sin small fish and bycatches that result in a direct financial loss for the operator, as government levies a payment for all non-target species catches.
Aurora's owners and crew were keen to try out doors with improved flow capacity, and the skipper was already well satisfied with the Apollo doors he had already been using successfully. Aurora carries a 1312 metre HiFlow self-spreading trawl with a horizontal spread of 70 fathoms under the headline sounder. But with the new versions Apollo doors, spread went to 80 fathoms.

Main results

"We tried these doors out in June last summer and I joined them for a trip," says Gudmundur Vigfússon.
"We saw horizontal spread improved by about 12 fathoms. The doors are considerably more stable when towing, in a turn or when lifting the gear over an obstruction on the sea bed. The trawl hardly closes at all while the codend fills with as much as 200 tonnes of Alaska pollock. It's also clear that with these doors it's possible to shoot more wire, which helps on shallow grounds, as the wider the trawl, the better the catch – something that has been proved on these grounds time an again," says Gudmundur Vigfússon

Skipper Todd Hendricks: These are Great doors!

According to skipper Todd Hendriks, there is a big difference between these doors and the older type. The doors square very well and work well with the HiFlow self-spreading trawl on board, and he reckons that catching is also better with this arrangement than with the old rig.
"These are great doors in every way and we can have a better angle of attack with these, up to 45° without the doors dropping, which can happen at 35-40° with other types. This additional squaring power could make fishing in waters shallower than 50 fathoms more effective by keeping the same spread as can be used in deeper water."

Stern trawler Aurora in Alaska.

Apollo Xstream trawl door.

The History Corner

Fishing Explorer tells his story

The only Hull trawler skipper to have written a book describing his career at sea, Ernie Suddaby has fifty years of seagoing behind him, beginning in coal-burning side trawlers in his teens and finishing as the master of a North Sea oil rig standby ship.
In 1972, as one of the Ranger Fishing Company's successful young skippers, he was appointed as skipper of the brand-new factory trawler *Ranger Castor* and took the ship to fish at Newfoundland, Iceland and finally in Norwegian waters. After more than a year and several successful trips, and with the Ranger fleet having changed hands to become part of British United Trawlers, he took a trip off. While he was ashore, the year-old trawler, by this time renamed the Gaul, vanished with all hands on the 8th of February 1974 off the north of Norway during atrocious weather conditions, sparking a 30-year mystery and an unending controversy of spy-ship theories and skulduggery fuelled by TV and newspapers.
Ernie has had the *Gaul* and its crew in his mind ever since and after the ship was finally located in a position very close to where he had predicted it would be, he took part in one of the official surveys of the wreck and saw the *Gaul* for the first time through ROV cameras since handing the ship

over to his relief skipper at the quayside in Hull, just before it sailed for that final trip to the Barents Sea.
He was also a witness at the subsequent inquiry that vindicated his long-held views that the *Gaul* was not engaged in espionage of any kind and was not sunk by a Soviet submarine – as some of the wilder theories had claimed.
In the intervening years he spent time fishing in the same North Atlantic waters, did a spell delivering ships to their new owners and sailed as the skipper of a Spanish-owned factory trawler in the Falklands Islands before working in the North Sea oil industry as skipper of a standby vessel.
His book, *Fishing Explorer* – named after the trawler he skippered in the Falklands – Ernie Suddaby recounts his time in the South Atlantic, looks back at the years when Britain had a distant water fishing fleet that ranged across the North Atlantic, and examines the mystery surrounding the *Gaul* and its loss, recounting his part in the survey of the wreck and the inquiry – not all the findings of which he is prepared to agree with.
Fishing Explorer by Ernest Suddaby is published by Maritime Info UK.
The book is available in the UK from http://www.maritimeinfouk.com/
email: admin@maritimeinfouk.com
Fishing Explorer is also available through the Shipping Publications at http://www.shipping-publ.no/

Quentin Bates
Features Editor
Fishing News International.

Retired trawler skipper Ernie Suddaby today, with Hull's St Andrew's Dock in the background

CATCH ON
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Research vessel Árni Fridriksson RE-200

Interview with skipper Gudmundur Bjarnason

Recently Catch On joined Iceland's marine research vessel *Árni Fridriksson* for a trip as part of the Marine Research Institute's work on capelin and hydrographic research work. Skipper Gudmundur Bjarnason has been a skipper for the Institute for many years, having skippered the previous *Árni Fridriksson* before the new replacement vessel arrived form Chile in 2000

"It's been a great experience to manage the ship and its crew over the past seven years. The ship has lived up to the expectations we had for it. It's a fine ship and just what is needed for the sea conditions in this part of the world," he said.

"The trawl deck is well laid out for fishing gear research. It is rigged for demersal and pelagic gear, and we can tow two trawls at the same time," he said, adding that the ship was also designed from the outset to minimise environmental impacts.

"It is important for everyone concerned to take part in fishing gear research, as all the facilities are here on board for just that. As an example, Hampidjan's Dynex warps were first tested on board *Árni Fridriksson* and by the end of 2007 there are expected to be eight trawlers using this type of warps entirely, instead of towing wire.

There are 14 regular staff around *Árni Fridriksson,* as well as research staff, and up to 32 people can be carried, which is just as well on cruises such as those on redfish or whale counting cruises. Among the crew is a core of men who have been there since the ship arrived and these people have a great deal of experience between them. The work carried out on board is varied, as can be seen from this extract from the ship's work list for the year

1. Capelin research
2. Pelagic trawl research/ Capelin
3. Capelin research
4. March ground fish survey
5. Calibrating echo sounders
6. Blue whiting/ herring/ Selectivity devices
7. Seabed cartography
8. International trawl/pelagic survey on redfish/ Whale count 2007
9. Charter work
10. Autumn ground fish survey
11. Capelin research/ Hydrographic research

Research vessel Árni Friðriksson.

Skippers Guðmundur Bjarnason in the wheelhouse.

Árni Fridriksson has been in use for approximately 200 days each year and the only limitation has been limited finance to run the ship. But changes in the capelin's migration patterns have lead to increased operation time in the last three years, due to the general uncertainty over the state of the capelin stock.

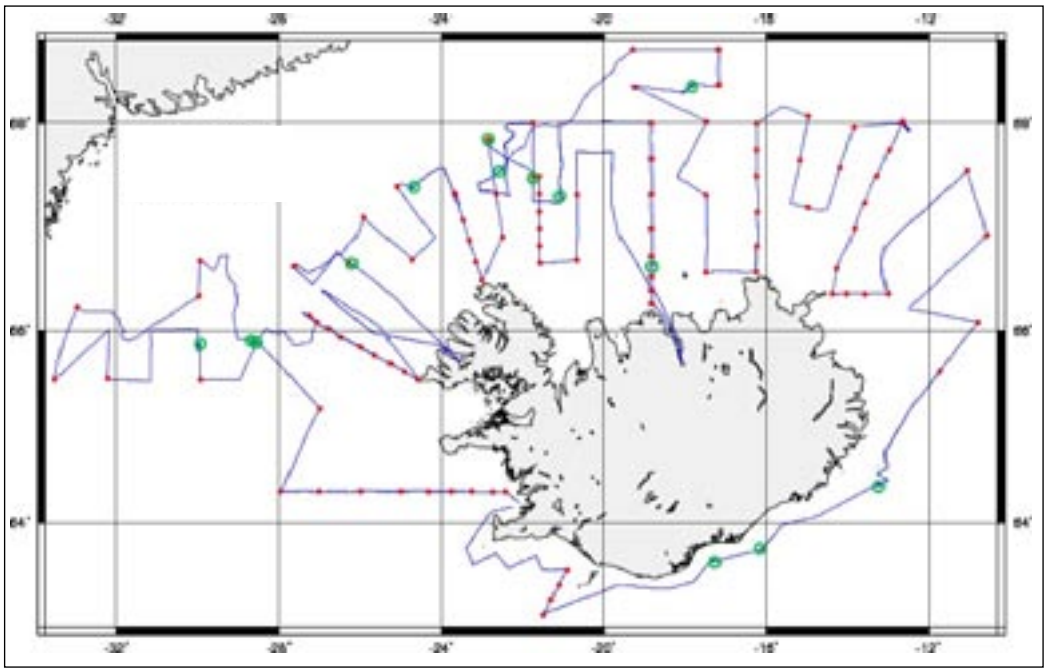
Over the last few months there has been a debate over the Marine Research Institute's activities following a cut in the cod TAC of 30% for the 2007-08 quota year, and Catch On asked what Gudmundur Bjarnason's view of this is?

"In my opinion, it is important for all of the interested parties to work together to deal with the difficulties that all of them are facing. An open debate is needed and people can call on their experience in this kind of situation, instead of simply pointing the finger at the Institute. Fisheries is in everyone's interest, at sea or ashore."

What about the debate over pelagic trawling for capelin and herring?

"It's something I have thought a lot about. My feeling is that changes in the migration patterns of herring and capelin are far more complex than being a matter of trawling or not. Fishing techniques have changed since we fished these species only with purse seines. Vessels are larger and more efficient, and they make a lot more noise. There are often many vessels fishing on a small area, all using their search-

lights to push the shoals down so they can be taken more easily in a trawl."
"What's needed is to continue the research until it is clear how fish react to fishing gears, including trawl shape, towing speed, noise, and other factors that affect the way fish behave."
"You mustn't think that I'm championing trawling over purse seining, but I feel that if we are going to use pelagic trawls, then those trawls need to be developed with the environmental factors I have mentioned in mind. *Árni Fridriksson* is already well equipped for research of this kind," Gudmundur Bjarnason concluded.



Árni Fridriksson's last survey 2007 from 6th to 28th. November. Capelin research and hydrographic research. Green dots indicate towing stations and red spots hydrographic stations.

Gloria Helix self-spreading Trawls

Great results on Baltic brisling/sprat

Denmark's largest net maker Cosmos Trawl A/S, and member of the Hampidjan Group, is looking at a very positive future since their self-spreading Gloria Helix trawls have been showing some very promising results in the Baltic Sea fishery.
Over the last few seasons the self-spreading trawls have already proved to be extremely effective among our Danish and Swedish customers for herring and mackerel in Skagerrak and the North Sea, both for single rig and pair trawling says Lars Jensen, Cosmos Trawl's deputy director.
In light of these positive signs, the Cosmos technicians and design team have been analysing new ideas, and only with a few adjustments on the trawl belly, the self-spreading trawls are now ready for the challenge of the Baltic brisling/sprat fishery.
Initial trials were carried out by Swedish vessels *Sunnanland* and *Bristol*, and after two weeks the results are clear. The self-spreading trawl fishes better, reacts very easy and is easy to tow compared even to the smaller Turbo trawls normally used for this particular fishery, Leif Lykke – Cosmos Skagen sales manager comments.
These initial results indicate that we can expect the self-spreading trawls to take over completely from our old best-seller, the Turbo trawl – which also were used for a mixture of fisheries in the Skagerrak, the North Sea and the Baltic.
This will certainly simplify things for our clients, as they only will require one Helix forepart and two belly variations to optimise things for each particular fishing zone, Leif Lykke concludes.

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Santymar and Hampiðjan Group congratulate MAPA

SANTYMAR, S.A.
Suministros para la pesca

Santymar in Vigo Spain, a business partner of Hampiðjan Group, recently supplied a 576 metre Gloria Hexagon midwater trawl and a pair of 4,0m² Apollo trawl doors, 1300 kg each, to the new Spanish research vessel „*Miguel Oliver*“, one of the largest of this type in Europe.“ In fishing trials the gear showed an mouth-opening of 30 x 60 metres which is suitable to catch enough pelagic samples and fish species to be studied for scientific purposes on board the vessel. Santymar and Hampiðjan Group congratulates MAPA and the crew with the new vessel with best whishes in future operations.

The Fish Box

Baltic herring

Clupea harengus membras
The symbolic fish of Southwest Finland is the Baltic herring. Silver flanked and with dark backs, Baltic herring move in large schools in the Baltic Sea, feeding on crustaceans and water fleas. The Baltic herring is a subspecies of the ocean herring, which has adapted to the low salinity of the Baltic Sea. Fully-grown, Baltic herring are about 15-20 centimeters long.

Fifteen pelagic trawlers caught 80.000 tons of Baltic herring in 2006, accounting for approximately 90 per cent of the catch by volume and over half in terms of value. Almost all the sprat and three quarters of the Baltic herring is used for reduction or otherwise as animal feed (mink farms), leaving less than one third of the total catch for human consumption. Half of the fish for human consumption is Baltic herring. The other main species of fish for human consumption is rainbow trout, which is generally from aquaculture.

GLORIA® HELIX™ DYNEX™ SWAN NET-GUNDRY COSMOS TRAWL MAGNET POLY-ICE Trawl doors UTZON
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