Bord Iascaigh Mhara
Irish Sea Fisheries Board

Aqua Culture

Newsletter from B.I.M.

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WORLD SEAFOOD CONGRESS ENDORSES THE IMPORTANCE OF AQUACULUTRE

The most important message to come out of the World Seafood Congress, which was organised by BIM, and co-hosted with Enterprise Ireland and the Food Safety Authority of Ireland, was that we all need to eat more seafood. Speaker after speaker, all of whom were the acknowledged world experts in their fields, stated bluntly that the western world will be overwhelmed by a rising tide of mental illness and obesity-related diseases unless we change our diets to include more seafood and less refined carbohydrates and saturated fats.

The weight of evidence backing up this view is now overwhelming and along with global warming the need to get the "eat more seafood" message understood by consumers is of critical importance.

Hosting a World of Seafood - Pictured at the official opening of the World Seafood Congress, 2007, at Croke Park Dublin are (L-R) Donal Maguire, Aquaculture Development Manager, BIM and Congress Moderator; Mary Coughlan, T.D., Minister for Agriculture, Fisheries and Food; model Christine Toale as Molly Malone; Don McSwiney, Strategic Development Manager, Enterprise Ireland; Jim Mulcahy, Consumer Foods Manager, Enterprise Ireland and Alan Reilly, Deputy Chief Executive, Food Safety Authority of Ireland (Picture: Mark McCall)

But where is all the seafood to come from? The FAO showed quite clearly that the world's capture fisheries are now at or beyond their sustainable yields. Further supplies of seafood can only come from aquaculture. This elevates aquaculture as an activity beyond a simple business opportunity. We must now move to a position where the business of creating seafood is recognised as being of paramount importance for the good of everybody's health.

Here in Ireland this means that we have to change the public perception of aquaculture. We must work hard to get our fellow citizens to understand and appreciate the importance of aquaculture as a new and sustainable source of seafood production around our coasts. Winning the hearts and minds of the coastal communites and thus engendering greater acceptance and support for our industry on the State foreshore is going to be a number one priorty for 2008.

In This Issue

Percid Fish Culture - From Research to Production.

A reminder that the International Percid fish culture workshop will be held at the University of Namur in Belgium on January 23rd and 24th 2008. The workshop promises to be an exciting event. Speakers will talk on markets, larval rearing and grow-out. In particular it is hoped that some of the difficulties associated with this species can be highlighted and dealt with. Speakers will include academic researchers from around Europe and industry practitioners. Lucy Watson, BIM and Damien Toner, Aquaculture Initiative will speak at the workshop. Further information and registration details can be found on the workshop web page:- http://www.percid.be/registration.htm

NEWS FROM THE NORTH-WEST

By Louise Collins, Regional Officer, Aquaculture Initiative

Navigational plans underway for two CLAMS groups.

Captain Robert Mc Cabe, Commissioners of Irish lights, has been overseeing navigational plans for Mulroy Bay CLAMS (Co-ordinated Local Aquaculture Management Systems) group, based near Milford Co. Donegal and Trawbreaga Bay CLAMS group, based near Malin town in Co. Donegal.

Both CLAMS groups were met in one day and worked with Robert, doing chart work, on the laying out of sites and agreement of navigational points. Navigation is important for health and safety of other users of the bay, such as jet skiers, boating enthusiasts, windsurfers, sea anglers, inshore fishermen and swimmers, who all require safe passage in the bay. Ongoing consultation is also taking place with the Marine Surveyors Office and DAFF in agreeing to the overall layout of the plan and the positions for the markers and buoys. These navigational plans will involve the deployment of special yellow aquaculture marker poles and yellow buoys marking aquaculture areas.

Mulroy Bay has more licensed sites and contains a variety of aquaculture farms, including salmon, mussels, oysters, and scallops whereas Trawbreaga Bay, which is a smaller size in area and where all aquaculture is oyster production.

Following the completion of the plan it is hoped to provide information boards displaying and informing the public about the plan at all piers and access points around the bays.

Both CLAMS groups have come together and worked well with the navigational requirements and directions for the future of their bays. This is a vital piece of work at this stage in order to meet licence requirements and to protect the whole marine community who will benefit from utilizing the aids to navigation. The next step is now to develop an appropriate management framework where we will be able to work more effectively with all the stakeholders involved in each of the bays.

Navigational markers will be funded under the CLAMS initiative from BIM.

Mulroy CLAMS secures €325,000 for Real Time Monitoring.

After many months of meetings with Donegal County Council, the CLAMS (Co-ordinated Local Aquaculture Management Systems) of Mulroy Bay have secured €325,000 from Donegal County Council to carry out real time monitoring during construction of the largest bridge to be built in Donegal.

Donegal County Council has appointed OTT Hydrometry, based in Dublin, to undertake the monitoring programme under the control and supervision of the RPS group, an international consultancy environmental firm, who are based in Letterkenny, Co. Donegal.

Construction of the bridge began in March 2007 and it will connect the Rosguill and Fanad Peninsulas. It will be a two and half year project. This will be the third element of Donegal County Council's 'Peninsula Hopping Project,' the slipways and ferry links at Rathmullan, Buncrana and Greencastle having been already completed. The primary goal behind the bridge construction is to provide a link to offer local traffic and tourist's substantial reduction in journey time between the Fanad and Rosguill Peninsulas.

The proposed bridge will be located at Boathill Bay, usually referred to as The Second Narrows, and will be 342m in length. The single carriageway bridge is a five span level concrete structure and in conjunction with its approach roads will measure almost 2.6km in length. It is envisaged that the bridge will open up the area to greater numbers of tourists and visitors.

Mulroy Bay is an important aquaculture location for the production of salmon, rope mussels, scallops and oysters, with a value in excess of €20 million and a major employer in the local area. It is also the major site for scallop seed collection in Ireland. It was designated as a candidate for Special Area of Conservation and is a Class A bay in respect of microbiological classificaition. This real time monitoring will use state of the art 24hour real time monitoring buoys in four locations of the bay.

The sensors will be measuring turbidity, dissolved oxygen, chlorophyll, salinity and current velocity. Monitoring will be carried at 15 minute intervals on a 24 hour basis.

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UISCE Carrying Capacity and Water Quality Project is well under way

By Benen Dallaghan, BIM

The project partners are making good progress with respect to their individual efforts and an extensive sampling program coordinated by Brian O'Loan of BIM is in full swing. The UISCE project has just completed a very busy schedule of water quality and oyster test site monitoring in Dungarvan Harbour. BIM staff have been sampling water from 16 sampling points (12 sampling stations throughout the harbour and 4 river stations). A GPS survey to assess the location of standing stock within the bay has been undertaken. To date approximately 500 tonnes of seed mussel were relayed across 14 test sites within Wexford Harbour. BIM are accessing sites on a monthly basis to sample and monitor water quality, mussel growth, mortality, distribution and predation.

Brian O'Loan, BIM, assessing samples of live mussels prior to sub sampling for biometric assessments in Wexford

In Killary Harbour water sampling is underway at 32 sampling points and there are 6 mussel growth test sites. Water sampling is conducted over a three-day period and this is done at forthnightly intervals. Sampling is three dimensional in nature (i.e. samples are taken at 3 depths) and the Seabird CTD vertical profiler has been used for this purpose. Mussel growth is measured monthly.

Partnership progress for the past three months is summarized below.

Marcon Computations (Galway); Marcon have developed hydrodynamic models for Dungarvan, Wexford and Killary. Water quality models for Wexford and Dungarvan have also been developed. A database with historical information and BIM sampling program data has been created and is now available to project partners. A lot of work have been done with respect to the integration of various predictive models into the MarGIS framework (computer desktop environment).

Martin Ryan Institute (Galway); MRI are looking after the analysis of shellfish and water samples from the pilot bays. Protocols for the analysis of shellfish samples have been drawn up and on-going analysis of phytoplankton and nutrient samples is underway.

Plymouth Marine Labs (UK); PML are assisting Marcon with the integration of ShellSIM (oyster and mussel growth model) into the MarGIS framework. ShellSIM is currently being enhanced and developed for inclusion into the project. PML have also played an advisory role on the BIM sampling program.

Longline Environmental / IMAR (Portugal) & NOAA (USA); Longline are assisting Marcon with model coupling and are developing FARM and E2K (ecological) models with a view to integration of these models into the UISCE project. Work on the integration of the ASSETS (tropic status modelling) is also underway. Longline continue to play an advisory role on the BIM sampling program.

Nicolas Chopin, BIM, water sampling in Dungarvan.

Blue Hill Hydraulics and Carter Newell; MUSMOD (mussel aquaculture modelling) has successfully been integrated into the MarGIS application framework. Flow models have been developed for Irish aquaculture structures. BHH and Carter have also advised on the BIM sampling program.

AQUAFACT International (Galway) and **Compass Informatics (Dublin)** have played roles with regard to data acquisition and project database design.

Sub-surface longline culture, New Hampshire, USA, 2007

By Dave Millard, BIM; Ger Lynch, Westpoint Shellfish Limited; Mike Murphy, Castletownbere

Coastal sheltered waters in Ireland available to farmers to expand the mussel industry are becoming increasingly limited. The industry has been expanding into more exposed waters at the edge of these sheltered waters.

Most mussel farms in Ireland use a surface 100-200m double headrope longline attached directly to floats each with a buoyancy of between 200-400L. At more exposed sites farmers typically use 200m single headrope longline, submerged to approximately 2-4m attached, again, to surface floats each with a buoyancy of 220L.

BIM have been working with Westpoint Shellfish Ltd at a very exposed site in Kenmare Bay and for the past four years working with 'Smartfarm' longlines, a surface floating system developed in Norway, which BIM ran trials with in a number of locations.

Unfortunately this system failed to weather the on site rigors of this past winter's storms (12m swells recorded) when supporting a full crop of mussels, but a lot was learnt about spat fall (down to 17m and the possibility of winter spat), Spring mooring systems and phenomenal mussel meat yield (>45%) and Westpoint Shellfish are still convinced that a system will be found to succeed in this type of location.

To increase dramatically the annual national tonnage produced of rope mussels it is agreed that we need to go offshore, away altogether from the sheltered waters, but how to cope with the weather offshore?

One method that seems possible is to fully submerge the cultivation system, floatation buoys and all. At the Aqua 20/20 conference held in April 2007, myself and Ger Lynch talked about this problem with Dr John Bonadelli, who put us in contact indirectly with Dr Richard Langan, from the University of New Hampshire (UNH).

So on the 27th of August myself, Ger and Mike met with Richard the director of the UNH Open Ocean Aquaculture Project (http://amac.unh.edu), who have established a demonstration site of approximately 12 hectares 10 km from shore in the waters of the Gulf of Maine, USA. The water depth at the site is 52m, which is fully exposed and can experience wave heights of 9 m during severe storms.

In 1999 they installed the first two submerged longlines, on which they have grown through seven cohorts of mussels, these same longlines are still on site albeit with different corner floats and anchors. These longlines have now been signed over to a commercial grower. This same grower is currently developing another site, about 3km south (Boars Head), which we also visited, where 10 lines have been installed.

The local mussel industry is still in its infancy, due in part to a lack of available sheltered sites. The predominant fishing activity being a thriving lobster fishery and so the lines in Boars Head have been moored individually to allow the lobster fishermen access to pots etc.

This type of sub-sea mussel farming fits well, visually, as for each mussel line there are only three small marker buoys on the surface, one for each anchor and one attached to the middle of the line.

*photo courtesy of Ger Lynch; **photo courtesy of Richard Langan

Back row: Robert Love, Dive Supervisor; Tim McClare, Research Vessel Captain. Front row: Randy Whisler, Research Engineer; Gita George, Deck Technician; Richard Langan; Dave Millard; Mike Murphy; and Michael Chambers, Senior Project Manager.

Each longline is held by one 2000kg granite block at each end, to this a 28mm polysteel rope is attached directly (no chain used), rising sharply at approx 45 degrees to the headline which is also made from 28mm polysteel. At this point there are a cluster of six floats (corner floats), from here the headline travels 130m horizontally until meeting the other corner floats and again running down to the second mooring block.

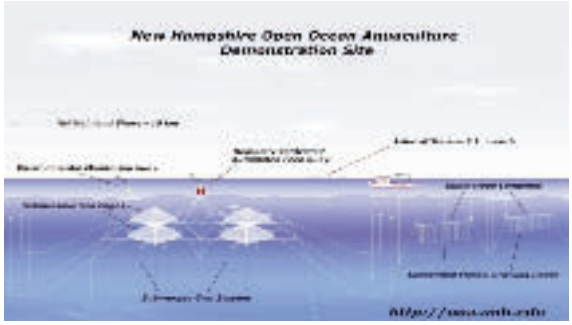
Initially a continuous leaded collector rope, or continuous unleaded cotton wrapped, mussel socked rope is attached to the headline, using a 2-4m length of looped 7mm nylon. One long loop of mussel rope would be attached, followed by one short length, each loop is attached 1m apart and at this stage no extra floatation is added. For seed collection the long loops extend 7m for maximum spat-fall, whereas for grow-out the ropes extend 12m with no reduction in growth rate.

As these seeded lines grow floatation is added, again using a 2m length of looped of 7mm nylon, so after about three weeks post deployment the line is checked and 0-4 buoys may be added, ending up close to harvest with approximately 60 floats attached to the headline. The geometry of the line can be assessed using an echo depth sounder, although more technical development of this is needed.

All of the floats used are a 40 cm diameter, thick-walled, rotationally molded plastic buoy. The last batch cost about six euro each. They provide about 32 kg of buoyancy and have been submersed to 80m without imploding. Fouling of the buoys during ongrowing does not appear to be a major issue.

They tend to thin the lines once from collection to harvest, but they re-pack the reject from the harvest and also have re-packed seed collected from the other structures on site, such as the test fish cages and mooring lines.

To access the line, the center marking buoy line is hauled up, using an open block on a crane and the headline is then placed on a star wheel forward and aft. Time to harvest on site was 12-14mths and typical meat yields could be as high as 60%. They calculate meat yields slightly differently, eliminating the in shell water prior to weighing, so these meat yields would more likely equate to 40-45. The post spawning mussels seen on this visit had a meat-yield estimated to be of approx 30-35%. Weak shells are often flagged as a problem for mussels grown submerged offshore, but this did not seem to be the case here, the shells were thin but not excessively so.



The domestic market demand is good with a harvest price of 1800 euro/Tonne. Richard estimates that it would cost about 1850 euro to construct and deploy each basic line with on-growing rope and buoys as extra. So the cost of the longlines does not appear excessively expensive, the major expense of going offshore using this system would be a suitable boat, not too big and low to the water so as not to drag the lines when anchored alongside, but large enough to carry heavy loads and haul lines from depth, yet fast enough to travel to these offshore sites.

At the Shoals site, they designed the system for a submerged headline depth of approx 12m and 10m at Boar's Head. As weight and buoyancy is added there will be a range of headline depth of as much as +/- 3m, e.g. the headline depth at Shoals can range from 9-15m and Boar's Head from 7-13m. They recommend keeping the lines deeper in winter when the weather is bad and the water column well mixed, whilst in summer to float them a bit higher and aim for the chlorophyll maximum, which in the summer ranges from 5-15m.

Having signed over the lines to a commercial producer the team are concentrating on testing underwater finfish cages. There are two cages on site one of 3000m3 with 45,000 cod and another of 600m3, which has been modified to have a flat bottom to accommodate halibut. There are plans to install a third cage of 100m3 (OCAT) designed to be auto submersible. They had a 2 ton automatic feeder on site, but since our visit have taken delivery of a new 20T capacity feeder, named 'Aquamanna', which can feed the four cages at once and will act as a platform for the remote monitoring on the site.

The next day Richard took us to meet with Jud DeCew a research engineer also with UNH, Jud showed us some versatile finite element analysis models, wherein they could build cage systems or mussel longlines, assign properties to the structures in terms of weight, strength etc and then subject them to various sea states, water velocities etc to determine how the cages/longlines perform.

He then demonstrated graphically the differences between a surface mussel longline and a sub-surface one. Two points that struck me were the snapping of the lowest part of the surface line mussel sock, similar to the action of a whip and also the snap at the sheltered end of the longline. In comparison the same sea state had a much-reduced effect on a submerged line, being a more lazy motion, as one would expect.

This type of simulation would be very useful in the forward and ongoing planning of a mussel farm; even to the point of being sophisticated enough to predict when floatation should be added. Jud and Richard also explained the requirements for short longlines and steep mooring lines 45' to assist in maintaining the underwater geometry. In addition it was pointed out that

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Code of Practice on the Microbiological Monitoring of Bivalve Mollusc Production Areas

By Marie Henson, Sea Fisheries Protection Authority

The Draft Code of Practice on the Microbiological Monitoring of Bivalve Mollusc Production Areas was presented to attendees at a recent ISA workshop for oyster producers in Sligo. Presentations on the Draft Code of Practice were given by The Food Safety Authority of Ireland, the Sea Fisheries Protection Authority, the Marine Institute and BIM.

This Draft Code of Practice was developed by a working group made up of members from the Food Safety Authority of Ireland, The Sea-Fisheries Protection Authority, the Marine Institute, the Irish Shellfish Association and BIM. Based on the provisions of the legislation and the European Good Practice Guide, the Draft Code of Practice outlines the procedures to be adopted by SFPA and its partners in the monitoring and classification of bivalve mollusc production areas. These procedures include sanitary surveys and sampling programs for new areas.

The microbiological quality of shellfish sampled from production/harvesting areas forms the basis for classification and shellfish can only be harvested from areas which have been classified by SFPA under the requirements of European and Irish Legislation.

Notes: By cross-reference from Regulation (EC) No 854/2004,via Regulation (EC) No 853/2004, to Regulation (EC) 073/2005.

By way of derogation from Regulation (EC) No 854/2004, the competent authority may continue to classify as being of Class B areas for which the relevant limits of 4,600 E. coli per 100g are not exceeded in 90% of samples.

This session in Sligo was the first in a series of regional meetings which will be hosted by SFPA to present the draft Code of Practice to industry. Additional information sessions are planned for Carlingford, Waterford, Bantry, Galway and Letterkenny. The draft document will then be finalized and implemented.

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If an alarm condition occurs, i.e. trigger levels are reached, the farmers will be immediately notified by text message and thereby enabled to take appropriate action, as well as Donegal County Council. All monitoring results will be accessable via the web, so that all stakeholders can keep up to date on the monitoring. Monthly Stakeholder meetings will be held for the duration of the works with Donegal Council, the Aquaculture producers and RPS.

These meetings will see RPS giving a review; of monitoring data of incidents originating from the works; the contractors monthly work programme. The producers can also update the council on the status of aquaculture in Mulroy Bay.

This monitoring project is invaluable for protecting the producers of Mulroy Bay as well as protecting the unique marine ecology. It also proves Donegal County Council's commitment to protecting the wider water environment as demonstrated through the Council's lead role in the implementation of the EUWater Framework Directive within the island of Ireland. The CLAMS group of Mulroy are delighted that Donegal County Council have invested in this technology.

BUOY TRIALS 15/8/07

By Dave Millard, Southern Regional Development Officer, BIM

A number of tests were performed on a new foam filled version of the JFC 250 Litre Single Line Double Loop (MF04) buoy. This buoy has come about from discussions Ger Lynch from Westpoint Shellfish Ltd had with JFC Manufacturing Co. Ltd for the need for a buoy capable of being submersed to depth.

Initially it's floatation was established, this was compared to the more widely used Gem Plastic float and then it's ability to be withstand submersion was tested to 10, 20, 30 and finally 40m.

Establishing maximum floatation of JFC 250 barrel

The weights following in brackets are the actual weights registering on the crane scales. Two concrete blocks (611kg) were attached to the JFC float, the blocks were submersed (344kg) and the float was submersed (120 kg). The same tasks were then performed on the standard Gem Plastics mussel barrel, submersed (122kg).

This established two facts firstly that concrete loses nearly 45% of its weight when submersed and that the two floats will float approximately the same weight of 220 kg when fully submersed.

We then decided to try to establish what is the approximate weight of mussels in water compared to their weight out of water. This appeared more varied than we expected with heavier drop-lines often weighing less in the water than lighter droppers alongside. (possibility due to water loss and air trapping).

Next we took the JFC float and dropped the buoy down to 10m for 1 minute and retrieved it, a slight crinkle in the plastic was noted. We then repeated this exercise for 20m, 30m and 40m but no further damage was noted. Finally the buoy was dropped to 40m and left for a week and then retrieved, at which point the bouy was dented but had not been punctured.

As yet there is no price available for this buoy, it did appear to survive the test albeit with some damage and might have a place in the future development of offshore mussel farming.

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Next we were shown their flume tanks where they ground truth the information learnt, using scale models of the systems planned for deployment offshore.

The possibilities of using this sub-surface method to cultivate seaweeds was discussed, being a balance between depth and light penetration and this is something we could work on in future trials.

The benefits of these sub-surface lines include reduced risk of crop loss, reduced conflict with other users in terms of visual impact and potential navigational hazards, combined with excellent growth.

There are very few sheltered sites now available and for the Irish mussel industry to expand beyond essential handling improvements we will have to move out into more exposed waters, this technology appears to be well suited to this challenge.

Open ocean farming and especially the use of these sub-surface lines do appear from this visit to be worth pursuing. Both Ger and Mike are keen to get out on site, both with current licence applications in process for exposed, deepwater areas suitable for this method and are convinced that this system of farming will work.

Dr Richard Langan and his team were extremely professional, helpful and informative and I'd like to take this opportunity to thank them, especially to Richard who gave up two days from his schedule to show us around and put his team and boat at our disposal.

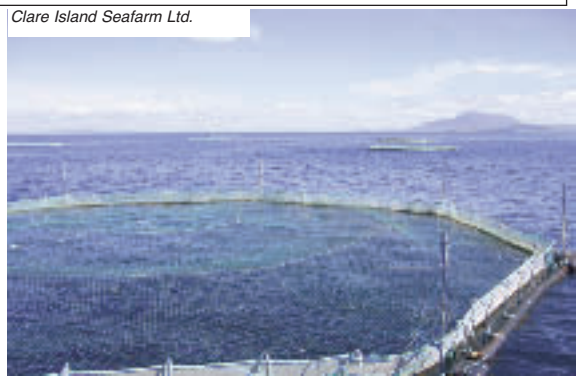
Stakeholder Views Sought at Major Offshore Aquaculture Workshop

By Alan Drumm, Marine Institute

A major international workshop and foresight exercise – "Offshore Aquaculture in Europe-The Next Steps?" took place on Monday 24th September in the Crowne Plaza Hotel, Dublin, to coincide with the World Seafood Congress. It was opened by Sean O'Neachtain, MEP and attended by almost 70 delegates from all over the world.

Pictured ieft to right: Rosa Fernandez, CETMAR, Spain, Arne Fredheim, SINTEF, Norway, Sean O Neachtain, MEP and Dave Jackson, Marine Institute.

The Workshop, which was funded under the EU 6th Framework Programme, was designed to provide anyone with an interest in Offshore Aquaculture the opportunity to submit their thoughts on the next steps for future development. This information will now be included in a comprehensive report outlining the way forward for the European aquaculture industry and submitted to the European Commission in February 2008.



Clare Island Seafarm Ltd.

The objective of the EU project OATP that funded the Workshop is to investigate the opportunity and usefulness for the aquaculture industry of promoting offshore aquaculture through a "technological platform" – a consortium of international experts and stakeholders.

Achieving this objective requires the collection, validation and collation of data from a diverse range of sources on the opportunities and requirements of European offshore aquaculture and its evaluation to assess the appropriateness of a technological platform as a suitable promotional vehicle.

The "Offshore Aquaculture Technology Platform" (OATP) project includes sixteen partners from seven countries: Ireland, Norway, Spain, Italy, Malta, Belgium and the UK. The consortium includes service providers, manufacturers, aquaculture practitioners with offshore experience, research and development organisations and agencies from across the sector. These partners operate in both the Atlantic and the Mediterranean and in many cases have operations or interests in the aquaculture sector outside of Europe. All participants are involved in the main activities of this 14 month project: collecting and collating information by way of survey and questionnaire, participating in the main workshop and contributing to the final report, to be submitted to the EU Commission in February 2008.

The 10th annual C-Mar Aquaculture Workshop

By Lynn Browne and Adele Cromie, Center for Marine Resources and Mariculture, Queen's University

The workshop was held in the Exploris Aquarium, Portaferry and was attended by delegates from Ireland and other European countries.

The opening session focused on developments in Bottom Mussel cultivation, mussel seed supply and resource management. Dr Dai Roberts (senior lecturer at Queen's University, Belfast and Director of C-Mar) and Professor Gavin Burnell (University College, Cork) presented findings from separate projects, north and south of the Border, both of which investigated the origins, extent, recruitment patterns and stability of the seed mussel resources in the Irish Sea.

These talks were followed by an industry perspective provided by Mr Brian Cunningham a local mussel farmer. Mr Cunningham emphasised the need for better communication between the regulating authorities and the mussel industry regarding the opening and closing of seed mussel beds.

Ms Carrie McMinn (a Queens University PhD student based at C-Mar) presented information on the impacts of dredging on mussel seed recruitment and biodiversity. Her research found recruitment to mussel beds to be very variable, with larval settlement being negatively affected by prolonged periods of heavy dredging. However, her investigations found that in the long term, dredging for seed mussels did not reduce biodiversity 'with species richness recovering fully to its original level after dredging had ceased'.

Dr Edward Fahy from the Marine Institute, Galway, ended the session and he examined the relationship between seed mussel dredging and whelk fisheries in the South West Irish Sea.

The second session was dedicated to the TIMES (Towards Integrated Management of Ensis Stocks) project which is investigating the management, aquaculture and sustainability of razor clam (Ensis) stocks within the European Atlantic Area.

The project was introduced and explained by Ms Adele Cromie (a Research Associate in C-Mar) who went on to describe recent investigations on razor clam larval rearing techniques within the C-Mar hatchery.

Following this, representatives from each of the partner organisations presented their recent research. Dr Miguel Gaspar (IPIMAR, Portugal) gave a presentation on research comparing the environmental impacts of various razor clam fishing techniques.

Mr Fiz Da Costa (CIMA, Galicia, Spain) described razor clam hatchery culture in Spain with the aim of restocking natural beds with hatchery produced seed. So far successful results have been obtained with three commercial species of razor clams. In the final talk of the day Dr Juan Fernandez Tajes (University of La Coruna, Spain) described the application of genetic investigations within razor clam aquaculture.

Day two of the workshop commenced with a session on methods for assessing the shellfish carrying capacity of Sea Loughs. Dr Matt Service (AFBINI (Agri-Food and Bioscience Institute, Northern Ireland)), presented an overview of the SMILE project and Dr Adam Mellor (also AFBINI) gave a presentation on The Coastal Monitoring Programme, a network of over 20 in-situ monitoring instruments.

Mr Alan Berry (Marcon Computations International Ltd) updated the delegates on 'MarGIS_Shellfish' a biological life-cycle modelling tool for shellfisheries management.

Finally Mr Brian O'Loan, BIM gave an update on the BIM UISCE project which aims to develop a desktop aquaculture and water quality modelling application to run in a GIS environment.

Professor Matt Dring from Queen's University, Belfast chaired the seaweed session, which was followed by a practical seaweed harvesting scenario involving representatives from the Northern Ireland Seaweed Industry and experts from the environment and Heritage Service (EHS). Professor Dring presented work which investigated the potential for seaweeds as bioremediators, whilst Mr James Warnock (EHS) explained the legislation currently in place governing seaweed harvesting activities.

For further information please contact Dr Dai Roberts (d.roberts@qub.ac.uk) or Dr Lynn Browne (l.browne@qub.ac.uk) or Tel. +44 28 4272 9648

C-Mar workshop delegates during a practical seaweed harvesting session at Millen Bay near Portaferry.

Seed Mussel Fishing 2007

By John Dennis, Technical Specialist, BIM

The seed mussel supply for the bottom mussel industry in 2007 to date (31st October) has been plentiful throughout the traditional fishing areas, with approximately 29,600 tonnes transplanted from the wild beds so far this year by 34 vessels. Beds were located within all the main loughs, with the exception of Carlingford Lough and in the vicinity of Skull Martin, Dundalk Bay, Wicklow Head, Cahore Point, Wexford and Rosslare Harbours.

21,000 tonnes has been fished from the East coast; 11,500 from Wexford, 7,400 from Wicklow and the balance mainly from the northeast coast. In addition some 600 tonnes was fished from within Dundalk Bay, 5,600 tonnes was fished from the mouth of Lough Foyle and 2,500 tonnes was fished from the mouth of Castlemaine Harbour. Fishing continues off Wexford and Lough Foyle while substantial beds of seed have been reported near Skull Martin and within Donaghadee Sound that remain closed.

Where possible all beds found were assessed for their suitability for fishing and exclusion boxes were put around those beds considered not to have reached their full potential for a given fishing period.

The season began with the exploitation of beds in Lough Foyle and off Wicklow Head on June 6th. The Wicklow beds had been found late last year by the industry and left for the 2007 season. Fishing off the Wexford coast began late in August and only upon those beds that were deemed to be suitable for fishing or threatened by starfish during a particular set of fishing tides. In addition, one bed off Wexford was temporarily closed to allow capture of a sufficient tonnage of seed for the 'Uisce' project, part of the carrying capacity project underway in Wexford Harbour. Fishing in Lough Foyle has continued on and off as seed has ' appeared and disappeared' over the same towing tracks, giving rise to local speculation that the seed must become positively buoyant and move backwards and forwards with the tides or gets periodically covered over and exposed again, also due to tidal movements.

Wexford seed mussel 2007

Seed quality overall has been good, having been lifted before or just after the appearance of starfish. Shell length overall averaged 25-30mm, larger seed being fished off Wicklow and smaller seed (12-15mm) was fished within Castlemaine Harbour.

Tripartite Working Group

By Isabel Valera, Aquaculture Technical Adviser, BIM

In the last 20 years wild salmon and trout stocks have been affected by a number of factors such as commercial fishing and climate change. Sea lice and escapes from the aquaculture industry are also perceived as a potential risk for wild stocks. As a result, rivalry and dislike between Fish Farming, Environmental and Fresh Water Angling and Fisheries sectors escalated during recent years.

The Tripartite Working Group in Scotland was established in 1999 and was created to tackle the decline of wild salmon and trout stocks and to recognize the importance of wild fisheries, sustainable aquaculture industry and environment to rural economies.

The members of the Tripartite Group are the Scottish Government, Environmental Institutions and Aquaculture Industry. Local Area Management Groups (AMGs) were formed to negotiate, agree and deliver management agreements for 4 areas in West Scotland: Argyll and Lochaber, Outer Hebrides, West Sutherland and Western Ross and Skye. Regional Development Officers (RDOs) were appointed to implement AMGs agreements, sea lice and escapes monitoring and very important, to improve communication and relationships between sectors. Under the Tripartite Working Group different goals are brought together under the same frame of action to improve health in farmed and wild fish.

The success of this collaboration is seen in one of the Western rivers in Scotland, which currently shows the highest number of wild salmon catches of the last 25 years. Targeted re-stocking, synchronizing of sea lice treatments and fallowing periods with the migrations cycle of wild stocks have been the keys of this success building trust and consensus between institutions.

The Tripartite Working Group is an interesting proactive approach to issues faced when sharing common waters.

Further information regarding the Group, publications and related links can be found on http://www.tripartiteworkinggroup.com/content.asp?ArticleCode

Perch travel around the world in 32 hours

By Damien Toner, Perch Development Officer, Aquaculture Initiative.

Ireland's emerging perch sector received a boost recently with the successful importation of eggs from New Zealand. The eggs represented a return journey for the perch which was first introduced into the southern hemisphere country in the 1860's by European emigrants. There are currently 3 ongrowing farms and two hatcheries in Ireland and demand for juveniles is unprecedented across Europe with new farms being built in Sweden, Holland and France. The provision of an adequate supply of juveniles for Irish growers (€1 million per annum) has seen the hatcheries develop out of season spawning during the winter months. As part of the development and roll out of their out of season spawning, PDS Perch Ltd in Co. Cavan and Emlagh Fisheries Ltd in Co. Sligo have developed links with Mahurangi Technical Institute in New Zealand. The North Island based institute is the only accredited and licensed perch hatchery in New Zealand and is world renowned for its work on the Asian eel which it has recently been successful in spawning. The Institutes owner Paul Decker has been involved in aquaculture all his life and was instrumental in getting the proper permission from the New Zealand authorities for the export of eggs to Europe.

New Zealand perch spawn during the northern hemisphere autumn (September - October) and thus if eggs can successfully be imported it will provide an important source of juveniles in future years. The high temperature tolerance (up to 28'c) of New Zealand perch and fast growth rate are also of interest to hatcheries here keen to develop their genetic stock. Dr. Tagried Kurwie of Mahurangi Institute visited PDS and Key Water Fisheries Ltd in September to see first hand the techniques developed here in Ireland.

The process involving the first importation of its type into Europe took over three months to complete and involved cooperation between the participating hatcheries, New Zealand Biosecurity, New Zealand Fisheries, Department of Agriculture and Fisheries and the Fish Health Unit of the Marine Institute. Philip Simpson of PDS elaborates " It was very difficult to do for the first time and everybody including BIM, CBAIT, freight forwaders, clearance agents, the Department and the Marine Institute pulled together to make it happen....Its important for us to learn from other countries and to have links with them, we don't know everything and the more we talk with different people the more we learn. These people (Mahurangi) have spawned eels which is no easy feat. It's a two way process as they are only starting with perch and we're in our fifth year. We really hope to go out there and see their set up soon and further develop our links.

Fertilised perch eggs at PDS
The first shipments arrived in September travelling through Singapore and on to Dublin over a 32 hour period. Indeed the eggs departure from Mahurangi was covered by New Zealand television. Those wishing to see the coverage can access it on

http://tvnz.co.nz/view/video_popup_windows_skin/1355717

The larvae are now feeding well at the PDS site and its hoped that co-operation between the two countries in perch rearing can further develop and flourish.

A World First in Aquaculture Eco-Standards

By Grainne O'Brien, Environmental Officer, BIM

Pictured L-R: Ger Lynch, Westpoint Shellfish; Denis Minihane, Bantry Bay Seafoods; Catherine Morrison, Head of Quality & Environment Section, BIM; Grainne O'Brien, Environmental Officer, BIM; John Hensey, Blackshell Limited and Orla Darcy,, Donemark Limited.

In September 2007 Bord Iascaigh Mhara's new Eco Standards for Rope Grown Mussels and for Farmed Salmon were accredited by INAB (Irish National Accreditation Board) to ISO65 / EN45011, the internationally recognized benchmark for food product certification. The eco-standards have been established as an extension of scope to the existing Irish Quality Mussel (IQM) and Irish Quality Salmon (IQS) schemes and are the world's first independently accredited eco-standards for aquaculture.

The IQM Eco-standard was officially launched at the 2007 World Seafood Congress with the presentation of certificates to Westpoint Shellfish Ltd and Blackshell Farm Ltd for their primary production facilities and to Bantry Bay Seafoods Ltd for their farm and processing facilities. The standard guarantees assurance that the mussels have been produced with due care for the environment, above and beyond all existing requirements. To achieve certification growers and processors have to meet a number of key criteria and follow strict environmental management practices in all aspects of their business including:

Environmental Management and Commitment
The standard requires evidence of an operational and up to date Environmental Management System, such as ECOPACT.

Environmental Aspects of operations
To demonstrate efforts made in the prevention and management of spills, taints and odours with respect to chemical purchase and usage.

The mussel eco-standard requires that all floats are battleship grey, apart from those necessary for navigational purposes.

Nature and Biodiversity
To demonstrate an awareness of and respect for protected areas and their designated features.

Waste Management & Reduction
The standard required evidence of a waste management programme based upon reduce, reuse and recycle. The mussel eco-standard does not permit the use of plastic (pergolari) mesh.

Speaking at the launch of the Irish Quality Eco-mussel Standard, BIM Aquaculture Development Manager Donal Maguire emphasised the importance of the Standard, "Although eco-standards do exist internationally, this is the world's first independently accredited eco-standard for aquaculture, and encourages production of an exceptionally high quality, sustainable product. The standard is accredited to EN45011, along with additional requirements to ensure that all aspects of production have minimal environmental impact." This was further endorsed by Dermott Jewell, Chief Executive of the Consumers' Association of Ireland, in his presentation of certificates at the launch.

With buyers becoming more conscious in their habits and adopting more sustainable purchasing patterns, eco-certification, alongside quality certification provides an opportunity to distinguish the Irish Aquaculture Product on the global market, while managing the local environment that sustains the sector. In addition, the Environmental Management System adopted will allow improved environmental performance giving a competitive edge, and cost savings in energy and water consumption.

For more information on the eco-standards or if you want to join the scheme, please contact BIM's Environmental Officer, Grainne O'Brien, telephone: 01 2144 135, e-mail: obrien@bim.ie.

OYSTER WORKSHOP 2007

By Trish Daly, BIM

An oyster Workshop was held in Rosses Point, Co. Sligo on 18th September 2007. BIM and the IFA Aquaculture jointly hosted the one day Gigas Oyster Workshop.

The Workshop, which was very well attended, served as a timely introduction of the new Code of Practice for the microbiological monitoring of bivalve shellfish production areas. This gave the producers an opportunity to raise concerns over key areas such as sampling protocols and procedures in place to deal with deterioration in water quality in a given bay.

Other issues of interest were the launch of the new Irish Oyster Quality Scheme, presentations from our French counterparts on market requirements and deep water trials and an update on research and development projects.

Oyster workshop, Rosses Point, Sligo

Status of Irish Aquaculture 2006

This report is a compilation of information on Irish Aquaculture, by BIM, Marine Institute and Taighde Mara Teo. This is the fourth annual report reviewing the status of Irish aquaculture . The report includes production, employment, export and market statistics along with current licensing activity from the Department of Communications, Marine and Natural Resources. Also included are results of monitoring programmes for farmed shellfish and finfish carried out by the Marine Institute.

Diary Guide 2007

Dec 2-4: Food Expo 2007, Oman International Exhibition Centre, Muscat, Saltanate of Oman. Details: www.omsnexpo.com

Feb. 9-12: Aquaculture 2008 America: Disney Coronado Springs Resort, Lake Buena Vista, Florida, USA. Hosted by The Florida Aquaculture Association. For further information: www.was.org

Feb. 10-12: Fish International 2008: Bremen, Germamy. For further information : www.fishinternational.com

Feb. 15-18: Agri-Business 2008: The 26th International Agriculture, Water, Agri-Industry Show: Lulu Convension Centre, Thissur, Kerala, India. For further information : www.reexpo.com

March. 5-7: Victam Asia 2008: Queen Sirkit National Convention Centre, Bangkok, Thailand. For further information : www.victam.com

May 19 - 23: World Aquaculture 2008: Busan Exhibition & Convention Centre, Busan, Korea For further information : www.was.org

How Happy are Your Fish?

Ensuring that the very highest standards of animal husbandry and fish welfare are being met is central to an innovative new course being offered by BIM.

Stemming from initial discussions with the aquaculture industry, the level 6 Farmed Fish Welfare Training Course, which has received approval from the Further Education and Training Awards Council (FETAC), is aimed at those working with finfish, whether in commercial growing or research, and covers aspects of many different species including salmon, cod and trout, as well as some tropical and ornamental species. The course is designed and tailored both for those working day-to-day with the fish as well as those in management.

BIM, in conjunction with IFQC SMART Training Solutions and Vet Aqua International, delivered the three-day training courses, which comprises two classroom days and a follow-up practical farm day, in three locations around the coast, namely; Letterkenny (7th-8th November), Galway (13th-14th November) and Cork (21st-22nd November).

Dr. Susan Steele, Aquaculture and Business Training Coordinator, BIM, said 'as the aquaculture industry continues to grow, we all need to ensure that the work being done in welfare on Irish farms is recognized and supported through training. This course aims to make a difference and fits in well with the other 44 courses currently provided by BIM to the Irish Aquaculture industry. BIM is using new teaching techniques to make the courses practical, relevant and interesting to ensure that people undertaking the training get the maximum benefit out of their time away from the workplace,' she said.

Those who successfully complete this FETAC Level 6 module will develop an awareness of the importance of farmed fish welfare and how it relates to responsible aquaculture practices. They will develop good welfare work practices on observing the farmed fish stock and be able to understand responsible animal husbandry principles and practices for aquaculture. The course covers other areas such as fish biology, disease recognition, water quality measuring and biosecurity, which are important to fish welfare.

IFQC SMART Training Solutions sees the course as fitting in with the rising awareness of today's marketplaces of the prerequisite for good welfare.

trout feeding
picture courtesy of Ryan Legge

BIM have found a very high demand for the courses already so anybody interested in future courses please contact Dr. Susan Steele on 027-71232, by text 087-6825294 or by e-mail steele@bim.ie

Gestinmer project visits Ireland

By Marisa Fernandez Canamero, CETMAR, Spain

Galician scientists visit Killary mussel farms

BIM and the Marine Institute have recently hosted a group of Spanish representatives from the Ministry of Fisheries and Maritime Affairs of the Galician Government and the Marine Technological Centre (CETMAR Foundation) located in Vigo. They visited County Mayo within the framework of GESTINMER Project in order to transfer the main outputs of this initiative to other EU regions. GESTINMER (System for the integral management of the waste produced by the mussel cultured in rafts and longlines) is a demonstration project promoted by the Ministry of Fisheries and Maritime Affairs of the Galician Government, co-ordinated by CETMAR and co-funded under the LIFE-Environment EU Programme. The Galician Mussel Regulatory Council and OPMEGA are the partners representing the producer sector.

The main goal of the project was to develop a system for the integral management of the wastes produced by the mussel culture. This objective was tackled through the following lines:

a) Assessment of the technical, economical and ecological feasibility of extracting the sediments accumulated beneath the rafts through the performance of an action on a pilot-scale in which different dredging techniques were tested (manual extraction with divers, hydraulic, pneumatic and mechanical dredging).
b) Development of a system for the selective collection, transport and storage of the labour wastes, produced during the tasks associated with mussel farming.
c) Study of the possibilities for utilization of both types of waste through their use in the restoration of soils, tailings/dumps and wetlands degraded by mines.

On 19th September a meeting took place at the Marine Institute headquarter in Furnace in order to make a presentation on the mussel production in Galicia (consisting of rafts) and the objectives, activities and main results of Gestinmer project as well as to exchange experiences and knowledge with different stakeholders involved in the Irish mussel sector.

Afterwards, visits to farming areas in Clew Bay and Killary Bay were kindly arranged by BIM on the 19th and 20th. There was also the oportunity to present the project results to the Killary CLAMS Group. These visits allowed GESTINMER representatives to learn more about the culture process in Ireland, to show the process of spatial planning of mussel production areas carried out by Galician government in the 90's, as well as to exchange views about waste management systems with Irish producers.

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PO Box 12, Crofton Road, Dun Laoghaire, Co. Dublin. Ireland.
Phone: 01-2144123; Fax: 01-2144119 **e-mail:** mcgowan@bim.ie
Editors: Niamh Mcgowan, Terence O'Carroll
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