

# The Grower

Newsletter for the Association of Scottish Shellfish Growers

January 2021



## Historic oysters discovered in Stirling

A line of eroding oyster shells have been found near Stirling. Dr Murray Cook, Stirling Council archaeologist announced on January 13<sup>th</sup> the find of what are likely to be very ancient oysters, on the Carse of Stirling. After the Ice Age the sea extended as far as the Lake of Menteith. While oyster middens are quite common in the area surrounding the River Forth Dr Cook says these are different in that many are complete shells. He is planning to get them carbon dated and work on the site will continue in the summer when



The Grower will hope to report in more detail.

The Grower is a little later than usual and we apologise. Normally we would be sending out season's greetings before Christmas but this issue comes with belated best wishes for better things for everyone in 2021.

## Shellfish culture?

Can any sharp eyed and very diligent reader of The Grower identify what this photo may be of? Answer in the next issue but please send your solution if you have one, to the Editor before the beginning of March.



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### Advertising

The Grower is distributed to all members of the ASSG, to policy makers and scientists with interest in shellfish and is sent electronically all over the world to shellfish farmers and their ilk. It is also available online at [www.assg.org.uk](http://www.assg.org.uk) Why not advertise to our specialist readership?

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**Disclaimer:** Views expressed in this publication do not necessarily reflect the official view of the Association

# Aquaculture common issues group (ACIG) EAS conference plans

The ACIG held another online “bite-size” meeting on 13<sup>th</sup> January. This is the Seafish response to the pandemic; to hold short online meetings to replace the twice yearly meetings that were the practice before Covid. This session was on “Supporting aquaculture growth through innovations”.

The first speaker was Tanja Hoel of Hatch on “Supporting aquaculture innovation on a global scale”. It was interesting to learn from this that Smart Oysters were one of the companies helped by Hatch and of course to hear more about the organisation itself. John Fitzgerald spoke on “Aquaculture Containment Technology”, Martin Sutcliffe spoke on “Aquaculture Development in the South West” and Dave Garforth spoke on “Coordinated local area management systems (CLAMS) model for aquaculture”. The presentations can be accessed at

[www.seafish.org/responsible-sourcing/seafood-issues-groups/aquaculture-common-issues-group/](http://www.seafish.org/responsible-sourcing/seafood-issues-groups/aquaculture-common-issues-group/)

The next meeting is scheduled for 17<sup>th</sup> March and the programme will be announced nearer the time. You can sign up for alerts at the above site also.



Plans are underway to make the postponed Aquaculture meeting in Cork into a fully online conference. Full details can be found at their website. The plan is to keep to the general lay-out of the “normal” conference with morning plenary sessions with break out sessions and E-poster presentations. An innovation to allow for the less amenable aspect of online events is that presentations will be available for 30 days after the event. This will mean that unusually one can see presentations that in real life would have been inaccessible due to time clashes.

For full details see  
[aquaeas.org/Meeting/AE2020](http://aquaeas.org/Meeting/AE2020)



EAS is also organising webinars and the next one is scheduled for February 2<sup>nd</sup> on the lobster farm in Norway. Asbjørn Drengstig will give a talk “They said it was impossible – the story behind Norwegian Lobster Farm AS”. Register at the EAS website.

## Dates for your diary

EAS Conference  
Cork  
April 12-15, 2021  
Online

SAGB Conference  
12-14 May  
(This will be online and for 3 morning sessions)

Aquaculture UK,  
Aviemore  
May 19-21, 2021  
(Further news of this event due by 23rd January)

EAS Conference  
Madeira  
October 4-7, 2021

ASSG Conference  
Corran Halls, Oban, Scotland  
October 28-29, 2021

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# CEO's Column

## Nick's Notes

### *That was the year that was*

Belated best wishes that all found some solace over the festive period and time to enjoy and reflect with family and friends. Apologies that "The Grower" has only just seen the light of day at the start of 2021 – rather than being written for Christmas reading.

Rather than wallowing in the difficulties of the past year it seems more appropriate to try and pick some markers for progress in the future. Indeed - we do have a future on Planet Earth despite what the media would have you believe. We just need to get a grip on the real issues and not spend too much time on the imponderables! That includes the biologists amongst us who may be wondering where mankind is on the typical "S" shape growth curve for organisms?

It is worth remembering that in 1969 when we put a man on the Moon there were 2.5 billion humans on Earth, in 2010 there were 7.5 billion and by 2050 an estimated 10 billion (give or take a few million). Did the 2.5 billion have a better life style than the 10 billion will have? That is one of those imponderables. If I were a marketing man with a product to sell, I might take the view that – we have an awful lot more mouths to feed – so there is an opportunity for us to play a part in improving lifestyles.

### *Accentuate the positive*

I am writing this before the conclusion of the Brexit transition period and can only say that I admire the endurance of officials and governments in pursuing their objectives. I am really hopeful that once they have completed this task they will have a short break and move on with the same dedication to the really important issue of tackling climate change.

The irrefutable truth is that there are no artificial borders when it comes to the marine environment. Organisms are not constrained by World Trade Organisation rules as to where they reside. It is all down to the environmental conditions and whether they can survive and thrive as a population pushing the boundaries of their habitat. When it comes to maintaining lifestyles through the exploitation of the available natural resources, we should regard ourselves as truly lucky. The Scottish marine zone is six times the area of the land mass – surely, we can make good use of that competitive advantage we have been handed – regardless of what species of marine organisms decide to take up residence. If I pointed out that we now have the potential to be a tuna fishing nation with the stocks present in west coast inshore waters – you may think that I had too much egg nog at Christmas? (But it's true!)

If there is a dilemma it appears to be in our general reluctance to freely accept change, and of course to create problems of our own making. Dealing with Covid has indicated the over-bearing desire for normality or even a new normal, the requirement for which must be in the evolutionary human psyche along with maintaining social groups. Marine organisms often tend towards being opportunistic colonisers and as a strategy it means change can be capitalised upon. Hopefully the



*Dr Nick Lake, CEO of the Association of Scottish Shellfish Growers (ASSG)*

difficulties and losses from the past year will allow lessons to be learnt and required changes in all our lives capitalised upon for the benefit of our society, and all social groups within it.

### *What did the Romans ever do for us?*

Apart from straight roads, sanitation, central heating, education and the introduction of good quality wine – they liked to exploit the natural shellfish resources found around the UK coastline. Even at that time, the trend was to export some of the bounty back to other areas of their Empire as it was a resource which was held in high regard. Colchester oysters consumed in Rome without the ability to refrigerate or use the channel tunnel! What did we get left with – well, shell waste middens that still exist in some places to this day – and a construction material contained in many buildings of the time that are still standing. Carbon capture and storage at its finest – with the benefit of creating exports and feeding a hungry workforce.

### *Déjà vu*

Capitalising on climate change while equally accepting that the rate of change is a man-made problem of population growth and lifestyle choices, is likely to be a necessity if we wish to continue to prosper. Will it be Colchester oysters to Rome in the future – well probably not the native species *Ostrea edulis* of the Roman's time. It is not a climate change resilient species in the more turbulent and human impacted coastal waters we are beginning to see. However, there is plenty of scope for a more opportunistic species such as the rock oyster *Crassostrea gigas*. Some would point out that there is a real opportunity to harness the traits of these opportunistic colonising species as our "native" stock is less well adapted to the current evolution of the marine environment. It even appears that the incoming coloniser could stabilise or create habitats which favour our native oyster to co-exist within.

Not only are we seeing changes within our oyster populations – but also another ubiquitous species the blue mussel. Once thought to be solely *Mytilus edulis* we now appreciate with modern DNA typing that this species has hybridised with the Mediterranean *M. galloprovincialis* and another northern species *M. trossulus*. When and how all this interloping took place is almost irrelevant now - other than to note that the Spanish Armada has been suggested! We could for convenience just add it to the list of what the Romans

## CEO's Column cont.

may have done for us? Basic biology would suggest that hybrid vigour may be able to secure additional possibilities to withstand environmental challenges. Hence any emerging positive hybridisation traits may ultimately relate to mankind assisted resilience of the resultant natural populations.

### *Conservation or preservation*

Will our “native” species disappear? Well yes, they have in some locations where we in our collective short-term knowledge historically expect them to be resident. But they may well be found possibly in deeper less turbulent and human impacted offshore areas where we have not thought to look or assumed in the past to be unlikely key habitats or locations.

The recent leaking of a report into the status of Marine Protected Areas within Scotland revealed that 90% of the blue mussel habitat in the Dornoch Firth designated area had disappeared? If this had happened overnight then alarm bells should be ringing – but if part of the greater natural cycle of growth and decline of a population (back to the “S” shaped growth curves again!) should we expect to be able to maintain the population just because we have decided to place some artificial boundaries around it? There is a slight hint of the King Canute associated with our current marine environmental conservation policies.

Is this type of decline event atypical, or even capable of raising interest if it occurs in areas which we have not decided to designate as special? Well unfortunately not – the loss of Blue mussels from one west coast loch system is currently under academic investigation funded by industry due to the impact on cultivation operations, and we have a more recent report of the total loss of an extensive mussel bed in the Clyde. I have written before about the importance of the NAEMO initiative which is looking at the evidence for such occurrences and possibly the reasons on a far wider geographic scale and primarily the North Atlantic.

Should we be alarmed by such occurrences – well yes and no – depending on time scales and causes. The biggest problem with assessing climate change impacts is that we are fairly data deficient on the “normal” cycle of events that have been occurring in Scottish coastal waters since the last Ice Age. What we do need to ensure is that as an industry whose focus is the cultivation of shellfish we remain flexible as to what we produce and the markets associated with such commercial production. We need to have in our psyche the ability to recognise, accept and adapt to change if we are to prosper.

### *Marine versus terrestrial*

The one difference between the marine and terrestrial environments (yes - I know it's the amount of water!) is that there is more of a continuum in the sea for creatures to disperse into – no man-made borders or boundaries other than natural features.

The term “nature abhors a vacuum” has never been truer than in the borderless marine environment. Every

niche opportunity is taken up to create or populate a habitat from the apparently amorphous soup that is the plankton. Where one species fails to survive – another is literally treading water waiting to find a space to drop into a habitat suitable for exploitation. One of the best examples of marrying this constant process of change with our current concerns regarding the climate is to admire the White Cliffs of Dover from the sea. Carbon capture and storage at its finest based on planktonic and shellfish marine productivity that occurred in the ongoing period of evolutionary change. In fact, let's bring this far closer to home to visualise. It is estimated that Scotland's carbon stores in marine sediments may hold up to eleven times the carbon locked away in its peatlands. Anyone familiar with the geography of Scotland knows that we can put on a good display of peat bogs – not to mention midges! Our marine environment has real scope to cope with natural and man-made change but we do need to appreciate, value and manage it if we are to reap the natural rewards.

### *Hobson's Choice*

We may like what we know and know what we like - but unfortunately as a species (and here we are again back on that “S” shaped growth curve) we may have to accept that through our actions we have limited our choices to stick to what we know and like. This is especially true in terms of the availability of natural resources and supplies. What we had the luxury of affording in the 1970s may not be the choice able to be made by today's consumers. This may quite literally mean that while we have improved our personal wealth overall, the options for all of us to purchase a favourite food item – including seafood may have diminished. The favoured cod and chips in England being an example of not only having a reduced access to stocks for geo-political reasons – but more obviously that cod is now less likely to be caught in southern waters due to climate change. Does this mean that the British staple of fish and chips is off the menu – well no but you may be tempted to have haddock instead of cod due to price or possibly sustainability considerations? Exactly the same is true for oysters. Where once the Romans and more recently the masses of the UK population pre-industrial revolution feasted and potentially considered the native oyster as a staple – it is now regarded as a luxury which is in short supply. The rock oyster is far more widely available for consumption by – if not the masses – certainly the discerning diner!

Dietary change is an evolutionary process but one we may need to hasten when it comes to food choices. The concept of “eating down the food chain” is probably most obvious within the general population through the rise in vegetarian options. The importance of this shift is nowhere more evident than in the retail sector where shelf space is now clearly demarcated and allocated to plant-based products.

The shellfish cultivation sector is fortunate in that we already have products which deliver on sustainability considerations. The consumer base is

## CEO's Column cont.

growing given the general trend for healthy eating. This includes a greater understanding of the requirement for certain nutrients (omega 3 fatty acids, zinc, iron and vitamin B<sub>12</sub> levels etc) in the diet which bivalve shellfish have a unique ability to deliver having grazed on natural phytoplankton all their lives. However, consumers are primarily choosing Scottish cultivated shellfish products for the simple reasons that - they like eating them - and they are increasingly available both in retail and hospitality settings.

### *Looking to the future – learning from experience*

The past year has challenged everyone due to the changes involved in dealing with the Covid pandemic. It would be good to say that we have seen the end of the worst of the human suffering now that a range of vaccines are coming forward, but the longer lasting changes seem likely to relate to the socio and economic impacts.

The shock of market disruptions associated with social distancing and travel constraints called for Scottish shellfish producers and processors to rapidly adapt or face going out of business. Scale of production and ability to be flexible in accessing new market opportunities or continuing to supply consumers through new routes has seen a divergence in activities. In some cases, the physical location in remote rural areas and especially the offshore islands has seen the inability to maintain national communication links severely constrain opportunities.

Some producers have found themselves re-inventing activities from previous decades involving direct sales within their local communities. The whole issue of a local food movement has come to the fore during periods when we were all expected to constrain our movements. Luckily between the two first waves of Covid a period of the summer when tourism was re-established enabled some businesses to supply the hospitality sector. In essence there was an appreciation within the local communities and for those visiting, that fresh shellfish products had a role to play in sustaining a degree of normality and creating a food focus to distract from the mundane.

Some of our smaller remotely located producers have been able to fill the niche created by the pandemic and the change in food distribution and travel patterns. However, if this is to be a new business model for producers the niche requires to be sustained and either the costs of production reduced or the inherent value of the products recognised in the supply chain. Social media may allow the latter point to be achieved as particularly with oysters – where they are grown is reflected in their taste and characteristics – to all intents and purposes unique products which certain consumers are prepared to seek out.

### *Scale of commitment*

While many smaller businesses were brought to their knees through the logistics of trying to deal with rapidly

changing pandemic rules the saviours of our mass food supply chain were the multiple retailers. Wet fish counters had fallen out of fashion with them long before any of us had heard of Covid 19 and during the year simplicity was the name of the game in terms of keeping the commodities flowing. For those vulnerable people during lockdown home deliveries became a literal lifeline.

It also has to be appreciated that the Butcher, the Baker and the Candlestick maker (well maybe not relevant today?) also had important roles to play in keeping local supplies available. Add to this the direct delivery to households of fresh foods in a convenient format – such as vegetable or fish boxes and new ways of gaining supplies have rapidly evolved.

Retail has been the saviour of the larger scale mussel cultivation sector with processing allowing vacuum packed products to fulfil the convenience requirement within the logistics supply chains. Consumers have valued this convenience while recognising that being able to produce a steaming hot bowl of mussels in the home - in a small way recreated a restaurant favourite and a degree of escapism. (*cont. overleaf*)

### For Sale

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## CEO's Column cont.

The scale of production and the cost efficiencies required to supply into the multiple retailers will always mean that any local sales for such producers are a deviation from core business activities. However, these can equally satisfy a community benefit of having a shellfish growing operation on the doorstep and allow a greater understanding of the importance for employment and support of the local economy.

### *Adapt and survive*

Regardless of whether individual businesses are focused on large or small-scale outputs they have a role to play within the Scottish shellfish cultivation sector and community engagement. Most importantly such engagement has to recognise the changing times we live in with respect to food supplies and natural environmental challenges. While the percentage of the population which regularly consumes seafood is relatively low and for shellfish is less than 15% the wider values it brings in a changeable World are increasingly being recognised. Highly importantly for shellfish the percentage figures are heading in the right direction with more people actively seeking to include it within their diet. Good for the Planet and good for the population -

something that can sustain and enhance our collective lifestyle!

Going back to that marketing man and the 10 billion world population levels. Yes, we do have an opportunity to produce and sell more shellfish but maybe also some different species based on climate change requirements? Hopefully this will keep the "S" shaped growth curve on the upward trajectory for a good while longer – not least for the 80-100 million people that could be residing in the UK by then?

All the best for 2021 and beyond,

Nick.



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# What's in a name?

Janet H Brown

There has been coverage in the past of the proposed reclassification of the genus *Crassostrea* for all Pacific cupped oysters and the arguments against this change (see bibliography and The Grower 2018).

While this refers to “all Pacific and Atlantic species” it probably is taken to refer mainly to *C. gigas*. In aquaculture terms, while *C. gigas* is far and away the major aquaculture species, the most recently published data for aquaculture output from FAO (for 2018) shows that there are a number of significant species of regional importance for which the problem also applies. However WORMS (the World Register of marine Species) while giving *C. gigas* the designation as “alternate representation” does not apply this favour to the other commercial species affected. Thus, in WORMS *Crassostrea madrasensis* is labelled “unaccepted”. It should according to WORMS be known as *Magallana bilineata*. Similarly, *Crassostrea iredelai*, regionally important in The Philippines and in some parts of SE Asia is also “unaccepted” and also designated as *Magallana bilineata*. The Grower has learnt that scientists working in the aquaculture of these species have been asked to change the species name from *Crassostrea* to *Magallana* in their publications.

The relevant literature presenting all the arguments is provided below but we would just like to highlight the issue here so that no one in the aquaculture world feels that they are in the wrong using the tried and tested names that FAO uses for their world production figures.

(Salvi and Mariottini have meanwhile published another paper on the topic so further discussion may well ensue.)

Is it perhaps just fair to say that while WORMS maybe the arbiter for taxonomists it can lead to confusion in the practical world of fisheries and aquaculture?

## Bibliography

Salvi D, Macali A, Mariottini P (2014) Molecular Phylogenetics and Systematics of the Bivalve Family Ostreidae Based on rRNA Sequence-Structure Models and Multilocus Species Tree. PLoS ONE 9(9): e108696. <https://doi.org/10.1371/journal.pone.0108696>

Salvi D. and Mariottini, P. 2017: “Molecular taxonomy in 2D: a novel ITS2 rRNA sequence structure approach guides the description of the oysters’ subfamily Saccostreinae and the genus *Magallana* (Bivalvia: Ostreidae)”, Zoological Journal of the Linnean Society, 2017, 179, 263–276,

Bayne B. 26 co-authors “The proposed dropping of the genus *Crassostrea* for all Pacific cupped oysters and its replacement by a new genus *Magallana*: a dissenting view”. Journal of Shellfish Research 36 (3) 1-3 2017.

Bayne B. 15 co-authors 2019 A scientific name for Pacific Oysters. Letter to Aquaculture, 499, p373 DOI: [10.1016/j.aquaculture.2018.08.048](https://doi.org/10.1016/j.aquaculture.2018.08.048)

Salvi D. and Mariottini, P. 2020 Revision shock in Pacific oysters taxonomy: the genus *Magallana* (formerly *Crassostrea* in part) is well founded and necessary. <https://doi.org/10.1093/zoolinnean/zlaa112>

## Shipping news

Janet H Brown

Brexit happened on January 1<sup>st</sup> and the fact that all was not as straightforward as promised first surfaced in Northern Ireland. There were empty shelves in supermarkets and queues of lorries at ports trying to make their way from Great Britain over the supposedly (as promised by Boris Johnson) non-existent border in the North Sea.

Attention has now shifted to the problem of Scottish shellfish trying to cross the real border into the EU. Whereas before, as members of the EU, the passage of live fish and shellfish products was seamless, from 1<sup>st</sup> January 2021 exporters of these items need to provide all sorts of information including the name, commercial and scientific of the species, the production method and a lot more. This is a huge current problem and we are currently in the “grace period”

The scientific name of all species is a requirement. If The Grower employed a cartoonist there would be a picture here of a huge queue of lorries arriving at a port. On the quay 2 officials would be examining a load from a truck and one would be saying indignantly to the other

“But is it *Crassostrea* or is it *Magallana*? A very niche cartoon.

And lo and behold....!



Cartoon credit to Lydia Allen, [lydia\\_allen@hotmail.com](mailto:lydia_allen@hotmail.com)

# Letters to the Editor

## From Jude Brown, Isle of Skye Mussels

Dear Janet

I hope you are keeping well and the end of 2020 has been OK for you with not too many restrictions to life.

Since I messaged you last we have made good progress on getting things ready.

We've also been lucky enough to get some trips out with other mussel farmers - Andrew Jones over at Cromarty has taken us out to his site and we've seen his spat lines and Lawrie and Alan Byrne have let us join them for a day's harvesting down at Garvan. So informative and really helpful advice from them all on what to do and what not to do! Still a long way to go to get the sites ready but feeling very positive about being ready next spring at least to get a few lines going. I've also been attending Business Gateway free webinars on marketing and social media - so feel free to check out our Facebook and Instagram pages (both are Isleofskyemusselcompany) for our regular updates on

progress.

Hoping we get some calm weather over the Xmas break to get out again as we're trying to fit it all in around Andy's work too!

Have a fabulous festive season and let's hope 2021 allows the ASSG conference to go ahead so we can again meet in person!

Best wishes  
Jude and Andy

Editor's note: Letters to the Editor are very welcome and are not published without author's express permission.

Cartoon credit to Heather Downie, [hebie2309@hotmail.com](mailto:hebie2309@hotmail.com)

Website: [hadow.squarespace.com](http://hadow.squarespace.com)



## Salisbury cathedral in the (shellfish) news



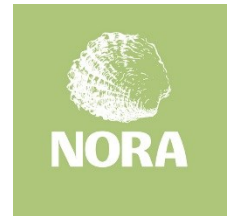
Editor's note. While not quite so old as Roman times (as mentioned by Nick on page 3) Salisbury Cathedral built 800 years ago apparently utilised oyster shells to balance hand carved stones that went into building the spire as reported in October in The Times. If you are not too much of an acrophobic tendency you may be interested to see the video of the climb of the spire by the clerk of works to replace a faulty anemometer by using this link.

[www.salisburycathedral.org.uk/gallery/climbing-spire](http://www.salisburycathedral.org.uk/gallery/climbing-spire)

Coincidentally it was announced the day The Grower went to press that this ancient cathedral is to be one the newly added sites for mass vaccination in the Covid pandemic.

# Latest news from NORA

Philine zu Ermgassen, NORA Secretariat



The Native Oyster Restoration Alliance is a pan-European network which supports the protection and ecological restoration of the native European oyster and its habitat. Since it was launched in 2017, NORA has worked to overcome existing barriers to the conservation, restoration and recovery of the European oyster by providing a platform for the NORA community to collaborate and participate in knowledge exchange. Many of the latest results of these efforts were presented at the recent NORA 3 Online conference, including the launch of two collaborative reports; the “European Native Oyster Restoration Handbook- UK and Ireland” (published by the Native Oyster Network UK and Ireland; NON), and the “European Guidelines on Biosecurity in Native Oyster Restoration”, which was a joint publication by NORA and NON. Both guidance documents can be downloaded from the NORA or NON websites.

The “European Guidelines on Biosecurity in Native Oyster Restoration” (*pictured below*) summarises which biosecurity issues are of relevance in native oyster restoration and outlines currently used methods for reducing the risk of translocating diseases and invasive non-native species between sites. The guidelines also highlight the importance of early engagement with the relevant and competent authorities, and the need to work

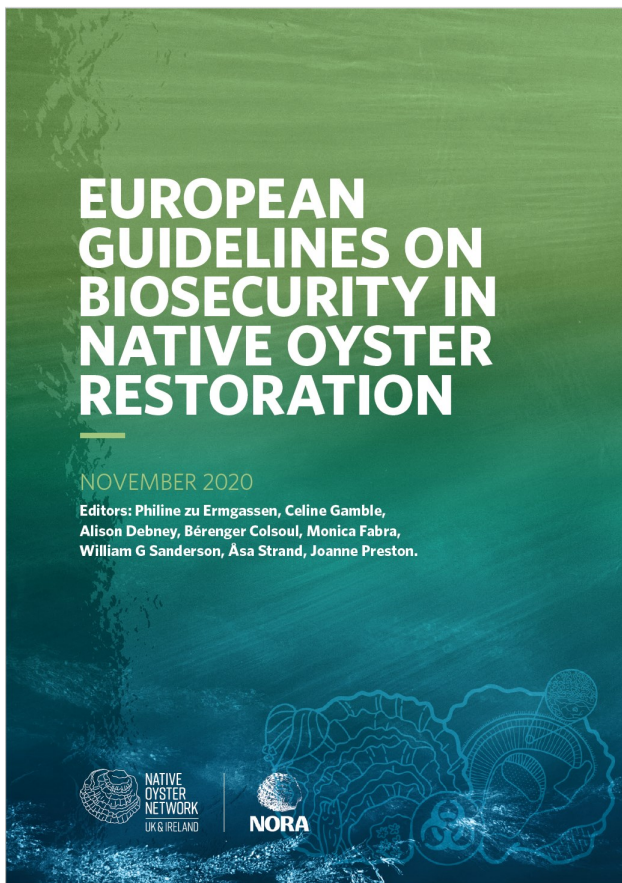


with them throughout the project duration to ensure that all legal requirements are met.

NORA now supports six working groups. While the Biosecurity working group is taking a short hiatus following the publication of the guidelines and the oyster habitat restoration monitoring group is currently in the process of editing and finalising monitoring guidelines, the four other working groups are powering ahead and are open to all interested parties. The Outreach Working Group meets online bimonthly to share experiences of public engagement and informal support for group members addressing issues within their own projects. So far the group has hosted talks on working in schools, knowledge exchange from established projects in Australia, and creating information boards, while Alec Reid of Cuan Beo presented at the last meeting on Community Engagement on December 8<sup>th</sup>. All past presentations can be viewed through the NORA webpage <https://noraeurope.eu/nora-outreach-group-videos/>.

The Historical Ecology Working Group is collaborating on a project to quantify the historical extent and importance of the native oyster across Europe, while the Site Selection Working Group is looking to summarise the main factors for consideration in determining the site selection for native oyster habitat restoration. Finally, the Production Working Group met on December 4<sup>th</sup> in an online workshop to collaborate on drafting fact sheets for use by industry members and restoration practitioners, and to draft a policy brief which explains the need and benefits of oyster restoration in Europe and explores potential ways of overcoming issues in funding the production of oysters for restoration purposes.

NORA looks forward to supporting further activities and opportunities for knowledge exchange in 2021. Registration is already open for NORA 4. Visit the [noraeurope.eu](https://noraeurope.eu) website to find out more about all ongoing and planned NORA activities.



# Introducing the Orkney Shellfish Hatchery

The overarching vision behind Orkney Shellfish Hatchery is to provide a biosecure location for the reliable production of disease free native flat oyster (*Ostrea edulis*) and European clawed lobster (*Homarus gammarus*) juveniles.

The reasons behind this are numerous:

- Native flat oysters, specifically those that are disease free, are at drastically low population levels. When one compiles the list of environmentally vital services that these bivalves provide the marine biosphere (filtration, carbon sequestration, reef construction and thereby biodiversity support – *think nursery habitat for a multitude of juvenile marine species* ), the necessity of safeguarding their genetic viability and even geographic variation is of paramount importance
- European clawed lobster, to supply and continue to develop the hatchery technology with the aim of supporting fisheries and the native lobster population.

Our biosecure, on-land shellfish hatchery was purpose built to become a hub of aquaculture production for various industry-significant species.

First and foremost an aquaculture hatchery, our primary aim is to provide premium seafood products, including Native oyster spat, and *soon* European lobsters, microalgae and nutrition solutions to the aquaculture industry.

Ocean On Land Technology, the technology provider supporting the OSH hatchery, provides both bespoke systems such as mobile hatcheries and laboratories, as well as specific internal components such as the patented Aquahive, Hatchery-In-A-Box, environmental monitoring systems and custom-built recirculating aquaculture systems (RAS).

We are all very aware how rapidly aquaculture is transforming the seafood industry and a significant part of our mandate, therefore, is to operate via sustainable and responsible methods, so as to cement the longevity of the industry while ensuring widespread trust of our products.

Capital investment into the hatchery has been significant and has been taken with the view to provide the best outcomes for our customers. From the ozonation, multi-stage particulate and ultraviolet filtration systems of the influent water, to the automated photobioreactors which in combination with other microalgae growing systems supply consistent and high-quality microalgae for the hatchery operations. Once the water exits the hatchery, the effluent is further filtered and passes through multiple ultraviolet filtration systems.



We are dedicated to finding the most efficient and reliable synergy between know-how and new advances in technology, while abiding by our core environmental responsibility.

At our hatchery, nutrition and hatchery system



engineers specialised in larval lobster, oyster spat, hatchery design and diet processing technology are continuously developing and adapting new technologies to our systems and feed products, ensuring optimal parameters are supplied to the first life stages of our hatchery products. This continuous investment, innovation and testing ensures that the hatchery products we produce have had the very best start in life possible.

It is with excitement then, that on the back of successful production of single oyster spat, and the first successful trials of Ocean On Land Technology's Hatchery-in-a-Box, we approach 2021 and beyond with the desire to build long-term partnerships with our customers; providing them with a product that is a sum

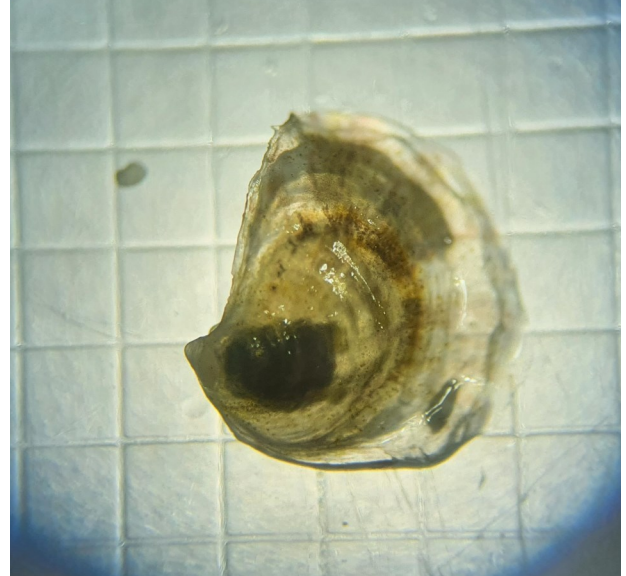
## OSH cont.

of the combination of technical expertise and the natural resources of the Orkney Islands that allows us to continue to produce shellfish of the highest quality.

### Native flat Oysters – *Ostrea edulis*

*Ostrea edulis*, a once common oyster distributed over vast expanses of Europe is now rare. Estimations put the naturally occurring wild stocks at less than 5%. A vital component of the natural marine environment is therefore in urgent need of supportive intervention, which is why we aim to produce *Ostrea edulis* spat to permit the implementation of numerous restoration projects and tackle this critical issue.

The Native flat oyster industry is currently small and nowhere near its potential. Due to its size it is beset by legislation that has been adapted and cropped from



Orkney Shellfish Hatchery therefore aspires to become a beacon of best practice for oyster hatcheries, duly vetted by independent auditors, and a champion for the introduction of industry-specific regulations, and the policing thereof, that accurately reflect the dire *status quo* of the Native flat oyster.

For further information and contact details see [www.orkneyshellfishhatchery.co.uk/](http://www.orkneyshellfishhatchery.co.uk/)

other marine species resulting in non-relevant stipulations, and obvious absences of regulation that we see as vital for a responsible and secure industry.



# NORA launches expert database

By Philine zu Ermgassen, NORA Secretariat



A key function of NORA is to provide networking opportunities and support knowledge exchange. Native oyster restoration in Europe benefits widely from sharing experience and expertise as well as enthusiastic collaboration between projects and experts. In order to support this ongoing knowledge exchange and assist practitioners, NGOs and industry partners in finding and connecting with the expertise they need to make their project a success, NORA have launched an Expert Database. The Expert Database can be used to identify

individuals within expert themes, including “Oyster Supplier”, “Seed production” and “Aquaculture”. It is intended that projects that are starting up will be able to search for and find suitable partners or suppliers for all aspects of their project from the database.

Registering as an expert has been made simple. By sharing a few personal details and a brief statement of your interests, it is possible to register as an expert, and make the business of area of expertise visible to others.

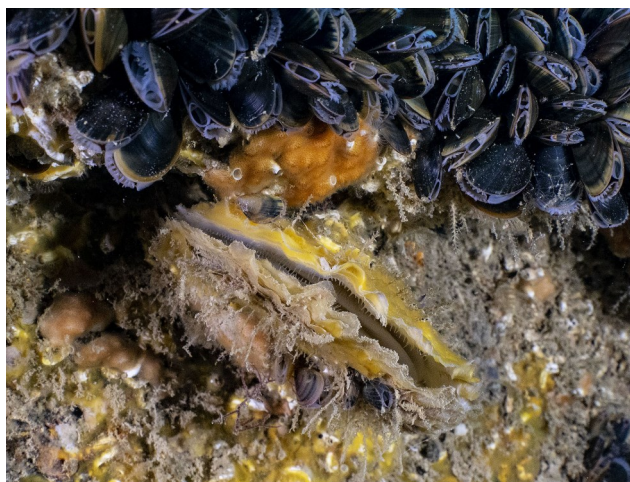
The expert database can be accessed here: [nora-europe.eu/nora-experts-home/](http://nora-europe.eu/nora-experts-home/).

## ZSL Photographic competition

The photographic competition ran from March till the end of September with the winners being announced early December (The Grower April 2020).

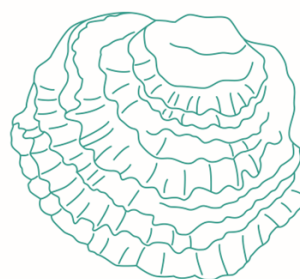
ZSL, the University of Portsmouth and NON set up the competition with a specific aim. Most photos of native oysters available are taken out of the water or in a gastronomic context. Finding photos of natives in their natural environment performing their role as a keystone species can only help the public understand better the reasons for wanting to restore this oyster reef habitat.

The winner was Dr Paul Naylor with an amazing photo of an oyster taken while diving under Brighton Pier (see below).



Runners-up were Sorrel Hugh-Jones (see back page) and Dr Gerald Legg. Congratulations to the winners!

Further details of the competition and the results can be seen at the native oyster network site at [nativeoysternetwork.org/nativeoysterquest/](http://nativeoysternetwork.org/nativeoysterquest/) where the photos can be enjoyed at full size.



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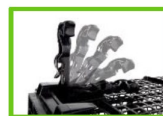
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# SCIENCE NEWS

## Recent publications of interest - native oysters return to Belfast Lough and environmental impacts on shellfish larvae

The new feature introduced in the January 2020 issue was for short summaries of papers likely to be of interest to shellfish growers. Sad to report that the same time a year later the feature reappears with the very same contributors! Maybe it will be different next year – let's see. But meanwhile there is no doubt who wins the student prize. Congratulations to Remy!

**Smyth, D., Hayden-Hughes, M., Alexander, J., Bayford, P. & Kregting, L. 2021. "Good news everyone", the natives have returned: Assemblages of European flat oysters make a reappearance in Belfast Lough after a century of absence. Regional Studies in Marine Science, 41, 101585. <https://doi.org/10.1016/j.rsma.2020.101585>.**

**Review by Janet H Brown, Editor, The Grower, [jan.brown.shellfishteam@outlook.com](mailto:jan.brown.shellfishteam@outlook.com)**

It's very timely now in these pandemic times to get good news but it is unusual to get this expressed in a science paper. But I certainly agree with the title on reading this paper entitled "Good news everyone" the natives have returned; assemblages of European flat oysters make a reappearance in Belfast Lough after a century of absence." This makes for a very interesting read including as it does, a look at the history of the loss of native oysters, and particularly the history of the oyster fishery in Belfast Lough, confirming that oysters have been absent from the Lough for at least 100 years. The aim of the study was to examine unsubstantiated claims as to their reappearance.

The survey indeed found oysters at 6 sites. They estimate recruitment has been happening for at least eight to 10 years. The authors speculate on where they have come from, how they've been able to breed or settle in the Lough. No aquaculture has been carried out on *Ostrea edulis*. The authors speculate on factors that could have influenced the resettlement including the dredging of the central channel in the Lough, an activity usually considered entirely detrimental to the presence of oysters. One suggestion that they consider most likely is that they were introduced via the bottom mussel fishery. If this were so this could be seen like belated redress from the bottom mussel industry for the introduction of *Bonamia* into Lough Foyle in 2005! However the authors extrapolate further to suggest this implication of a connection with the mussel fishery may relate to a possible undiscovered Irish Sea population of native oysters. There is clearly a need for this encouraging development to be monitored carefully, with the dual aim of safeguarding what has already occurred

This is further encouragement for the concept of passive restoration. This is slightly different from the situation in Strangford Lough where the reappearance of a healthy population of natives was due to unsold natives left one summer in very close proximity.

(Editor's note: Interestingly in view of article on page 11 there is one reference to *Crassostrea gigas* in

this paper in the context of how it has been spread in some places by transportation in ballast water. The authors refer to it as *Magellana gigas* but then as *C. gigas*! Habits die hard but maybe best we keep the habits that work.)



*Pictured above; native oysters as newly discovered in Belfast Lough after an absence of a century. Photo credit David Smyth*

**Taltec, K., Huvet, A., Di Poi, C., González-Fernández, C., Lambert, C., Petton, B., Le Goïc, N., Berchel, M., Soudant, P. & Paul-Pont, I. 2018. Nanoplastics impaired oyster free living stages, gametes and embryos. Environmental Pollution, 242, Part B, 1226-1235, [doi.org/10.1016/j.envpol.2018.08.020](https://doi.org/10.1016/j.envpol.2018.08.020) Review by Romaric Moncrieffe, [romaricmoncrieffe@gmail.com](mailto:romaricmoncrieffe@gmail.com)**

Microplastic contamination has been one of the most pressing areas of study for over a decade. Every shellfish farmer or hatchery operator has heard of or talked about the issue and the potential impacts it could have on the industry. In recent years, we have had a dearth of information on how large microplastics (> 2 micrometers) impact adult bivalves. In Taltec et. al, we receive information that sheds light on a lesser-known area – how small microplastics (2 micrometer, 500 nanometer, and 50 nanometer) impact the embryos, gametes, and free living stages of the Pacific Oyster *Crassostrea gigas*.

Results were varied, but statistically significant. Current environmental concentrations of microplastics are difficult to calculate. However, in this study, the lowest value tested, 0.1 ug/L, was lower than the 16.9 ug/L concentration found in the sediment-water layer of microplastic hotspots. Even though this is 16.9 ug does not currently represent wild oyster growing conditions, the exponential increase in microplastics in the water

## SCIENCE NEWS cont.

column mean that in the future it could possibly become a reality.

Uncoated microplastics, e.g. those without a carboxyl or amine layer, showed no negative effect on the survivability of *C. gigas* gametes when compared to the control group, regardless of size, at the 0.1 ug/L threshold. This changes when you add a carboxyl later to the microplastic, as is commonly done for industrial applications. 50 nanometer COOH microplastics started showing toxicity at 1 ug/mL, and 50 nanometer NH<sub>2</sub> amine group microplastics show the greatest effect, decreasing fertilization by 6.3% at just 0.1 ug/L concentration.

Only the smallest microplastics affected the gametes and free-living stages of *C. gigas*, and only those that are coated in NH<sub>2</sub> were able to bond with the gametes of the organism. However, because of the nature of the breakdown of plastic, this size will become most prevalent in the future while also being the hardest to detect. While the future impact these particles will have on the industry remains unknown, the information that

harmful effects can be reduced by increasing the size of microplastic aggregates should not be overlooked. Future strategies could include encouraging microplastics to clump together into clusters in order to then be safely extracted.

### Editor's note

Remy is currently in Nantes where he finds the more metropolitan surroundings more to his taste born as he was in Washington. He starts work on his thesis as part of the ACES+ course at the end of this month. It will be the effect of microplastic and nanoplastic degradation in sunlight on the Blue Mussel, *Mytilus edulis*. The aim is to see if the plastic is leaking any chemicals after exposure to UV rays that are being absorbed by the mussel.



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## Photonews - prize winner and happy returns



For review of the paper announcing the return of native oysters to Belfast Lough (*pictured above*) after a century of absence see page 13.

*Photo credit David Smyth*



Sorrel Hugh-Jones was proud winner of second prize in the ZSL photographic competition with a lovely photo she took “while Dad was loading oysters”. Fuller report on page 12.

## 6 WAYS TO ENSURE YOUR HATCHERY'S SUCCESS



Tim Reed, President, CEO and Founder of Reed Mariculture, Inc.

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