

BVA policy position on UK sustainable finfish aquaculture – Executive Summary

Introduction

As the world population continues to grow, global consumption of animal-derived food is rapidly increasing¹. This provides challenges in protecting the welfare of all animals involved and minimising the impacts of our food production on the environment, climate change, habitat loss and waste. In response to this challenge, BVA launched its [position on UK sustainable animal agriculture](#) in 2019. This position now seeks to provide a similar vision for finfish aquaculture in the UK.

With wild stocks of many species declining and capture fisheries around the world at their limit, aquaculture plays a significant role in meeting growing demands for fish protein to feed the global population. Aquaculture now produces 50% of the fish consumed, and this is predicted to increase to 70% by 2050. To meet demand, many nations will need to develop robust aquaculture industries, and it is important this happens sustainably. It will also be important to promote the benefits of sustainable consumption properly valuing quality animal-derived products, as well as the concept of “less and better” to help ensure the demand itself is more sustainable.

Aquaculture is one of the UK’s key strategic food production sectors, helping to underpin sustainable economic growth, both in rural and coastal communities and in the wider economy. It is particularly important in Scotland, providing essential jobs in remote and rural communities. However, there have been questions raised as to whether aquaculture can ever truly be considered sustainable. This is a complex question, with and as in any food production sector, on land or in water, there are many wide-reaching environmental, ethical and economic considerations to take into account. There are also many knowledge gaps, and aquaculture covers a wide array of sub-sectors focused on production of hugely varied taxa in similarly diverse production systems, which makes it impossible to answer.

Sustainable aquaculture can be defined as aquaculture carried out in a way that meets the needs of the present without compromising the ability to meet the needs of the future². Sustainable aquaculture should be undertaken in a way that is environmentally, ethically, and economically acceptable for consumers, producers and wider society. As part of this, animal health and welfare should not be unnecessarily compromised to address human need and in order to be considered sustainable, aquaculture systems must work towards the positive health and welfare of all fish raised within them.

All forms of aquaculture are important for feeding the growing population, however there is a huge variety in the requirements and issues associated with each species. Since salmon and trout farming are the most significant sectors in the UK aquaculture industry, this position focuses on finfish. Most of the evidence and information included refers to these two types of fish, but many of the recommendations should also be applied to other finfish species being farmed in the UK. Many of the principles discussed will be relevant to other species farmed in aquaculture systems around the world, including cephalopods and decapods, but there will also be key differences which are not covered in this position. This position seeks to discuss the main sustainability challenges facing the aquaculture sector in the UK and make recommendations for how it may develop more sustainably. The role of this position is not to defend all aspects of current practice, and it will make recommendations for improvements where they are needed. The position will be reviewed over time and updated as the UK aquaculture industry evolves.

¹ Food and Agriculture Organisation of the United Nations (FAO) 2023. Livestock and the environment. www.fao.org/livestock-environment/en/ Accessed March 2023

² This definition is based on that used in the BVA Position on UK sustainable animal agriculture

Key topics discussed in the position

Animal health and welfare as a key sustainability objective

In order to be considered sustainable, aquaculture systems must work towards the positive health and welfare of all farmed animals raised within them. Animal health and welfare should not be unnecessarily compromised to address human want or need. This section considers key animal welfare issues including: mortality rates, stress and handling, gills, skin and fins, disease and biosecurity, parasites, medicines and treatments, vaccines, stocking density, water quality, and slaughter.

Sustainable resource management to protect and conserve species, habitats and biodiversity

As a health-centred profession and key stakeholder in the One Health agenda, the veterinary profession also recognises that policies relating to sustainable aquaculture must address the use of natural resources, protection and conservation of wild species, habitats and biodiversity in order to better protect the environment which both humans and animals share and reduce the ecological footprint of aquaculture as a whole. This section considers key environmental issues including: fish feed sourcing, predator control, escapes and interactions with wild populations, water pollution, effluent, and medicines in the environment, policy, legislation and planning permission, carbon footprint, and waste.

The role of the veterinary profession

Historically, veterinary professionals have not been as closely involved in the UK aquaculture sector as they are with terrestrial farming systems, and there is a significant shortage of vets with the correct expertise to provide useful guidance to the aquaculture sector. This section explores some of the barriers to this and highlights the key roles vets can play in the sector.

Welfare outcome assessment

BVA supports welfare outcome assessment in assurance schemes as a tool to drive continuous improvement of animal management and husbandry practices (including welfare at slaughter and food hygiene), in turn promoting high animal health and welfare. This section considers monitoring of health, resources and behaviour, and working towards positive fish welfare.

Emerging trends: breeding, technology, and innovation

The aquaculture industry has so far shown itself to be highly innovative, meaning it has been able to rapidly progress in recent years. This section considers innovations, including in relation to genetics and breeding.

Consumers and sustainable consumption of animal-derived products

It is important to recognise that fewer healthier and happier animals with better productivity have less of an impact at all levels compared to numerous animals with poorer health and welfare outcomes. Considering sustainable consumption and production together can therefore have a positive impact. This section considers the role consumers play in supporting sustainable aquaculture, and the role of the veterinary profession in influencing discussions around sustainable, healthy consumption.

BVA policy position on UK sustainable finfish aquaculture – Recommendations

Recommendation 1: Sustainable aquaculture should be undertaken in a way that is environmentally, ethically, and economically acceptable for consumers, producers, and wider society.

Recommendation 2: BVA should monitor any new research or evidence of new and emerging aquaculture systems in the UK, and consider developing additional positions on sustainable aquaculture for those species as appropriate.

Animal health and welfare as a key sustainability objective

Recommendation 3: Animal health and welfare should not be unnecessarily compromised to address human need. Aquaculture systems must work towards the positive health and welfare of all fish raised and used within them.

Recommendation 4: The definition of “animal” in the Veterinary Surgeons Act should be updated to “all animals other than man”, to bring it in line with more recent legislation.

Recommendation 5: To be considered sustainable, aquaculture systems must provide for the five animal welfare needs, positive health outcomes and adhere to WOAHS standards for animal health and welfare.

Recommendation 6: Practical and scientific research should be urgently undertaken to support keepers in being able to provide systems which offer stimulating living environments and allow for the performance of highly motivated behaviours; opportunities for positive welfare outcomes, such as comfort, pleasure, interest and confidence; and excellent health outcomes.

Recommendation 7: Urgent efforts should continue to be made to reduce the mortality rates of farmed fish, identifying and mitigating existing risks and staying aware of emerging threats.

Recommendation 8: Innovative methods or technology to identify and capture individuals with poor health and welfare without causing stress to others should be researched and developed.

Recommendation 9: To prevent potential harm to fish, thermal and physical treatments for lice should only be used within a welfare assessment structure and with veterinary advice.

Recommendation 10: Further research should be carried out to improve prevention and treatment options for all common parasites and diseases affecting the aquaculture sector.

Recommendation 11: Governments, regulators and pharmaceutical companies should address the issue of availability of vaccines and medicines for farmed fish, taking their role in social responsibility into account. Development of novel technologies and approaches should be encouraged, and regulatory mechanisms should be made more dynamic to enable these to have a clear and safe route to market.

Recommendation 12: Fish farmers should consider all aspects of fish health and welfare, to ensure a balanced approach, acknowledging that many complex diseases require a toolkit of control measures used in dynamic, strategic and planned ways. All treatments and interventions should be considered and managed through a veterinary health and welfare plan, ensuring appropriate advice is taken into account.

Recommendation 13: Veterinary professionals should develop their skills and knowledge to play a more active role in supporting fish welfare. Organisations such as BVA and FVS have a role to play in providing education and CPD, as well signposting to useful information. Veterinary schools and the Veterinary School Council should work to include more information on aquaculture as part of the veterinary curriculum.

Recommendation 14: All those involved in the harvesting of fish should familiarise themselves with, and adhere to, best practice to promote positive fish welfare during harvesting. the [BVA position on the welfare of animals at slaughter](#) provides useful guidance.

Recommendation 15: The UK Governments should provide specific legislative protections for the welfare of farmed finfish, including at slaughter. The UK Welfare of Animals at the Time of Killing regulations should include the stunning of farmed fish (including detailed requirements of key parameters), alongside general welfare protections at slaughter.

Recommendation 16: Innovative stunning technology should be further developed and used as widely as possible to improve welfare at slaughter.

Sustainable resource management to protect and conserve species, habitats and biodiversity

Recommendation 17: Policies relating to sustainable aquaculture must address the use of natural resources, protection and conservation of species, habitats and biodiversity in order to better protect the environment which humans, domestic and wild animals share, and reduce the ecological footprint of aquaculture as a whole.

Recommendation 18: Research into alternative feed sources should continue to reduce the pressure of wild stocks, but this must not be at the expense of farmed fish welfare. A One Health approach is required.

Recommendation 19: Any ingredients used in fish feed must be sustainably sourced, including, but not limited to, those currently coming from wild marine environments.

Recommendation 20: To progress towards being a key stakeholder in the production of insects as a food source, the veterinary profession should develop further understanding and specific expertise in relation to insect rearing health and welfare issues, husbandry systems and assuring food safety for human consumption.

Recommendation 21: Methods to control seals and other predators must carefully balance fish welfare and the welfare of the predators. As with all wildlife control, the first consideration should be measures to deter and prevent access, before any control measures are taken. Further research into all possible methods of prevention should be urgently undertaken to allow the sector to work towards an agreed direction of travel. Planning policies should support use of sea pens which prevent seals accessing pens. The aspiration is to eventually find solutions that best protect fish welfare without unnecessary welfare harms to wild predators such as seals. Humane destruction of predators that do become trapped in pens and cannot escape or be safely removed should however be available as a last resort to prevent them suffering and to protect the welfare of the farmed fish.

Recommendation 22: Further research should be conducted to fully understand the impacts the presence of predators has on fish health and welfare, and how this can be mitigated.

Recommendation 23: Keepers should make all reasonable efforts to prevent fish from escaping, embracing new innovations which are shown to reduce the likelihood. Where escapes do occur, they must be reported and mitigated as much as possible.

Recommendation 24: Research should be conducted to establish any role aquaculture may be playing in the decline of natural fish populations.

Recommendation 25: Medicines regulations should be reviewed and harmonised, to ensure animal health and welfare, human health and environmental health concerns are all appropriately considered. This should include all regulatory bodies and must be robust, transparent and evidence based.

Recommendation 26: The industry should look to embrace innovation which makes incremental improvements in existing systems/practices in the immediate term, whilst also considering more fundamental approaches with new or very different systems/practices which will make a bigger impact. Innovative solutions of providing medicines without discharge should continue to be developed and researched.

Recommendation 27: More research is needed to establish clear and measurable maximum levels for environmental contamination, to develop a coherent view of what a biologically or ecologically significant effect of medicines discharges may be.

Recommendation 28: The cost-benefits of various medicines used in fish production needs to be carefully considered and use monitored. Consideration should be given to fish welfare, environmental impacts and public opinion. Whilst closed land-based treatment systems may have some advantages, these will need to be carefully controlled. The use, advantages and

disadvantages of such systems will need to be properly communicated to the profession and general public.

Recommendation 29: Planning regulations and farm licensing procedures should be proportionate, streamlined, evidence-based, and dynamic, with the environment and fish health and welfare both being central to decision making.

Recommendation 30: The aquaculture sector should continue to reduce its carbon footprint and to produce less waste. New innovations, methods and technology should be embraced, and any potential for diversification considered, but all changes must be fully considered to ensure they do not negatively impact on animal welfare.

Recommendation 31: Individual farms and the wider aquaculture sector should ensure they can identify areas impacting their carbon footprint and focus efforts on where they can make the most significant reductions. They should also develop risk assessments and adaptations plans to respond to the threats climate change is likely to pose.

The role of the veterinary profession

Recommendation 32: Veterinary professionals should play an active role in aquaculture, as part of a vet-inclusive team.

Recommendation 33: All veterinary surgeons should be able to articulate the contributions that the profession can make to the sustainable aquaculture agenda; at the levels of individuals (communicating directly to animal keepers and owners), communities (eg veterinary practices serving as credible and informed animal welfare hubs) and nationally (eg veterinary associations developing and advocating policy).

Recommendation 34: The veterinary profession should ensure there is increased visibility of aquaculture within the veterinary industry, particularly for students at university, and encourage all vets to improve their understanding of the sector.

Welfare outcome assessment

Recommendation 35: To avoid oversimplification when considering how different production systems address animal health and welfare needs, animal health and welfare outcome assessments should form part of production system key performance indicators.

Recommendation 36: The welfare needs of cleaner fish introduced to pens must be considered and monitored. Further research is needed to ensure we understand the husbandry needs of all cleaner fish species, and how best to measure their welfare outcomes.

Recommendation 37: Further research should be undertaken to better understand fish welfare needs and what a good life represents. This should be a high priority for the sector.

Recommendation 38: Development of new and improved monitoring techniques should be encouraged, including those which reduce the need for handling fish. Welfare assessments which account for large numbers and do not interfere with fish are urgently needed.

Recommendation 39: BVA would welcome the further development of animal welfare metrics across species and sectors where they do not currently exist so that indicators of positive welfare, emotional and behavioural states are incorporated into welfare outcomes assessment and lifetime welfare assessment where possible. In the meantime, keepers should improve welfare assessment through practical implementation of the existing knowledge on welfare, using the best available evidence and expert opinions where this is lacking.

Emerging trends: breeding, technology, and innovation

Recommendation 40: Whilst BVA recognises the role of new technologies and innovative methods, particularly in the aquatic environment, in monitoring animal health and welfare outcomes, addressing animal health and welfare conditions and optimising the contribution of each fish to aquaculture systems, automatic systems should not replace either the regular assessment of welfare and behavioural needs by skilled veterinary professionals and keepers, or appropriate human interventions.

Recommendation 41: New technologies and innovative models used to improve the contribution of animals, be that in terms of the production of food, animal feed or environmental goods, must not compromise the welfare needs of the animals in question.

Recommendation 42: Members of the veterinary profession should educate themselves on new technologies to enable them to play a role in communicating them to the public, correcting misunderstandings and highlighting any risks.

Recommendation 43: Further consideration should be given to how breeding and genetics can be used in an ethically responsible way to improve animal health and welfare within sustainable aquaculture

Recommendation 44: BVA should highlight the benefits and risks of gene editing for animal welfare, to support evidence-based decisions over its potential future use.

Recommendation 45: Rigorous research should be undertaken to assess the safety of any new technologies which may benefit fish health and welfare or sustainable production.

Consumers and sustainable consumption of animal-derived products

Recommendation 46: The aquaculture sector needs to improve communication with the public to dispel common misconceptions, and engage with stakeholders on initiatives to tackle the challenges that exist. Veterinary professionals and organisations also have a role to play in educating others on current UK standards and advances in farmed fish welfare.

Recommendation 47: UK governments urgently need to introduce clear, streamlined legislation which standardises the conditions in which fish can legally be farmed and provides confidence to consumers on minimum standards. Farm assurances schemes should then produce standards which go above and beyond the legislation and further improve conditions for fish and the environment.

Recommendation 48: Within the context of One Health, the veterinary profession should promote the benefits of sustainable consumption and the concept of “less and better”, which sees some citizens reduce consumption of animal derived products, whilst maintaining proportional spend on high animal health and welfare products. The role of farmed fish should be considered as part of this sustainable diet.

Recommendation 49: The veterinary profession should promote the benefits of properly valuing quality animal-derived products, where quality encompasses good animal health and welfare, food safety, environmental protection and fair returns for producers.