



Twelve Month URCHIN Newsletter

(Activities between November 2015 and April 2016)

URCHIN project meeting and Workshop in Galway, Ireland April 2016

Project meeting

On Wed 6th April the second Project meeting was held at the Galway Mayo Institute of Technology in Galway, Ireland. All of the RTD partners were present as well as the Royal Greenland partner and representatives from Canada. The meeting covered all aspects of Project Management and financial reporting as well as an update and current status from each of the Project partners. Each of the project Work Packages was then discussed in regard to deliverables, outputs and when and how these would be achieved. Finally the next project meeting in Greenland was discussed. It was decided that further investigations into the cost of travel to Greenland should be made before a final decision is made and where the next meeting is held but it has since been decided to hold the meeting in Iceland in October 2016. The meeting ended with a Project dinner that evening.



Project Workshop

From the seafloor to the plate. From community level benefits to global roe enhancement concepts. Spanning a geographical area ranging from Ireland in the south, Greenland in the north, the Mingin Islands (Canada) in the west to Norway in the east, the Northern Peripheries and Arctic URCHN project workshop had it all.

The Project Workshop in Galway was held on the 7th April with participants joining from Norway, Iceland, Greenland, Canada and Ireland and including research partners, SME partners and other interested SME participants. After a brief welcome and introduction to the URCHIN Project a range of topics were presented and discussed. These included the following: fishing methods for sea urchins in the NPA and worldwide; Sustainable fisheries management (Fisheries) and legislation (Fisheries & Aquaculture); Ranching and restocking sea urchins in Ireland; Issues and possible solution for developing a sea urchin fishery in Greenland; Japanese roe enhancement trials and the role of GSI in the market value; Commercial seed production and initial investigations into ranching sea urchins in West Cork; Irish feeding trials and roe enhancement; The role of sea urchin in community and the role of sea urchins in fine dining.



JP McMahon, the charismatic owner operator of the Michelin star restaurant, Aniar, in Galway provided a fitting finale to the workshop with a presentation on the place of sea urchins in the fine dining scene.

The next URCHIN Project meeting and workshop

Where: Iceland
When: First week of October (tentative), 2016
Theme: Roe enhancement and monitoring the reproductive cycles in wild urchin populations

Workshop: (tentative outline)

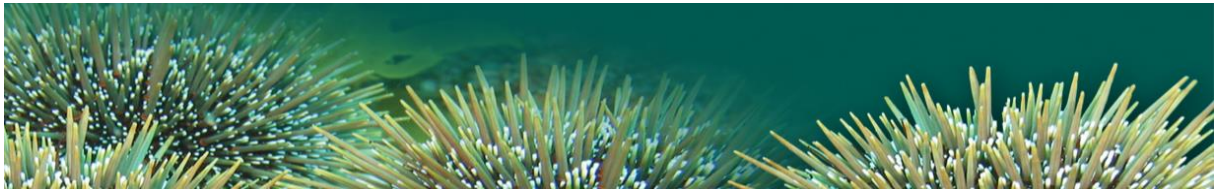
Day 1 Reykjavik, a day of presentations and discussions

Day 2 Breidifjörður, a day looking at the practical side of roe enhancement and sea urchin sampling

(Watch the URCHIN website, or contact Nofima for further details)



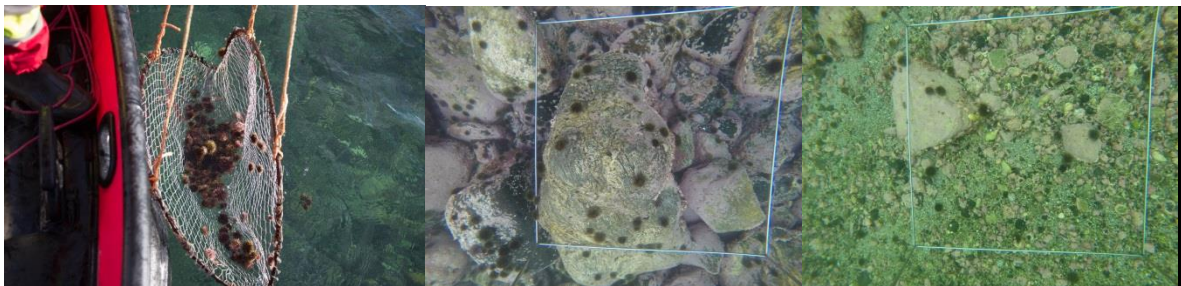
Project partner activities during the last six months:



Norway (Nofima and Arctic Caviar AS):

Continuation of trap testing for the Norwegian sea urchin fishery and initial stock monitoring trials:

Trapping experiments continued in Tromsø, Norway with an emphasis on the effects of site selection on sea urchin quantity and size. The results clearly showed that site selection is a crucial factor in the success of trap fishing. Alongside the trapping trial a novel method of stock monitoring has been developed using a steel drop frame and camera. This will be further developed in the coming summer.

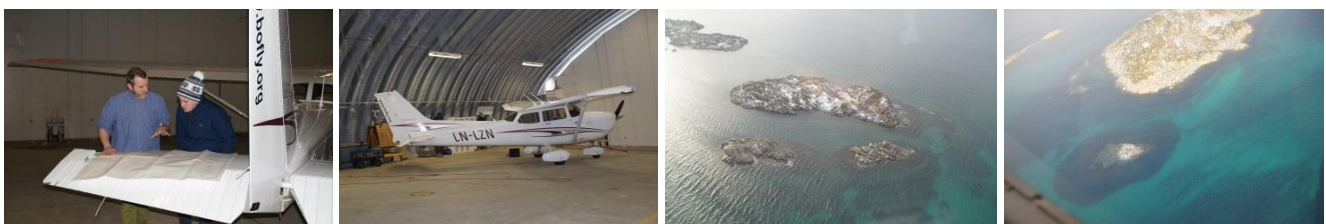


Passive traps used in Norway and images from the drop frame used for initial stock monitoring trials

Photos: Tor Eversen

Aerial stock monitoring technique trialed in Norway: Arctic Caviar AS, in conjunction with Nofima have trialed an aerial survey of new fishing grounds in the Lofoten area in what is believed to be a world first! Roderick Sloane of Arctic Caviar summarised that the survey was of significant value. It was possible to view extensive kelp beds at certain sites and although it was not possible to actually see sea urchins from above the survey provided invaluable knowledge of potential sites. The amount of area covered during the three hour survey would take weeks to cover using the traditional boat survey method. Having identified a number of key sites, Roderick will go and inspect them more closely with a boat and put a diver in the water at the sites with the most potential.

In addition to the fixed propeller aerial survey Nofima will also run trials with a drone to test fine scale aerial surveying of potential sites in the coming summer.



(Left to right) Roderick Sloane and pilot, the plane used to undertake the survey and examples of the view from the air of potential sea urchin fishing sites

Published Outputs (published on the URCHIN project website and as Nofima Reports):

1. Sea urchin fisheries, management and policy review: This report gives a summary of the sea urchin fishery management techniques that are used in sea urchin fisheries around the world. These are listed in order of size of the fisheries and include a brief description of the history of the fishery and what management practices have led to the current state of the fishery. There are three more detailed case studies of Fisheries Management from Chile, the world's largest fishery, New Zealand, a small but sustainably managed fishery and Canada, a fishery that has substantial management in place and a sustainable fishery that experiences similar environmental conditions to countries in the NPA. The report then summarises the management practices, or lack of, that have been in place in the participating NPA countries (Ireland, Iceland, Greenland and Norway). Finally, conclusions are made on the history of sea urchin fisheries management in the NPA countries and the impacts that a lack of fisheries management and regulation has had in these countries.
2. Sea Urchin Fishing techniques Report: This report gives a summary of the fishing techniques that are used in sea urchin fisheries around the world. The main sea urchin fisheries around the world are then briefly described, together with the fishing techniques that are used in each fishery. This gives some indication of the frequency of use for the different techniques in various countries around the world. The current status of the fishery and fishing methods utilized in participating NPA countries (Norway, Iceland, Greenland and Ireland) are described. A brief description of the history of roe enhancement in Norway is also included. Finally, the factors that contribute to define the optimal sea urchin fishing techniques for any given country and company are outlined. The efficacy of a fishing technique will depend on a number of these factors and the interactions between them. In the following NPA report a cost/benefit analysis will be conducted for each of the participating NPA countries on what method of fishing is most effective.



Ireland (Marine & Freshwater Research Centre, Galway Mayo Institute of Technology and SME partners):

Organisation of the Project meeting and Workshop in Galway (see earlier story)

Site Surveys

Surveys of sea urchin reseeded sites began slowly due to adverse weather conditions in Ireland from December up until and including the month of March. Due to bad weather during the months of November and December site surveys with each of the associated partners were postponed. One site survey was conducted in Connemara (Errislannan) on a known harvested site in December 2015.



Site survey in Errislannan Connemara of a known harvested site. This is the same tidal rockpool in winter (left) and in spring (right). Due to the exposed nature of the habitat surveys and reseeding are extremely weather dependent.

A site survey was also conducted on Arranmore Island off Co. Donegal with Seamus Bonner (Arranmore, Development and Employment Co-op) on the 27th of January when there was a sufficient calm weather. Although the spring tides were sufficient for surveys however we were unable to survey harvested sites. Four proposed reseeding sites were surveyed.

Surveys of proposed sights on Achill Island Co. Mayo were surveyed on the 11th of March with the associated partner Fergal Guilfoyle of Treanbeg Marine consultancy. Surveys were very successful with the location of preferred reseeding sites being identified.

The final site survey is to be completed in May 2016 at Mullaghmore Co. Sligo for Mr Philip Water of the Lobster farm Mullaghmore.



Urchins at Purteen Achill Island Co. Mayo.



Proposed reseeding site at Purteen Achill Island. These selection of rock pool once were highly productive prior to overfishing during the 1990s.

Urchin Spat

Urchin spat are been supplied to the project by Mr John Chamberlain of Dunmanus Seafoods, Durrus, Co. Cork. Dunmanus Seafoods is one of Ireland commercial sea urchin hatcheries and is one of the longest running, and most successful in Europe.

Juvenile urchins between 15mm-20mm in test diameter will be graded to remove smaller urchins for reseeding. Urchins have been on-grown indoors in their nursery unit at Dunmanus Seafoods.



Nursery unit at Dunmanus Seafoods where juvenile sea urchins are on-grown in cone tanks before going to sea in cages or for reseeding efforts (left). Juvenile urchin spat feeding on Laminaria Spp. which is abundant in the areas proposed for reseeding (right).



Graded Sea urchins 15-20mm in test diameter, these urchins are ready for reseedling



Greenland:

Royal Greenland A/S have been conducting trial fishing to investigate whether or not there is potential for sea urchins to become a new fisheries species in Greenland. They have also run factory trials to learn about production methods and costs should a sea urchin fishery be established. They have also undertaken market analysis in Tokyo, Japan as well as visiting a sea urchin processing site in Dalian, China.

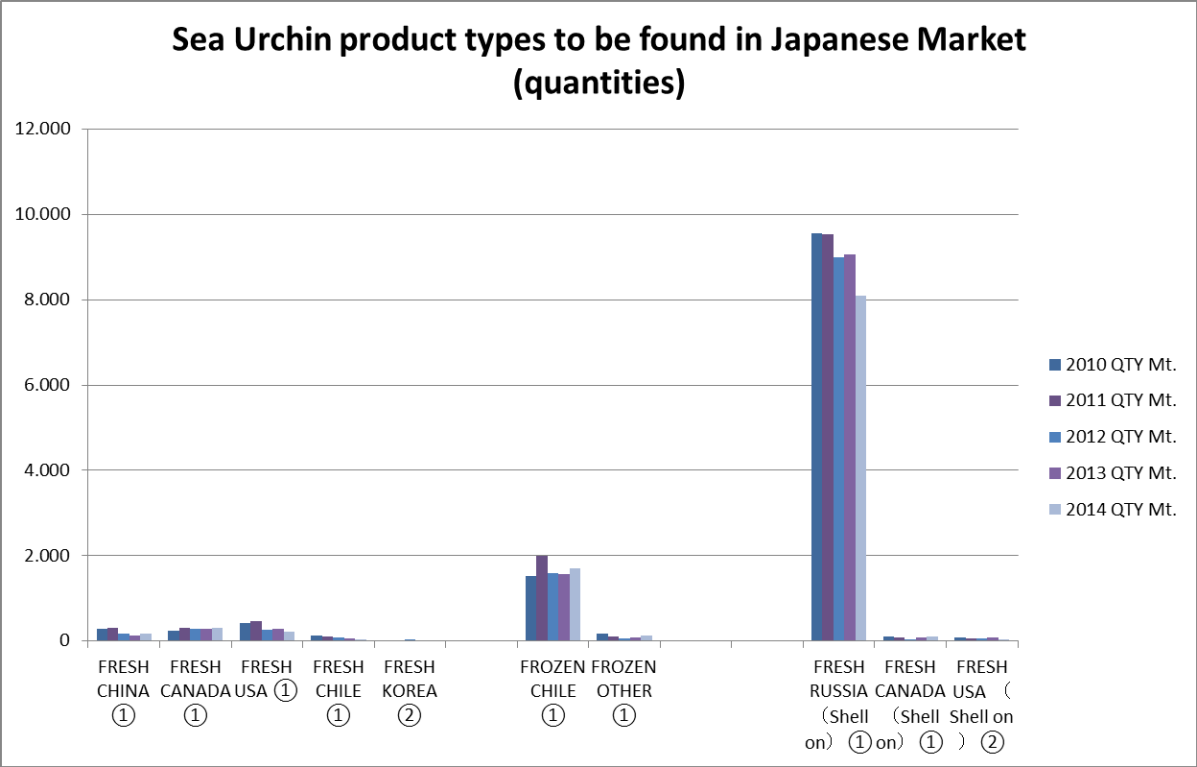


A fine fish restaurant in Dalian, China, with living animals, to show/validate the freshness of the products Pictures by Nikoline Zeimer.

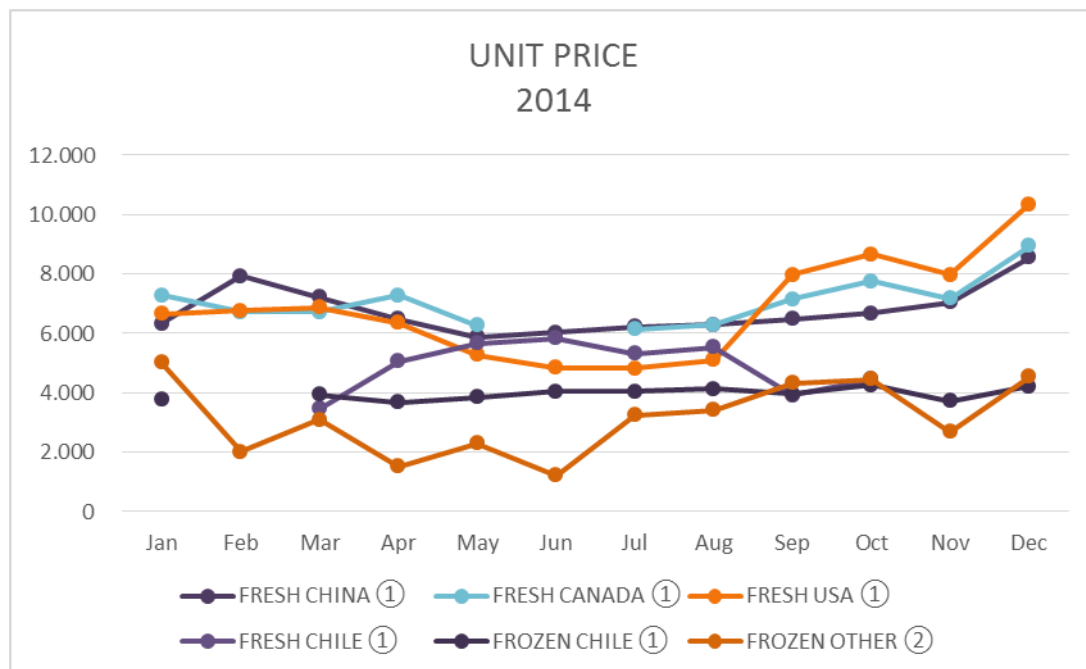
Greenland is an enormous island with 73 distinct villages and cities which are not connected to each other by road. In order to get from one city to another it is necessary to catch an airplane or a boat. So Greenland is truly a remote place with enormous infrastructural challenges. One of the aims

of the URCHIN project and for Royal Greenland A/S has been to solve the logistic challenges associated with starting up a sea urchin industry and feasible sea urchin export from Greenland. In order to do this it was first necessary to define the product type. Should it be live sea urchins such as the product exported from Iceland, or, a frozen product such as that exported by Chilean producers?

Analysis undertaken by Royal Greenland shows that the Japanese sea urchin market consists mainly of the following products: fresh roe, whole live sea urchins, frozen roe and canned products. The consumers prefer the fresh roe or whole live product, but production of frozen sea urchin roe is also a feasible option for the market. For a country like Greenland, a frozen product would be ideal as it has a prolonged duration date and can be delivered reliably despite logistical challenges.

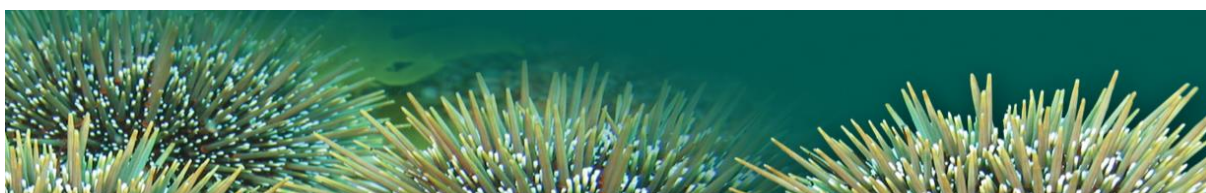


Graph showing the sea urchin product types and their quantities found in the Japanese seafood market.



The comparative prices for the various sea urchin product types on the Japanese market (prices in JPY).

Subsequently, Royal Greenland A/S has been focusing on the production of frozen roe and also visited China to investigate processing protocols for frozen sea urchin roe. They found that the labour intensive technology currently being used could be improved and made less costly. Labor costs are high in Greenland and so it is necessary to look further into this area, before any conclusions on establishing a sea urchin industry in Greenland can be made.



Iceland:

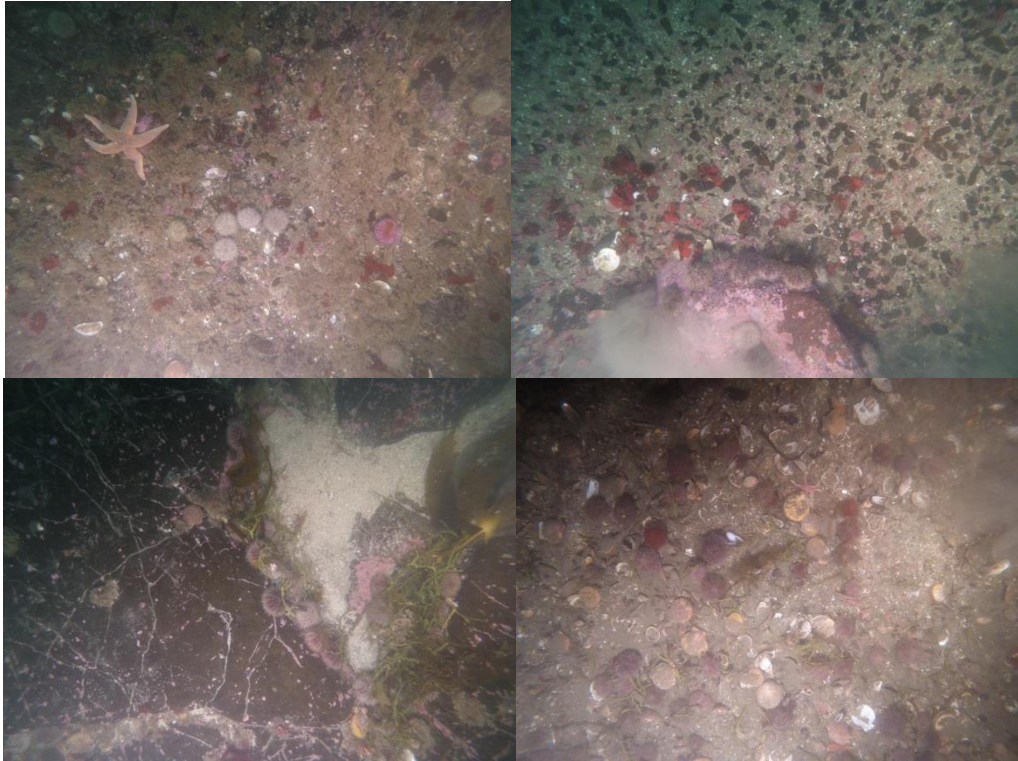
Population monitoring for Government Regulation and for fishing efficiency in Iceland

From November 2015 to April 2016 trials using bottom photographs were conducted, counting and identifying all possible species from the photos taken at a number of sites. The number of sea urchins/ m² of bottom was estimated and compared to abundance estimated from a survey where swept area method was used to assess the abundance (see photos).

The efficiency of the dredge ranged from 10 to 33% depending on bottom type and currents. On hard bottom and strong currents the efficiency decreased considerably.

Between April 11th-14th a survey was conducted to continue with the stock assessment that was carried out in September. Using the same techniques the stock size and population structure of the sea urchin was investigated. The rest of the month was used to work on the samples and measurements.

The gonad index (the amount of roe inside the urchins) in April (closure of fishing season) ranged from 15-25% depending on areas but in September (opening of fishing season) this range was 4-18%.



Photographs from different types of seabed in Breidifjörður, Iceland. To assess the efficiency of the sea urchin dredge, the number of sea urchins observed in the photos was compared to the number of sea urchin fished at the same site.



*The urchin roes from two different sea urchin species collected at Breidifjörður, Iceland. On the left; The green sea urchin (*Strongylocentrotus droebachiensis*) on the right: The common sea urchin (*Echinus esculentus*).*



Examples of the roe processed from the green sea urchin from Breidifjörður, Iceland in April 2016



Twelve month reporting, newsletter and financial reporting

The project has now reached the twelve month stage and a newsletter and a 12 month NPA Project report will be completed. The financial reporting for the second 6 month period will begin as soon as the first is complete. It has been a busy first twelve months and with the northern summer fast approaching the project participants look forward to a number of initiatives during the warm summer months. If you have any queries I would encourage you to contact one of the following national contact points to discuss possible involvement in the URCHIN project and the sea urchin fishery in the Northern Periphery and Arctic area.

Norway:	Phil James	philip.james@nofima.no
Ireland:	Collin Hannon	hannon.colin@gmail.com
Iceland:	Guðrún Þórarinsdóttir	gutho@hafro.is
	Guðmundur Stefánsson	gudmundur.stefansson@matis.is
Greenland:	Nikoline Ziemer	nikz@royalgreenland.com

(If you are outside of these NPA countries please don't hesitate to contact Phil James at Nofima, Norway for further information regarding associate partners and activities)