# AP2/1-3/2017 T12/419 Celtic Kerber

# Licencee submission

**CELTIC KERBER LTD.** 

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Your Ref:	AP2/1-2/2017	
Site Ref:	T12/419 A, B & C	
Appellants:	Carrickfinn Trust Company Ltd. by Guarantee & Others	$\checkmark$
	Anraí Ó Domhnaill T/A Carrickfinn Wild Atlantic	
	Coiste Timpeallachta an Ghaoith f/c Áislann Rann na Feirste	

Re : Observations on Appeals against the decision of the Minister for Agriculture, Food and the Marine to grant an Aquaculture and Foreshore Licence to Celtic Kerber Ltd., for the cultivation of Pacific Oysters using bags & trestles on site T12/419 A, B & C on Braade Strand, Gweedore Bay.

Dear Mary,

In accordance with the provisions of Section 44(2) of the Fisheries (Amendment) Act, 1997 (No 23), please find attached our observations on appeals received by the ALAB in relation to the above.

If the ALAB requires clarification in relation to any issue or requires additional information about the following, please contact us.

Yours sincerely,

Rémi LOUIS, Coordination Manager, On Behalf of Celtic Kerber Ltd.

Directors: Marie-Aude DANGUY, François-Joseph PICHOT, Stephan ALLEAUME. REGISTERED IN DUBLIN, IRELAND No. 477645. VAT No. IE 9750243P.

# I – The Company: Celtic Kerber Ltd.

Celtic Kerber Ltd. is an Irish company, established in 2009. The owners are growing oysters as a family business since the late 1950's. They export oysters to more than 70 countries and they have faithful customers all around the world. In 2009, Celtic Kerber launched a special Irish branded oyster called "Muirgen" (See Appendix I).

In 2010, Celtic Kerber took over James Bonner's licence n° T12/365 in Gweedore bay (See Appendix II), in order to increase the production of "Muirgen" as the previous production levels were not sufficient for the sales. As soon as this licence was transferred, Celtic Kerber improved the farming process by tidying the bay (aligning the trestles, cleaning the beach, marking the sites, etc.), as can be seen in the bay.

In 2011, Celtic Kerber applied for a new licence in Gweedore Bay (n° T12/419) (See Appendix II). Since then, we complied with all the requirements of the licensing process, under Section 6 of the Fisheries (Amendment) Act, 1997.

In 2014, Celtic Kerber took over Fota Oyster Farm Ltd. in Cork Harbour.

Celtic Kerber Ltd. is now producing between 70 and 80 tons of Crassostrea gigas annually from our sites of Gweedore Bay and North Channel Cork Harbour. Each site is part of the whole process of oyster growing.

We receive seed from different hatcheries (Ireland, UK & France) to our sites in Gweedore Bay. The seeds (6-10 mm) are first grown in 4 or 6 mm mesh size oyster bags (depending on seed size), with approximately 1000 oysters per bag. In Gweedore Bay, we also put seed in Australian baskets hanging from the trestles (500 oysters per basket). When they are 7-10 grams, they are split down to 500 oysters per bag into 6mm mesh size oyster bags. While growing, oyster bags are shaken, turned and split as needed. When oysters reach approximately 40-50 grams, they are graded in our shed in Kincasslagh and we put them into 14 mm mesh bags at 150-200 per bag.

Depending on the available capacity in Cork Harbour, we transfer the biggest oysters from Gweedore Bay to Cork Harbour for fattening.

In order to collect oysters from the shore, the teams use designated access routes to reach trestles on the beach. We use a tractor and two trailers. In the shed, the team have an elevator, a grading machine, and two weighers / baggers. They also have all necessary facilities for the employees (e.g. changing room, canteen, toilet, etc.).

To sum up, our site in Gweedore bay is only growing oysters (shaking & turning bags, splitting and grading oysters). There is no packaging, processing or final sales from the Donegal site. We have currently 8 employees working in Gweedore bay (and 7 more in Cork Harbour). The only freshwater we use is to clean down the shed as well as our canteen and toilets. It was coming from the mains which we replaced completely by harvesting rain water in 2016. The shed is still being renovated (toilets, canteen, new floor, heaters and machinery. A new bio tank waste water treatment plant is on its way). We do not use sea water as we are too far from the sea. Our waste stream includes plastic, paper, old trestles, old oyster bags which all go to Sharkey's Waste Recycling in Annagry where everything is separated and recycled.

In Carrickfinn From time to time, the public come to view the operations and we are delighted to explain them the process of oyster farming. We keep the beach as clean as possible by lifting any waste we see on a daily basis and clean the beach weekly. The Carrickfinn work shed was extended to incorporate a canteen and bathroom area. A rainwater harvesting system was installed in 2016 as the water supply for the facility. No mains water is used.

When oysters from our sites in Co. Donegal reach the required size, and as available capacity allows, they are taken directly from the sea in Co. Donegal in oyster bags and they are transferred to our site in Cobh, Co. Cork. This is done in order to fatten the oysters to "spéciales" quality.

Since 2015, Celtic Kerber Ltd complies with the Origin Green & Ecopact labels (See Appendix III). As part of these certifications, we:

- Have reduced our amount of waste sent to landfill, by recycling more than 50% of our waste stream;
- Do beach cleans up on a regular basis, especially after storms (See pictures in Appendix IV).
  We try to keep the beach as clean as possible, because storms happen and we can't do anything about that which can damage our equipment;
- Re-use all oyster shells in order to maintain access routes and we are currently working with a local farmer who crushes the shell to enhance his fields. We intend to buy a shell crusher in order to supply local farmers with crushed shells;
- Educate local children about oyster farming and environmental issues as we intend to work with local primary school in Cobh;
- Promote environmental and social sustainability in our areas by being members of Birdwatch Ireland, by donating to local charities (Naomh Muire GAA, Cobh Pirates Rugby Club, Maghery Community Festival, the RNLI, St Colomba's Church Burtonport window restoration fund, etc.);
- Inform public about oysters as an ingredient by publishing nutrition facts on our Facebook page. We would like to publish recipes with oysters as well.
- Do some modernization works in our shed in Carrickfinn, with a new toilet area, new changing room for the team, a new septic tank with waste water treatment system, new machinery, etc. We keep this place as clean and tidy as possible, as can be seen in the bay.

Celtic Kerber Ltd. makes a point of working with local businesses and subcontracting local people for all the works we need: architects, builders, mechanics, plumbers, electricians, transport companies, all suppliers (steel, fuel, tools, food, etc.), welders, metal fabricator, waste suppliers, hotels, local airport, etc.

Considering all of the above, we can proudly say that the purpose of Celtic Kerber Ltd. is to grow oysters and co-exist in harmony with the local community.

Our activity is directly linked to the environment and in particular to the sea. Our core principle is to work in a sustainable manner and protect the environment. Our mission is to respect the environment, limiting our impact on it and adapting a responsible farming attitude now and in the future. We endeavour to communicate this philosophy to young generations and share it with our local communities.

# II – The new application n°T12/419

As mentioned above Celtic Kerber Ltd. applied for an Aquaculture and Foreshore Licence for the cultivation of Pacific Oysters using bags & trestles on site T12/419 A, B & C on Braade Strand, Gweedore Bay.

The first application was sent to the Department of Agriculture, Food and the Marine (DAFM) in February 2011. In this application, two areas we applied for were overlapping with an application which was received prior to receipt of ours. For this reason, Celtic Kerber has been asked by the DAFM to send an amended application with alternatives sites (March 2011). These are the sites under licence number T12/419 (See Appendix II).

From this date (6 years ago), Celtic Kerber complied with all the requirements from DAFM and other related bodies (Marine Institute, Commissioners of Irish Lights, Department of Housing, Planning, Community and Local Government, Donegal County Council, etc.).

Finally, on the 5<sup>th</sup> of September 2016, in accordance with Regulation 8 (1) (b) Aquaculture (Licence Application) Regulations, 1998 (SI No 236 of 1998) we were required to publish notice of our application in the local newspaper "Donegal Democrat". In the meantime, arrangements have been made by the DAFM to have a copy of the notice, overall site plan for Gweedore bay, site maps, Appropriate assessment (Natura 2000 Sites), relevant extracts from the application forms and ministerial determination regarding EIS requirements in relation to the proposed operations, sent to the Garda-in-Charge at Milford and Bunbeg Garda Stations.

The public notice has been published in the "Donegal Democrat" on the 8<sup>th</sup> of September 2016 (See Appendix V) and the Milford & Bunbeg Garda Stations have been informed on the 7<sup>th</sup> of September that the applications details may be made available to members of the public for one month from the 8<sup>th</sup> of September 2016, as requested by the DAFM.

A copy of the entire newspaper containing the public notice has been forwarded to the DAFM, on the 9<sup>th</sup> of September 2016.

As the DAFM didn't receive any comments / objections, our application was then sent to the Minister's office for determination. On the 8<sup>th</sup> of December 2016, The Minister for Agriculture, Food and the Marine approved the granting of a 10-year Aquaculture licence and accompanying Foreshore Licence, for the cultivation of Pacific Oysters using bags and trestles on sites n° T12/419 A, B & C.

This determination has been published in the "Iris Oifigiúil" on the 13<sup>th</sup> of December 2016 and in the "Donegal Democrat" on the 15<sup>th</sup> of December 2016, for appeals (See Appendix VI).

This is where we stand now. As you can see above, Celtic Kerber Ltd. has complied with all the requirements concerning the application for licence n° T12/419 during the past 6 years. Complaints against the licensing process and/or the various ministerial determinations can't be resolved by the applicant i.e. Celtic Kerber Ltd.

# III - Responses to appellants' concerns

As a starting point, we would like to reaffirm that is in our interest to respect our environment, and we have always worked – and we will continue to work - in the most sustainable way, as the environment is at the core of our business. It is in our interest to work in harmony with the local communities, and we have always made a point of employing local people and supported the local economy.

As a responsible company, Celtic Kerber Ltd. did not commence any expansion or operation on licensed sites T12/419. We currently buy new trestles, delivered in Carrickfinn, in order to replace old ones on existing sites. In the meantime, we bring these old trestles to the local waste supplier (Sharkey's Waste Recycling, located in Annagry) (See Pictures in Appendix VII).

Like any company or business, its purpose is growing, especially when this growth is led by the success of our Irish branded oyster "Muirgen". We regret that this wasn't taken into account and that the appellants totally did not take into account the need for the sustainable development and success of a local business as no alternative options/sites have been suggested by appellants.

# > Concerns about cumulative scale of expansion

When a company such as ours submits an application for a new licence, we have no idea if the licence will be granted or not.

As sustainable oyster farmers, we allow fallow areas from time to time. Sites are well maintained and for growing and access purposes, we let wide access routes and turning areas between the different bays of trestles. Additionally, overstocking is not part of our farming practice.

As explained in part I, we are already working in Gweedore Bay. Currently, areas of the existing licences we have are fallow. The Irish branded oyster we produce in the bay is very successful. As a result of this success, in 2011 we decided to expand production, which requires new licence sites (i.e. T12/419). We were not aware of either the number or the sizes of other new applications and Celtic Kerber Ltd. can't be held responsible for third party applications.

# > Concerns about impacts on visual amenity

Oyster trestles in Gweedore Bay are not visible all day long nor all year round. In order to feed and grow, oysters need to spend most of their time under water. The trestles are only visible during daylight hours, at low tide and mainly during spring tides.

Based on our observations, the highest trestles on the shore are uncovered approximately 6 hours per low tide during spring tides (occurring on average about 10 days per month) and approximately 2 hours during neap tides. The lowest trestles are only uncovered during tides lower than 0.4m, i.e. for less than 10 days per month.

Oyster farming needs oysters kept at different heights: from lower grounds (=covered most of time) for fast growing, to higher grounds (uncovered at middle to high tide) to harden them before transfer or slow down the growth. This also explains the use of different height trestles, from 30 centimetre to 1 meter high.

If a site is really unstable and is not suitable for trestles, we will notice it (if not already noticed) and keep it fallow. As previously said, we generally don't use the whole area of licensed sites.

Our production standards can be seen (See Appendix VIII) in the bay at low tide, when aligned trestles on well-maintained licenced sites are showing how tidy they are. Same level of care will be given to the application sites.

# > Devaluation on lands & houses in the neighbourhood

There is no evidence of any property devaluation directly related with oyster farming. To our knowledge (in France for example), famous tourist areas are overlapping with the largest oyster farming areas on the Atlantic coast. No devaluation on properties have been noticed in these regions, but the reverse happened.

You will find the same situations in Ireland, as in County Cork or County Kerry to mention a few.

As far as we know, there is less than 80 properties within the 500m area around the application sites, and they are not all overlooking the bay.

# > Loss of potential tourism revenue to the local economy

As a local business, supporting the local economy, we appreciate the development of local tourism in the area of Gweedore Bay. Celtic Kerber Ltd. is delighted to see the success of the "Wild Atlantic Way" (WAW) tourism initiative.

As part of the WAW project, the "Taste the Atlantic" route is about to include county Donegal. We believe this is an excellent method to integrate tourism and aquaculture along the WAW. http://www.wildatlanticway.com/stories/food/seafood-itinerary

As a committed company, the option of offering tours / field trips to tourists and bringing to light how we work in conjunction with our environment is an option we are considering. This kind of ecotourism is already offered in many farms abroad and has proved to be a successful concept and people are becoming more interested in this little known farming – which is not exclusive to cultural tourism.

Oyster farming is not industrial farming. We still use ancestral methods to grow oysters, with tools that have evolved over the years. The environment is, today more than ever, at the core of our business.

"Aquaculture is a comparatively small contributor to Ireland's economy" (See appeal from Coiste Timpeallachta an Ghaoith, p.14), but the direct positive economic impacts are obvious as our company is creating jobs in the area, investing in County Donegal, and supporting local economy by working in partnership and sub-contracting local companies/businesses. Contrary to what tourism provide (seasonal activity), our activity occurs all year round. This allows our employees to work and live in the area which is helps to sustain the local community (see above, part I).

## > Concerns on biological Hazard

Oyster farming has to be separated from finfish farming. We don't use any feeds, fertilizers, antibiotics, drugs or chemicals. Oysters are bagged and cannot "escape" as they are immobile shellfish. We don't have to deal with the disposal of dead fishes as if an oyster dies, it will leave an empty shell in the bag. Monitoring and inspection of the farm is carried out every year by the Marine Institute and the DAFM. All records of transfers (seeds imports or half grown export/movement to Cork Harbour in this case) are kept by us and regularly checked by DAFM and Marine Institute. The water in Gweedore Bay (and all Shellfish production areas) is checked on a regular basis in regard of Biotoxins and Microbiology by the Marine Institute. All results are available on their website <a href="http://www.marine.ie">http://www.marine.ie</a>.

We were never notified that the outside "Designated Shellfish Production Area" part of licence T12/419A could be an issue from a biological perspective. If this is the case, then further discussion is needed.

Gweedore Bay Shellfish Area is classified as a class B designated production area, which is the case for many Irish designated shellfish areas / Irish oysters' production areas (<u>http://www.sfpa.ie/SeafoodSafety/Shellfish/ClassifiedAreas.aspx</u>). This classification is based on the quantity of bacteria E. coli you'll find per 100g of oyster flesh. Being in class B means that the farmer must depurate his shellfish to meet class A requirements, before direct human consumption, which we do.

However, we can't disagree with the fact that Annagry Waste Water Treatment plant is an insufficient level of treatment, and we will strongly support any upgrade. This is, by the way, a very interesting point, as many studies have shown (see below, part IV) that one of oyster farming benefits on environment is decreasing the nutrient level by filtering water and limiting algal blooms by filtering (and feeding) from phytoplankton.

One of the appeals stated that "Pacific Oysters may be invasive" (Appeal Ref. AOD13117, p.7) and that could be right if harvested oysters could reproduce, which is not the case with our production (triploids oysters). To the best of our knowledge, we don't have the water temperature in Ireland to allow Crassostrea gigas to reproduce and establish themselves naturally.

# > Concerns about interferences with Local Cultural Heritage

Concerning the "cultural heritage sites": At low tide (when we are working), we have never observed many people on the shore, except fishermen, seaweed harvesters, oyster farmers, and a few others. We did not notice any gathering of people in the area. We did not notice archaeological remains where the trestles are or could be. And we never received any complaints or comments from individuals, organisations or state agencies such as NPWS.

For example, we didn't know about the tidal ford (Braade tidal ford) which allegedly crosses licence T12/419A and our staff have never seen anyone there. However, if it is true, then the option of letting a wide clear way within the licence area is a potential solution and students from the summer school, and guided walking tours would have unobstructed access.

# > Concerns about seaweed plots and other activities.

Many studies (see below, part IV) are focusing on the benefits of oyster farming on seaweed / seaweed harvesting. For example, the oysters clean and filter suspended solids thereby making the water more clear thus allowing more sunlight to go through then promoting seaweed growth. By filtering unsuitable nutrients (mainly Nitrogen & Phosphorus), oysters are making dissolved nutrients available and useable by seaweed.

Record show that oyster harvesting has occurred in Ireland for hundreds if not thousands of years as well as seaweed harvesting. Celtic Kerber has no desire to adversely affect the harvesting of seaweed as we believe that the two have a symbiotic relationship (See part IV)

However, we totally refute the following statement from one of the appellant: "They [the seaweed plots] are currently being destroyed to make room for trestles", as this is false. Celtic Kerber Ltd. has never displaced / destroyed any seaweed plot or "Srathóg" in any side of Gweedore bay. And this is obvious that Celtic Kerber Ltd. has no problem with people currently harvesting seaweed in the bay.

We refer to the specific appropriate assessment carried out in Gweedore Bay by the Marine Institute (Report supporting Appropriate Assessment of Aquaculture in Gweedore Bay & Islands SAC) available at the following <a href="http://www.agriculture.gov.ie/media/migration/seafood/aquacultureforeshoremanagement/aquaculturelicensing/appropriateassessments/GweedoreBayIslandsAAAquaFeb16220216.pdf">http://www.agriculture.gov.ie/media/migration/seafood/aquacultureforeshoremanagement/aquaculturelicensing/appropriateassessments/GweedoreBayIslandsAAAquaFeb16220216.pdf</a> which states : "A number of in-combination effects resulting from a range of activities (i.e., fisheries, seaweed harvest and pollution) were considered in this report. The conclusions is that none, when considered in conjunction with shellfish culture activities will result in a significant disturbance to the conservation features of the Gweedore Bay & Islands SAC".

Concerns about pollution from equipment / markings

We strongly refute with some points within the appeals, especially concerning washed up trestles. These shouldn't be written in these appeals against Celtic Kerber Ltd. We can say that none of our trestles have been abandoned / washed up along the shore. This has been explained during meetings with two of the appellants in January 2017. We keep our sites tidy and if a storm occurs, we go to the shore on the following day to clean up the area. Occasionally, bags become detached from the trestles. Some may wash up on the shore and some fall beneath the trestles. As part of our standing operating procedures, we regularly check for any detached bags so if one is missing, we quickly notice it and put it back on the trestles.

However, rubbers (holding the bags) can break, especially during storms. That's why our crew regularly clean up the beach (See pictures in Appendix IV), looking for rubbers (ours or not). We try to limit this occurrence by fixing rubbers to the trestles. As occurs in other bays in Ireland and abroad, oyster companies contribute financially towards the cost of cleaning bays by helping associations such as local Tidy Towns groups for example, to dispose of any flotsam and jetsam. This is an option which can be discussed with local groups.

The picture of washed up trestle on picture n°9 (p.20 of the Appendix in appeal AOD13117) is frankly untrue and bordering on defamation as this trestle has nothing whatsoever to do with Celtic Kerber Ltd. and we cannot and shall not be held responsible for other farmers actions.

We would like to clarify the disposal methods we use for the empty oyster shells. We have an agreement with a local farmer, who takes the vast majority of these shells and crushes them to use them to enrich his fields.

As agreed with the DAFM, current markings poles will be upgraded. We are awaiting delivery of New St Andrews Crosses and will be put in place in the very near future.

To say that oyster farming is a "destructive farming" and "destroys the bay" without any evidence is frankly unfair. No evidence has been submitted to substantiate this claim.

# Concerns about Environmental impacts

Most of the concerns about environmental impacts mentioned in the received appeals have already been answered in the appropriate assessment (Report supporting Appropriate Assessment of Aquaculture in Gweedore Bay & Islands SAC), carried out by the Marine institute and available on the DAFM website:

https://www.agriculture.gov.ie/media/migration/seafood/aquacultureforeshoremanagement/aquaculturelicensing/appropriateassessments/GweedoreBayIslandsAAAquaFeb16220216.pdf.

You will find below some of the referenced benefits of oyster farming on the environment (See below, part IV) such as an increase in water quality, an positive increase of benthic biodiversity, benefits from the association with seaweed, creation of resting/sheltered areas for juvenile fish species (such as flat fish) and a stimulating role on biodiversity, etc.

> Concerns about interference with wildlife

From our observations on the shore, our activity does not seem to disturb birds or local wildlife. Actually, some of the birds seem to be attracted by our activity: some are feeding on the bags (geese, oyster catchers, etc.) and between trestles. It is our interest to respect wildlife and the environment in our environs and we consciously work with this in mind to limit any negative impact on same.

We refer to the specific appropriate assessment carried out in Gweedore Bay by the Marine Institute (Report supporting Appropriate Assessment of Aquaculture in Gweedore Bay & Islands SAC) and its conclusions (Appropriate Assessment Conclusion Statement by the Licensing Authority for aquaculture activities in Gweedore Bay and Islands Special Area of Conservation (SAC) - (Natura 2000 November available site) Updated 2016), both at the following http://www.agriculture.gov.ie/media/migration/seafood/aquacultureforeshoremanagement/aquac ulturelicensing/appropriateassessments/GweedoreBayIslandsAAAquaFeb16220216.pdf and http://www.agriculture.gov.ie/media/migration/seafood/aquacultureforeshoremanagement/aquac ulturelicensing/appropriateassessmentconclusionstatement/AAConclStateGweedoreNovember2016 131216.pdf which states :

"For the most part the bird species will range beyond the scope or influence of the shellfish culture operations. Therefore, shellfish culture and associated activities considered in this report does not pose significant risk to the conservation features found in the West Donegal Coast SPA"

"It is acknowledged in the Appropriate Assessment that the favourable conservation status of the Harbour seal has been achieved (NPWS 2013b, 2013c) given current levels of aquaculture production within both the Gweedore Bay and Islands SAC and the Rutland Island and Sound SAC. The current levels of licensed shellfish culture and applications within Gweedore Bay and Islands SAC are considered non-disturbing to the site specific Conservation Objectives for the Harbour seal within the Rutland Island and Sound SAC."

"The Appropriate Assessment found that aquaculture activities did not present a barrier to migration or to the freshwater attributes of the otter. The current levels of licensed shellfish culture and applications are considered non-disturbing to otter conservation features."

You will find some pictures (See pictures in Appendix IX) as examples (not exhaustive) to illustrate these statements (pictures taken in our licensed site n° T05/294 in Cork Harbour, North Channel).

## Disagreements about the licensing process

1) Minister determinations in relation to:

- a. EIS requirements
- b. public access to recreational and other activities
- c. population density of the area
- d. protect the visual amenities

### 2) Lack of consultancy within the licensing process

Celtic Kerber Ltd., as an applicant, has nothing to do with these determinations and can't be held accountable for the minister decisions. We strictly followed the requirements and obligations expected of applicants since the application for licence n° T12/419 was submitted in 2011.

As part of these requirements, a public notice has been published in September 2016, as required by the DAFM (See above, part II).

# IV – Oyster farming benefits to environment

Oyster farming is highly dependent on water quality as oysters, like all bivalves, are filter feeders. Oyster farming is sustainable and environmentally friendly. No fertilizers, feeds, herbicides, drugs, chemicals, or antibiotics are used. Shellfish aquaculture does not damage the environment and is sustainable. We harvest and reseed every year.

# > Oysters as a filter

Oysters are filter feeders, and as such, are known to improve water quality as they filter microscopic particles from the water. Some of the benefits of filter feeders are listed below:

- Remove chlorophyll (Newell & al., 2002; Grizzle & al., 2006);
- Remove problematic sediments and phytoplankton and their associated nutrients (See below);
- Remove some of the nitrogen, which is incorporated into protein and the rest is deposited on the bottom, where it can be consumed by other organisms (See below);
- Reduce turbidity (Newell and Koch, 2004);
- Improve light penetration (See below);
- Create denitrification (See below);
- Stimulate benthic algae production through faeces & pseudo-faeces (See below);
- Decrease bacteria biomass (Cressman & al., 2003);
- Reduce anoxia (low oxygen) (See below).
- > Oyster as a nutrient extractor / collector

Nutrient (Carbon, Nitrogen and Phosphorus) pollution is the primary cause of eutrophication in our coastal waters. Eutrophication is defined in the Marine Strategy Framework Directive (MSFD, 2008/56/EC) as a process driven by enrichment of water by nutrients, especially compounds of nitrogen and/or phosphorus, leading to increased growth, primary production, and biomass of algae; changes in the balance of organisms; and water quality degradation. Delivery of land-based nutrients to coastal waterbodies has been greatly accelerated by human activities and may promote a complex array of undesirable symptoms, beginning with excessive growth of pelagic and opportunistic benthic algae which may lead to other, more serious water quality problems such as hypoxia, losses of seagrasses and occurrences of nuisance and toxic algal blooms (Ferreira & Bricker, 2015)

Shellfish farms are nutrient sinks (Ferreira & al, 2007). Storage of phosphorus and nitrogen in animal tissue limits eutrophication in this ecosystem. Transfer of oysters for marketing / oyster harvest actively participates in the limitation of the eutrophication of these systems under anthropogenic influence (Deslous-Paoli & al, 1998). In terms of nutrients removed per unit area, oyster harvesting is an effective means of nutrient removal compared with other nonpoint source reduction strategies (Higgins & al, 2010). Consequently, natural and aquaculture-reared stocks of bivalves are potentially a useful supplement to watershed management activities intended to reduce phytoplankton production by curbing anthropogenic N and P inputs to eutrophied aquatic systems (Newell, 2004).

As shellfish grow, they incorporate nitrogen and other nutrients into their tissue as they feed. In addition to removal of nutrients through shellfisheries and molluscan aquaculture, shellfish beds may act to promote removal of nitrogen from estuaries by increasing organic nitrogen deposition to the sediments that stimulate denitrification processes (Newell & al, 1999; Rice, 2001).

Shellfish remove nitrogen from the water as they feed. They also improve the shoreline marine environment in another way: specifically, the nitrogen and phosphate that are not digested and incorporated into the tissue of the shellfish are processed and excreted in a form that is readily used by plant growth (Newell, 2004).

In addition, shellfish, like other carbon fixers such as corals, help reduce the production of carbon dioxide (CO2 - a "greenhouse" gas), by incorporating carbon into their shells (Young, 1990; Grabowski & al, 2012). In the worst scenario, the net effect is zero change in marine CO2 as a result of shell building (Ferreira & al, 2007).

Policy-makers should recognize that bivalve aquaculture should be an integral part of the nutrient economy in watershed management.

## Oyster farming interaction with seaweed

By filtering the water, bivalves reduce turbidity, thereby increasing the amount of light reaching the sediment surface, enhancing the photosynthesis that sustains eelgrass (Newell & al, 2002). This has the effect of extending the depth to which ecologically important benthic plants, such as seagrasses and benthic microalgae, can grow (Newell, 2004).

The nitrogen and phosphate that are not digested and incorporated into the tissue of the shellfish are processed and excreted in a form that is readily used by plant growth (Newell, 2004). The production of dissolved (hence bioavailable) nutrients can occur directly via excretion by the oysters (Boucher & al., 1988), or indirectly via re-mineralization and subsequent release from enriched sediments (Souchu & al., 2001). Suspension feeding bivalves (like oysters) are important resource conduits converting inaccessible N and P in the water column to elevated sediment nutrient levels within the rhizosphere available for absorption by submerged aquatic vegetation (Peterson & Heck, 1999). Bivalve farming increased the sediment nutrient content and these increased nutrients are biologically available to the plant (Peterson & Heck, 2001). These nutrients fertilize the sediment in which eelgrass grows, increasing its germination and survival (Han Jie & al, 2001, Peterson & Heck, 1999).

Nitrogen and phosphorus, excreted by the bivalves and regenerated from their bio deposits, are recycled back to the water column and then can support further phytoplankton production (Newell, 2004). Dissolved nutrients released from oyster excretion or sediment remineralization have the potential to stimulate phytoplankton production (Prins & al., 1998; Pietros & Rice, 2003). Conversely, where filter-feeding by oysters leads to increased water clarity (Cerco & Noel, 2007), this may lead to increased production of benthic algae and seagrasses, thereby reducing the flux of dissolved nutrients to the water column and reducing phytoplankton production (Souchu & al., 2001; Newell, 2004; Porter & al., 2004).

That's why Integrated multi-trophic aquaculture (IMTA) is such a hot topic in the aquaculture area : effluents (mainly P & N) from fish farming can be used by filter feeding shellfish, which can stimulate *in fine* seaweed cultivation by delivering available dissolved N & P, needed by seaweed to grow.

## > Oyster farming benefits to flat fish

A field mesocosm study of Pacific oyster cultivation effects in western France showed that the microhabitat created beneath trestles was more frequented by flatfish than adjacent homogenous habitat (Laffargue & al., 2006). The trestles could be used as "rest area" for these flatfish, especially during day time.

# Shellfish aquaculture stimulates Biodiversity

Some interesting studies have been done about the effects of oyster farming on the biodiversity (species richness, abundances, etc.). One of them (Dealteris & al, 2004. for the methodology) compared the biodiversity between three areas: "Shellfish Aquaculture Gear" (SAG), "submerged aquatic vegetation" (SAV), and a "shallow non-vegetated seabed" (NVSB). The results show that species richness and abundancies of species were consistently higher in the SAG than in the SAV which in turn was greater than in the NVSB, throughout the year. These results are consistent with many studies that have recognized increased habitat complexity supports higher abundances of organisms due to increased predator protection (Orth & al, 1984; Ryer, 1988; Heck & al, 1995; Mattila & al, 1999; Beck, 2000). Species diversity were similarly higher in shellfish aquaculture gears and the eelgrass ecotypes than in the unvegetated bottom. The species abundance and diversity data from this study suggest that the shellfish aquaculture gear has similar habitat value for its inhabitants when compared with eelgrass. The oysters within the aquaculture gear are providing many ecological services, including particle clearance, nutrient removal and remineralization, benthic-pelagic coupling and the creation of refuge from predators (Coen & al, 1999a, Dame, 1999). The SAG also provides 3dimensional structural complexity and many of the same benefits that artificial reefs provide in areas where habitat is limiting. Studies have shown and suggested that biologic services of artificial reefs include foraging habitats and predator refuge to residents and transient marine organisms (Blancher & al., 1994; Bohnsack, 1989). These findings indicate that shellfish aquaculture gear provides habitat for many native species of recreationally and commercially important fish and invertebrates in their early life stages throughout the year and that shellfish aquaculture gear has a habitat value at least equal to and possibly superior to submerged aquatic vegetation.

As said above, marine farm structures and artificial structures in general, provide a three-dimensional reef habitat for colonisation by fouling organisms and associated biota (Costa-Pierce & Bridger 2002). Such structures provide a novel habitat that can support a considerably greater biomass and density of organisms than adjacent natural soft-sediment habitats (Dealteris & al., 2004). Hence, several studies have highlighted the role played by artificial structures within the ecosystem, such as increasing local biodiversity, enhancing coastal productivity, and compensating for habitat loss from human activities (Ambrose 1994; Costa- Pierce & Bridger 2002; Hughes & al., 2005). Recent evidence also suggests comparable roles for intertidal trestles (Hilgerloh & al., 2001).

Another study will confirm these observations (Pinnix & al, 2005) as samples have been done with different trawls on the same ecotypes. Catch per unit effort of fish (CPUE) of both shrimp trawl and fyke net samples differed significantly between habitat types, with greater catches in oyster culture than in mudflat and eelgrass habitats, which did not differ significantly from one another. Species richness and diversity of fyke net catches also differed significantly between habitat types, with samples collected in oyster culture and eelgrass habitats having greater species diversity than in

mudflat habitats. Species richness and diversity of shrimp trawl samples did not differ significantly between habitat types.

More recently, an experimental scale deployment of oyster gears suggested that aquaculture gear could benefit populations of ecologically and economically important fish and epibenthic macrofauna in a way comparable to oyster reef habitat (Erbland and Ozbay, 2008).

### Oyster farming & Birds :

The recognized role of marine structures in providing fish habitat (see above) could conceivably attract bird species to prey items. Griffen (1997, unpub.) suggested that the habitat enhancement provided by natural seabed oyster reefs may benefit some bird species (e.g. herons and other foraging birds) by providing an additional food supply. This view is supported by recent work in Argentina which examined the ecological role of naturalized Pacific oysters 20 years after their introduction (Escapa & al., 2004).

In the case of elevated intertidal culture, trophic modelling (Leguerrier & al., 2004) similarly suggested that birds could benefit from an enhanced food supply. Clearly, the consequences for higher trophic level animals that arise as a result of intertidal oyster farm effects on the nature, quantity or availability of their food supply will depend on consumer dietary preferences and their ability to adapt to changes induced by cultivation. Overall, the few overseas studies of oyster culture provide information consistent with other forms of aquaculture described overseas, suggesting an attraction of seabirds to culture areas for foraging fish and epibiota fouling structures, and even the cultured crop itself (Ross & al., 2001; Roycroft & al., 2004; Kirk & al., 2007).

A number of studies have found that instead of local bird species being excluded from foraging sites, their distribution was unaffected : none of the species studied (Booth & Rueggeberg, 1989) appeared to be significantly impacted by aquaculture in terms of number of colonies or the amount of important habitat area (colonies, breeding areas, moulting areas) that overlap with aquaculture operations. And some other studies showed that birds were actively exploiting cultured species as a food source (Carswell & al., 2006; Zydelis & al., 2006). In relation to trestle culture in Ireland, a preliminary study (Hilgerloh & al., 2001) found that oyster structures did not affect the feeding behaviour of birds. For most species, bird densities were lower in the farm area than a reference area; however, the authors recognised that this pattern may have reflected natural environmental differences. The same conclusion about the long-term temporal decline in Brent geese numbers along the West coast (US) which is unlikely to be associated with shellfish aquaculture (Dumbauld & al., 2009).

In addition to modifications to benthos, Hilgerloh & al. (2001) also noted that macro algae fouling the oyster trestles and associated small mobile gastropods provided a food source for some bird species.

The following statement is from specific appropriate assessment carried out in Gweedore Bay by the Marine Institute (Report supporting Appropriate Assessment of Aquaculture in Gweedore Bay & Islands SAC: "The foraging range of the species identified in the COs is extensive and while some may utilize the aquaculture areas for feeding (which are proximate to a small portion of the SPA), it is unlikely the activities or structures used will impact on the conservation objectives and targets. For the most part the bird species will range beyond the scope or influence of the shellfish culture operations. Therefore, shellfish culture and associated activities considered in this report does not pose significant risk to the conservation features found in the West Donegal Coast SPA".

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Appendix VII: Pictures of new trestle delivery and old trestles leaving to Sharkey's Waste recycling Ltd.

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Appendix IX: Pictures of examples of Fauna (not exhaustive) in our oyster farm in Cork Harbour.

Appendix X: References

# Appendix I: Description of special Irish branded oyster called "Muirgen"



# Jewel of the Irish Gods

DURING A JOURNEY WITH HIS FAMILY ACROSS THE FAIRY DOMAIN OF AENGUS THE RISH GOD OF LOVE, ECCA, SON OF AN IRISH KING, WAS GIVEN A HORSE, AS HE HAD LOST HIS OWN. HOWEVER, THE PECULIARITY OF HIS NEW HORSE WAS THAT HE HAD TO REMAIN AT WALKING PACE CONSTANTLY IN ORDER TO AVOID ANY DISASTER. AT ONE STAGE, ECCA FORGOT AND AS A RESULT, A MAGIC FOUNTAIN APPEARED UNDERNEATH THE MOTIONLESS HORSE.

FOLLOWING HIS ACCESSION TO THE THRONE, ECCA CREATED A FORTRESS AROUND THE FOUNTAIN, PROTECTED FROM THE WORLD BY THICK WALLS. LIBANE, THE DAUGHTER OF ECCA, WAS IN CHARGE OF KEEPING THE DOOR CLOSED AND ONLY ALLOW THE FORTRESS RESIDENTS TO DRAW WATER.

ONE DAY, BY DEGLIGENCE, LIBARE FORGOT TO CLOSE THE DOOR. THE PLAIN WAS IMMEDIATELY SUBMERGED WITH WATER, CREATING A LAKE NOW CALLED LOUGH NEAGH. THE ANG ECCA AND ALL HIS SUBJECTS PERISHED, EXCEPT HIS DAUGHTER LIBARE WHO LIVED UNDER WATER IN A CAVE. AFTER CENTURIES, SHE BECAIDE A INERMAID, HALF WOMAN, HALF FISH. THE WATERKEEPER LEGEND WAS BORD.

ULSTER INHABITANTS WERE CHARMED BY HER SINGING. FOR 3 CENTURIES SHE LIVED THAT WAY UNDERWATER UNTIL COMBALL OF BANGOR FISHED HER OUT AND CALLED HER MURGEN : BORN FROM THE SEA.

IN IRISH MYTHOLOGY, THE GATE TO THE OTHER WORLD WHERE GODS LIVE IS THE WATER: LAKES RIVERS OCEADS. DURING HER UNDERWATER LIFE, MURGEN WAS GATHERING THE FRUITS FROM THE SEA TO SERVE THEM TO THE GODS DURING THER IMMORTALITY BANQUETS.

PARCS SAINT KERBER, IN THE PURE TRADITION OF CELTIC BELIEFS, OFFERS YOU TO DISCOVER THE RISH JEWEL WORTHY OF THE GODS' FEASTS: MURGEN, AN OYSTER WITH FIRID FLESH. GROWN IN IRELAND AND SLIGHTLY MATURED IN THE MONT SAINT MICHEL BAY, COMBINING A GENUINE TASTE OF THE RISH OYSTERS AND A SWEETNESS COMING FROM THE PURITY OF THE WATER FROM LEGENDARY LAKES.

# Appendix II: maps of licensed sites T12/365 & T12/419



SCALE 1: 10000

Application sites ( as revised) are 365A, 365B and 365C

GPS survey 22/6/05 POS

In red: Licensed sites n°T12/365 A, B & C



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# Appendix III: Origin Green Certificate



# an initiative by Bord Bia

This certificate recognises that

# **Celtic Kerber**

is a verified member of the

# Origin Green Sustainability Programme

To check certificate validity, please click on the company logo at http://www.origingreen.ie/companies/verified-members

Aidan Cotter, Chief Executive, Bord Bia



Growing the success of Irish food & horticulture



# Appendix IV: Pictures of the crew cleaning up the shore in Gweedore bay





# Appendix V: Public notice published in the "Donegal Democrat" on the 8th of September 2016



# Appendix VI: Minister Determination published in the "Iris Oifigiúil" on the 13th of December 2016 and in the "Donegal Democrat" on the 15th of December 2016

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### IRIS OIFIGIÚIL, DECEMBER 13th, 2016

### S.I. No. 597 of 2016.

### STATISTICS (BALANCE OF PAYMENTS SURVEY) ORDER 2016.

The Taoiseach, Mr. Enda Kenny T.D., in exercise of the powers conferred on him by section 25(1) of the Statistics Act 1993 (No. 21 of 1993), and for the purpose of giving full effect to Council Regulation (EC) No. 2533/98 of 23 November 1998, as amended by Council Regulation (EC) No. 951/2009 of 9 October 2009 and Council Regulation (EU) No. 2015/373 of 5 March 2015, Council Regulation (EC, Euratom) No. 1287/2003 of 15 July 2003, Regulation (EC) No. 184/2005 of the European Parliament and of the Council of 12 January 2005, as amended by Regulation (EC) No. 1137/2008 of the European Parliament and of the Council of 22 October 2008, Commission Regulation (EU) No. 555/2012 of 22 June 2012 (as amended by Comission Regulation (EU) No. 519/2013 of 21 February 2013) and Regulation (EU) 2016/1013 of the European Parliament and of the Cauncil of 8 June 2016, and Regulation (EU) No. 549/2013 of the European Parliament and of the Council of 21 May 2013, made the order na above.

Copies of the above Order can be obtained from the Government Publications Office, 52 St. Stephen's Green, Dublin 2. Phone: 076 110 6834.

Price: €2.54.

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### S.I. No. 601 of 2016.

### ELECTRICITY REGULATION ACT 1999 (LPG SAFETY LICENCE) LEVY ORDER 2016

The Chairperson of the Commission for Energy Regulation, Mr. Garrett Blaney, has made a Statutory Instrument nuder Paragraph 16 of the Schedule to the Electricity regulation Act, 1999 (No. 23 of 1999) as amended by the Energy (Miscellaneous Provisions) Act 2012 (No. 3 of 2012).

This order imposes a levy on a licenced LPG undertaking, for the purpose of meeting expenses properly incurred by the Commission for Energy Regulation in the discharge of its functions under the Act.

Copies of the above may be purchased from Government Publications, 52 St. Stephen's Green, Dublin 2. Phone: 076 110 6834.

Price: €2.54.

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### FISHERIES (AMENDMENT) ACT, 1997 (NO. 23) PORESHORE ACT, 1933 (NO. 12) NOTICE OF DECISION TO GRANT AQUACULTURE AND FORESHORE LICENCES.

The Minister for Agriculture, Food and the Marine has decided to grant Aquaculture and Foreshore Licences to the following:

File Reference	Applicant	Species and No. of Site(s) and reference
T12/145	Donegal Oceandeep Oysters Ltd	Pacific Oysters using bags and trestles- Eldrim-Mount Charles area of Donegal Bay T12/145A and T12/145B

File Reference	Applicant	Species and No. of Site(s) and reference	
T12/349	Douegal Oceandeep Oysters Ltd	Pacific Oysters using bags and trestles-Eddrim-Mount Charles area of Donegal Bay T12/349A	
T12/243 Donegal Oysters Ltd Pacific Oy and trestler Charles an Bay T12/243C T12/243C		Pacific Oystem using bags and trestless-Eddrim-Monat Charles area of Donegal Bay T12/243A, T12/243B, T12/243C & T12/243D	
T12/346	Douegal Oysters Ltd	Pacific Oyaters using bags and trestles- Eddrim-Mount Charles area of Done gal Bay T12/346A	
T12/347	Racoo Skellfish Ltd & Bell's Isle Seafoods Ltd	Pacific Oysters using bags and trestles in Inner Donegal Bay T12/347A	
T12/410	Thierry Gillardens & Desmond Moore	Pacific Oysters using bags and trestles- Braade Strand, Gweedore Bay T12/410A & B	
T12/419	Celtic Kether Ltd.	Pacific Oysters using bags and trestles- Brande Strand, Gweedore Bay T12/419A, B & C	
T12/430	John Boyle	Pacific Oysters using bags and trestles- Brande Strand, Gweedore Bay T12/430A & B	
T12/438 Gary Boyle		Pacific Oysters using bags an trestles., Gweetlore Bay T12/438A & B	

The reasons for this decision are elaborated on the Department's website at:

http://www.agrienlture.gov.ie/seafood/aquacultureforeshoremanagement/ aquaculturelicensing/aquaculturelicencedecisions/

An appeal against the Aquaculture Licence decision may be made in writing, within one month of the date of its publication, to THE AQUACULTURE LICENCES APPEALS BOARD, Kilminecky Court, Portlaoise, Co. Laois, by completing the Notice of Appeal Applications Form available from the Board, phone 057 86 31912, e-mail info@alab.je or website at <u>http://www.alab.je/</u>

A person may question the validity of the Foreshore Licence determination by way of an application for judicial review, ander Order 84 of the Rules of the Superior Court (SI No. 15 of 1986). Practical information on the review mechanism can be obtained from the Citizens Information Board at: <u>http://www.citizensis.formationBoard.ie/</u>

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### DEPARTMENT OF AGRICULTURE, FOOD AND THE MARINE AN ROINN TALMHAÍOCHTA, BIA AGUS MARA

FISHERIES MANAGEMENT NOTICE NO. 68 OF 2016 (December Demersal Quota Management Notice)

I, MICHAEL CREED, Minister for Agriculture, Food and the Marine, in exercise of the powers conferred on me by section 12 of the Sea-Fisheries and Maritime Jurisdiction Act 2006 (No. 8 of 2006) and the Sea Fisheries, Foreshore and Dumping at Sea (Transfer of Departmental Administration and Ministerial Functions) Order 2007 (S.I. No. 707 of 2007) (as adapted by the Agriculture, Fisheries and

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Public Notices

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Appendix VII: Pictures of old trestles leaving to Sharkey's Waste recycling Ltd.







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# Appendix VIII: Pictures of trestles in area T12/365 A.



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Appendix IX: Pictures of Fauna in our oyster farm in Cork Harbour.



Picture of Seals & Oyster catchers on trestles



Oyster catchers feeding on oyster bags



Oyster catcher on oyster bags while crew at work



Swans & Seagulls on oyster beds



Heron, Egret & Oyster Catcher on oyster beds



Curlew & Seagull on oyster beds



Sandpipers (bar-tailed godwit) feeding on oyster farm



Seals & Oyster Catchers on oyster trestles



Bar-tailed Godwit on oyster beds



Sandpipers (probably Redshanks) on oyster beds



Swans with oyster trestles

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