Note of Aquaculture Common Issues Group meeting held at Friends House, London. Wednesday 5 April 2017

For minutes and further information see:
http://www.seafish.org/industry-support/aquaculture/aquaculture-groups/aquaculture-common-issues-group
http://www.seafish.org/industry-support/aquaculture/aquaculture-support/guides-and-information

1. Welcome and apologies

Attendees

Andrew Rowley	Swansea University
Andrew Schofield	Tidal Lagoon Power
Ben Lambden	New England Seafood
Brendan McAndrew	University of Stirling
Caroline Roberts	ABPmer
Catherine Miller	Food Standards Agency
Catriona Shannon	University of Leeds
Charis Cook	BBSRC
Chris Williams	New Economics Foundation
Clare Blacklidge	Environment Agency
Colin Charman	Natural Resources Wales
Craig Burton	Seafish
David Jarrad	Shellfish Association of Great Britain
Dawn Purchase	Marine Conservation Society
Delyth Dyne	Defra
Eleanor Adamson	Fishmongers' Company
Elizabeth Hinchcliffe	NERC
Emily Flowers	NERC
Giles Bartlett	Sealord Caistor
Ian Pike	Consultant
Karen Green	Seafish (Minutes)
Katie Miller	ClientEarth
Keith Jeffery	Cefas
Lee Cocker	Seafish (Chair)
Michael Gubbins	Defra
Neil Auchterlonie	IFFO
Oliver Robinson	British Trout Association
Paul Howes	Swansea University
Piers Hart	World Wildlife Fund
Richard Slaski	SARF
Sara Catahan	Defra
Sofia Franco	BBSRC-NERC
Stacey Clarke	Marine Management Organisation
Tim Goodwin	Sustainable Leadership Ltd
Walter Rakitsky	TerraVia

Apologies were received from:

Birgit Oidtmann	Cefas

Dan Lee	Global Aquaculture Alliance
Iona Campbell	Marine Conservation Society
Jill Wilson	Food Standards Agency
John Holmyard	Offshore Shellfish
Jonathan Shepherd	Consultant
José Constantino	Welsh Government
Marcus Coleman	Seafish
Martin Jaffa	Callander McDowell
Martin Syvret	Aquafish Solutions
Mike Berthet	Global Aquaculture Alliance
Nick Lake	Association of Scottish Shellfish Growers
Patrick Blow	Cowrie Associates
Robert Whiteley	Natural England

2. Minutes from previous meeting held on 14 September 2016.
Lee Cocker welcomed everyone to the Aquaculture Common Issues Group (ACIG) meeting. The final minutes were accepted as a true reflection of the meeting and have been added to the ACIG web page. Attendees were asked to take note of the meeting guidelines. In the following minutes Seafish will provide a link to the various presentations given at the meeting but not summarise the whole presentation. In the main we do not attribute the comments made at the meeting. Matters arising: Various links were circulated.

There was mention of the forthcoming Shellfish Association of Great Britain. Annual Conference. 23 and 24 May 2017.

Policy development

3. General Seafish Domestic Aquaculture update. Lee Cocker, Seafish.
http://www.seafish.org/media/1689574/acig_apr2017_seafishactivities.pdf
This included an overview of Year 2 (2016/17) of the Seafish Corporate Plan with details on progress covering the on-line Cefas 'Regulatory Toolbox for England', the release of commissioned UK aquaculture reports, the renewal of Seafish aquaculture guides and information sheets, the Seafish aquaculture web pages, two SIP funded aquaculture-related projects started and letters sent to 20+ academic institutes highlighting Seafish offshore training for aquaculture. In addition this covered the FAO Aquaculture Questionnaire 2017; aquaculture related Strategic Investment Programme (SIP) project outputs; the Risk Assessment for Sourcing Seafood (RASS) aquaculture profiles; the Seafish Domestic Aquaculture Advisory Committee (SDAAC) including how it works, membership and timeline. There have been 23,282 views of the Seafish on-line aquaculture pages and six of the key aquaculture resources added last year have been downloaded over 6,000 times. Seafish is now seeking feedback from SDAAC members and guidance as to what the scope of aquaculture work might be for 2018-2021.
Discussion

- **Question.** Do you have any information on who is actually downloading this information? **A.** No we do not have that level of detail but can ask if this is possible.

Action: Circulate link to Strategic Investment Programme (SIP) project outputs Closing the Circle: Blueprint for Sustainable Aquaculture in Enclosed Embayment's from Hatchery to Plate as soon as available.

4. Progress of the Seafood Industry Expert Working Group. Neil Auchterlonie, Co-Chair, Aquaculture, Seafood Expert Group.
http://www.seafish.org/media/1689577/acig_apr2017_seafood2040.pdf
Defra requested Seafish submit an industry vision to support the 25 year Food & Farming Plan; the aim was to explore the challenges and opportunities facing the English industry and shape a long-term ambition that could realise its potential. The high level vision submitted to Defra in January 2016 included the recommendation for a Ministerially-appointed industry group to deliver an Action Plan. In May 2016 there were Ministerial appointments to the Seafish Industry Expert Group. The Vision showed three key themes: collaboration, consumption and science and covers wild fisheries, aquaculture and the supply chain with multiple links and overlaps. The development of the Action Plan is now underway to be submitted by summer 2017.
Action: Any thoughts on the Vision should be submitted to Defra by Wednesday 19 April to Georgina.Karlsson@defra.gsi.gov.uk

5. New team structure at Defra. Sara Catahan and Delyth Dyne, Defra.
There is a new team at Defra headed up by Delyth Dyne, supported by Sara Catahan and Michael Gubbins. This restructuring will support the Several Regulating Order and Expert Groups and will help to deal with the challenges of the UK exiting Europe.
Discussion

- **Question.** What are the main stumbling blocks or problem areas for UK aquaculture going forward? **A.** The industry is disparate. In England the industry is dominated mostly by small and medium-sized enterprises and although we have good trade bodies some members do fall outside these trade bodies. We need feedback from industry and want news sites to be developed but can recognise that the licensing rules can make applying a long process so there is scope for clarity to make this process much smoother for new entrants. We also have very busy waterways in the UK and aquaculture is relatively late to the scene and perhaps food production has not been emphasised enough. We also need better links between scientific support and industry needs. There is a very good mechanism in Scotland and there is a real need for industry-driven applied science.
- **Question.** There have been failures of initiatives to farm cod and halibut in the UK. Under the Seafood 2040 action plan have we looked back on why these failed? **A.** Cefas has looked at the halibut example but it is always easier to analyse in retrospect. The Action Plan is unlikely to go into that level of detail and is likely to focus on what is already being produced.
- **Question.** Continuing finance is so important **s**o is there a reassurance beyond 2019 with regards to whatever follow the European Maritime and Fisheries Fund (EMFF)? **A.** At the moment we just have to focus on EMFF.
- There was concern expressed over Mandy Pyke leaving and the valuable work she did on depuration and Norovirus from a technical standpoint and who would now support industry and fill that gap. The comment was that Seafish recognised this and this was being addressed.

Seafish-funded projects

6. Brixham Fisheries and Aquaculture Centre Feasibility Study (SIP project). Tim Goodwin, Sustainable Leadership Ltd.
http://www.seafish.org/media/1689601/acig_apr2017_brixhamfish_aquacentre2.pdf
This provided an overview of the opportunity at Brixham and the outcome of the study and was an opportunity to discuss areas of common interest and exchange ideas on the way forward. This stakeholder survey looked into feasibility of a Brixham Fisheries and Aquaculture Centre for creating and supporting new methodologies or technologies would help the sector grow. On the positive side: there was the recognition of a huge demand for seafood/protein and that the aquaculture sector was expanding in the region; that Brixham was the main fishing port in the UK outside of Scotland; that fishermen need help diversifying; there was a need to improve sector horizon scanning; and an opportunity to improve how we collaborate and support the sector. However there was also the need to determine: whether there were gaps in research/R&D services; the business case; whether there was a local aquaculture industry with needs; and whether we can justify funding a new venture post-Brexit? In particular there was focus on: hatchery and aquaculture technologies; aquarium and ornamental species; testing services; stock assessment and fisheries; disruptive technology; and collaborative research. A small start-up is underway.
Discussion

- **Question.** When is this due to open? **A.** The Centre is open for business now with 25 businesses in place, four aquaculture focussed.

Action: Link to the report once published.

7. Sustainable Aquaculture in Tidal lagoons. Andrew Schofield, Tidal Lagoon Power.
http://www.seafish.org/media/1689583/acig_apr2017_tidallagoons.pdf
This detailed the Tidal Lagoon Swansea Bay (TLSB), future lagoons and associated aquaculture opportunities. For the Swansea Bay potential venture the environmental impact assessment covered fish, the benthic (subtidal and intertidal), the wider ecology, DCO requirements, Adaptive Environmental Management Plan (AEMP) and mitigation and offsetting. The DCO obligations specified the removal of native oyster from the footprint of the lagoon wall and the additional commitment by TLSB of a 10 year programme of reintroduction of native oysters and the creation of spatting ponds in the lagoon as well as the creation of a laboratory and hatchery area. If approval for the lagoon is given aquaculture opportunities would favour Pacific oyster, native oyster, mussels, King Scallop and macroalgae. The lagoon would be tidal and it is anticipated that water quality in the lagoon would improve which would be good for shellfish in particular. This development fits with Welsh Government aquaculture strategy to double production by 2020, to look for co-location opportunities with the marine industry in light of limited spatial resource in which to operate. If approval is given the lagoon would be developed between 2020 – 2022. Six further sites have been identified with potential.
Discussion

- **Question.** Will the recent announcement of a grant for the city of Swansea help this? **A.** We would like to think so and are working in tangent to promote the different work streams.
- **Question.** We need a back up to renewable energy, could tidal lagoons be co-located to support this? **A.** Tidal lagoons generate for 14 hours a day due to the high predictability and staggering of the tides. We are looking at how we could fill the remaining 10 hours and storage is one option.

- **Question.** Have there been any adverse reactions? **A.** We have engaged with the local community and been proactive and as a result the project has received very strong support, but concerns have been expressed by fishermen about the loss of fishing grounds and the potential for increased travel time to get to the fishing grounds where they would naturally fish. Recreational fishers (salmon and sea trout) have also expressed strong reservations.
- This is a very positive step. There has been work to look at the co-location of aquaculture facilities with wind farms but the reality is that wind farms do not really want that. This project is the first to really put aquaculture development at its core.

Action: Publish links to repots when available. The outputs of the SIP project concerning Aquaculture in enclosed embayments (TLSB as the case study) is now available on a dedicated SF aquaculture page 'Aquaculture-related Seafish Strategic Investment Programme Projects'. http://www.seafish.org/industry-support/aquaculture/aquaculture-related-strategic-investment-programme-projects

New initiatives

8. Development of BBSRC-NERC Aquaculture Network initiative ARCH-UK. Andrew Rowley, Swansea University.
http://www.seafish.org/media/1689586/acig_apr2017_archuk.pdf
ARCH-UK is an integrated aquaculture network that aims to solve the shared and specific issues preventing the sustainable growth in all sectors of the UK aquaculture industry. It is funded by the BBSRC/NERC UK Aquaculture Initiative for four years and commenced on 1 March 2017. The aim is to develop a community of people working together drawing in new researchers; to develop a strategic research agenda for the U.K; to assist the RCUK in building a UK academic capability to underpin capacity that meets the long term needs of industry; to encourage exchange of knowledge; to facilitate the development of solutions to community-level challenges; to encourage translation of new technologies; and to help improve the contribution of the UK aquaculture industry to national food security. There are eight working groups tasked with creating research priorities, developing specific workshops, assisting in the development of early career researchers and championing the introduction of new approaches/technologies. ARCH-UK is very thankful to the support from Seafish and it is really important to see the support that the Research Council is giving.
Discussion

- **Question.** How does this fit with Seafood 2040 Vision? **A.** We are going to talk this through. A lot of the recent developments are starting to come together. We wanted a network that was fit for purpose.

9. The Bluefish project an update on the proposal. Andrew Rowley, Swansea University.
http://www.seafish.org/media/1689589/acig_apr2017_bluefishproject.pdf
This project aims to increase capacity and knowledge of climate change adaptation for the Irish and Celtic Seas and coastal communities in relation to aquaculture and fisheries. There are four work packages. The first covers ecosystem understanding with regard to trophic interactions, mapping predators, shellfish and climate change and ecosystem features, goods and services. The second looks at ecosystem resources and sustainability for scallops, seabass and shellfish seed. The third package looks at ecosystem health and well-being, invasive species, cockle health, disease connectivity

and emerging toxins and pathogens. Finally the fourth package covers models and scenarios for ecosystem change.

Fishmeal/fish oil and alternatives

10. Fishmeal and fish oil production. Neil Auchterlonie, IFFO.
http://www.seafish.org/media/1689782/acig_apr17_fm_fo_iffo.pdf
This explained the role of IFFO (the marine ingredients organisation) which promotes fishmeal and fish oil and wider marine. The sector has an overall value of c. US$9.5bn. IFFO members represent 60% of global production and 80% of sector traded value. It is estimated that Mass Balance Marine Ingredients is around 20 million tonnes per annum of raw material used to produce 5 million tonnes of fishmeal. Fish by-products account for 35% and this figure is rising. Aquafeed now dominates global fishmeal consumption however typical inclusion rates are falling in grower diets. Fishmeal is increasingly being used as a strategic feed ingredient. Looking forward there will need to be more feed for aquaculture. The use of vegetable origin ingredients is already widespread with alternative ingredients required to meet demand however nutritionally fishmeal is very difficult to replicate. There are mixed messages surrounding fishing – we are looking for complementary ingredients for aquafeeds to be used as well as, not instead of fishmeal.

11. The impact of El Niño on fish oil supply. Ian Pike, Consultant.
http://www.seafish.org/media/1689592/acig_apr2017_elnino_fo.pdf
This emphasised the importance of EPA and DHA (omea-3) for healthy heart and brain function. In the UK the average intake is less than 250mg a day, compared with a recommended intake in the UK of more than double that at 500mg a day. The EU recommends 250mg but this has been criticised. Most EPA and DHA comes from oily fish predominantly salmon. An El Niño event impacts on the global production of fish stocks, and conversely it impacts on the production of fish oil and farmed salmon. With less fish oil available there is the likelihood of reduced fish oil inclusion rates in farmed salmon diets and therefore reduced EPA and DHA.

12. Algae: The Original Source of Marine Omega-3s. Walter Rakitsky, TerraVia.
This emphasised the importance of omega-3 in the diet and the clear nutritional need to increase intake. The majority of health organisations recommend a minimum of 200 mg of omega-3 each day for healthy adults. Global annual production of fish oil is limited and with a growing population of seven billion people demand for omega-3s is at an all-time high and there is the need for a new source to bridge the gap. TerraVia transforms simple plant sugars (algae from non GM sugarcane feedstock) into renewable oils and specialty ingredients. A purpose built commercial plant in Brazil is currently producing AlgaPrime™ DHA at scale.
Action: For a copy of the TerraVia presentation E: Katie Compton

Overall discussion

- **Question.** Fishmeal and fish oil are very palatable. Is this the case with AlgaPrime? **A.** Digestibility and palatability have been addressed as part of the whole production process.
- **Question.** As the ration of EPA to DHA is so crucial what is the current ratio in farmed salmon? **A.** This will depend on the source of the raw material used in the feed. For wild salmon the DHA:EPA ratio is likely to be 2:1, for farmed salmon it is more like 1:1. The human body can absorb plant omega-3 and convert it to EPA, however DHA has to come from the diet, the body can't make it.

- **Question.** What is the industry trying to achieve? **A.** Current optimum ratios are weighted towards EPA but there is no recognised optimum ratio. EPA is more in surplus and the fact that algae is richer in DHA does have the potential to bring this more into line.
- **Question.** We see slogans to brand seafood as 'a good source of omega-3' or high in omega-3' is there a market to brand fish as high in EPA? **A.** Government has a huge role to play in consumer messaging on this however there has been a lot of research into this in the USA. Beyond omega-3 there appears to be little resonance with consumers over EPA and DHA.
- **Question.** With the introduction of the EU landing obligation due to come to full fruition by 2019 has fish that would have been previously discarded become available for fishmeal production? **A.** To date the reality is that this has not produced the volumes expected. In addition in the UK we only have four fishmeal plants so there is a logistical problem. For high quality fishmeal the raw material needs to be processed very quickly. New high seas vessels are being developed with small fishmeal plants on board and this development is likely to grow over time but will depend on the economies of scale.
- **Question.** Is the BioMar involvement with AlgaPrime typical? **A.** BioMar is an IFFO member and recognises the need to adapt to changing times. TerraVia have spoken to all of the major feed companies and acknowledged that amongst the major feed suppliers there were varying degrees of urgency with regards to feed supply and ingredient use. BioMar were the most forward-thinking.
- **Question.** Who certifies the sugarcane? **A.** The non GM sugarcane feedstock is certified by Bonsucro®, a multi-stakeholder organisation that sets standards for the sustainable production of sugar and sugar-derived products. Bonsucro® certification requires compliance with UN International Labour Organization conventions, environmental standards incorporating biodiversity, water use and other metrics. In addition very little is required – I million tonnes per annum (compared with the 600 million tonnes actually produced).
- **Question.** Does using AlgaPrime represent a saving on feed costs? **A.** Due to the amount of initial investment there is likely to be a small premium to start with but this will come down as scale increases. It is not 1:1 yet but that is the ultimate goal, bearing in mind the whole development has to be economically viable to begin with to stimulate innovation and investment.

Research and funding

13. UK Aquaculture Initiative and other Research Council/Innovate UK activity. Charis Cook, BBSRC.

http://www.seafish.org/media/1689595/aciq_apr17_nercbbsrc.pdf

The joint BBSRC-NERC UK aquaculture initiative programme, with co-funding from Marine Scotland Science, Cefas, the Food Standards Agency and Food Standards Scotland aims to develop a healthy, safe and sustainable UK aquaculture system. Funding comes to £6 million over five years to cover an innovation project, capacity-building research projects, networks in finfish and shellfish and a research and innovation strategy. The aim is to build UK academic capability and underpinning capacity to meet the long term needs of the aquaculture industry, and to encourage cross-discipline working, as well as draw in new researchers to the aquaculture sector, to ensure knowledge exchange between the academic science base and industry through the support of effective networking between academic groups and businesses.

A news call for innovation projects will be announced at the end of 2017 for 2018. This will be informed by ARCH-UK.
Action: Provide NERC and BBSRC contact details.

14. Blue New Deal Action Plan. Chris Williams.
http://www.seafish.org/media/1689598/acig_apr2017_newbluedeal_nef.pdf
The Blue New Deal is an action plan for the UK coast. Based on existing potential growth estimations for different types of aquaculture, and for respective countries and regions of the UK, NEF estimates that aquaculture production could, on average, support 1,618 additional jobs throughout the UK coast over the next five years. When accounting the indirect jobs supported by the sector through supply chains expenditures (spill overs on regional economies), aquaculture on the coast could support an additional 3,560.
Discussion

- There were comments over the NERC/BBSRC aquaculture initiative and their requirement to engage with industry, and the many invites that come to industry (and their representative organisations) to support these research initiatives. The issue is that there are different rules on funding to cover the costs for academia and industry, and as such, industry does not receive travel and subsistence expenses for their support. Industry views are crucial for strategic direction so the ask was for some level of funding to support industry engagement otherwise it is difficult to justify the time spent (to members).

15. Date of next meeting.
The next meeting is on Tuesday 26 September at Friends House, London.