



*European Parliament Forum on Recreational Fisheries and Aquatic Environment*

## REPORT

### **Making fish farming more sustainable Eco- friendly solutions to tackle escapees, sea lice and other challenges**

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European Parliament

**MEP Nils Torvalds** welcomed the participants and stated that decision makers and civil society are increasingly aware of the fact that – in order for people to be fed with good seafood in Europe and worldwide – there is the need to take care of the resources. He argued that, over the past years, neither fish farming nor recreational fisheries have been taken seriously into account in the discussions about the Common Fisheries Policy (CFP) and sustainable fisheries.

MEP Torvalds then introduced and welcomed the different guest speakers and invited them to discuss different approaches to sustainable fishing and fish farming, highlighting that this would be an important contribution for a further discussion within the European Parliament's Committee on Fisheries (PECH).

**Øyvind Fjeldseth** presented the perspective of the Norwegian anglers on aquaculture and highlighted the problems of escapees and sea lice. He explained that in Norway there are approximately 1000 farmed salmon per wild salmon. To this regard, he added that the main concern for anglers is the progressively lower number of returning spawners to the rivers. In Norway this number is flatted out around 400 000 of returning spawners, which is way lower than what should be expected from a country with such a long coast. He then explained that the anthropogenic factors affecting the wild salmon population are escaped farmed salmon (*genetic introgression*) and sea lice and stressed that both issues need to be addressed in a timely manner.

As for *Genetic introgression*, Øyvind Fjeldseth explained that if the farmed fish spawns together with the wild fish, the survival rate of the offspring is further reduced, generating problems on the long-term. In Norway, about 200 000 salmon escape from farms each year, which is a high number



compared to the 400 000 returning salmon to the Norwegian coasts each year. He also explained that escaped salmon have already affected the genetics in 66% of 175 surveyed salmon stocks. He suggested that possible solutions to tackle this problem are salmon sterilisation – despite the fact that this practice could raise animal welfare concerns, and the removal of escaped farmed salmon from rivers – although it is very difficult to differentiate the fish in the running rivers.

As for the sea lice issue, Øyvind Fjeldseth explained that it is a natural parasite, which is deadly in large number, especially for young and small fish. He presented a 2017 analysis about the estimate mortality in certain Norwegian rivers caused by sea lice infections, showing that in some rivers the estimated mortality is even 80% compared to a general trend of 20%. He stressed that sea lice also cause a huge economic loss to the aquaculture industry as treatments are very costly - e.g. Norway spends 1 billion euro each year to face the sea lice problem.

He then argued that the use of chemical, lasers and mechanical solutions has increased over the years as “sea lice management solutions”, however, he observed that this considerably affects the fish mortality.

Øyvind Fjeldseth stated that the EAA supports a shift towards more sustainable aquaculture. In particular anglers demand:

- A gradual transition towards closed facilities at sea/on land;
- A reduced genetic impact from escaped salmon and actions to prevent escapees;
- A more effective removal of farmed salmon from the rivers;
- More recirculating aquaculture systems (RAS) facilities.

He concluded that science must be the basis for every policy when it comes to the use of natural resources and that strict regulations are not necessarily negative for growth; instead, they can make the industry much more efficient.

[Petter Arnesen](#), representative of the Federation of Norwegian Industry, presented the “Roadmap for sustainable growth in Norwegian aquaculture”. He explained that the idea behind the roadmap is for farmed Norwegian salmon to become the most sustainable and eco-friendly seafood product worldwide. He observed that – in order to meet the increasing global food demand – there is the need to produce more seafood in the form of fish farming.

Petter Arnesen explained that salmon production in Norway flattened out, mainly because there are no more sites and because there is a lack of production capacity. In addition, he underlined that the biggest growth restrictions today for the salmon industry are represented by sea lice and escapees. As for the latter, he argued that new standards and regulations introduced in Norway are contributing to lower down the level of escapees.



Petter Arnesen then noticed that there is an increasing demand for fish farming in the sea in what he defined as the “battle for ocean space”. However, he stressed that growth cannot come at the expense of the environment, but it must be pursued in a sustainable way. To this regard, the Federation of Norwegian Industry has worked on a Roadmap, which outlines the path for the Norwegian fish industry of the future, with the aim of producing health salmon in a sustainable and economically sound way. In this sense, thanks to technological innovations and increasing investments, they plan to have escape-proof installations by 2024 and sea lice free installations by 2027.

In conclusion, Petter Arnesen affirmed that the sector needs an innovative and proactive approach to solve these challenges. Among the innovative measures to be adopted, he identified:

- The traffic light system, which outline a green zone – where the industry can growth – a yellow zone – where the *status quo* is maintained – and a red zone – where production needs to be reduced;
- Development licences that will spur new technological concepts to tackle the industry’s space and environmental problems. Among them, it is worth mentioning the development of closed containment systems at sea.

[Urszula Budzich-Tabor](#) presented the challenges and opportunities of aquaculture producers at the local level, from the perspective of the European Commission’s FARNET Support Unit.

She explained that FARNET supports the capacity-building of local farmers and promotes sustainable fisheries and aquaculture across Europe. She explained that at community level they support the *fisheries local action groups (or FLAGS)* which are partnerships of public, private and social actors, whose projects are much more connected, efficient and interactive compared to the traditional top-down funding approach. She explained that under the EMFF funding, FARNET supports this local approach in 20 Member States by overseeing around 2000 projects.

Urszula Budzich-Tabor also observed that most FLAGS are dealing with marine fishing production, while there are a few projects on the ground that are dealing with aquaculture. To this regard, she explained that one of the goals of FARNET is to build capacity of the FLAGS to support the aquaculture sector more efficiently.

She then described the FARNET strategic approach, which consists in identifying the key challenges faced by aquaculture producers in FLAGS areas – e.g. community acceptance, health and environmental concerns, hostile legislations and licence systems etc. – and providing support to help aquaculture producers to face these challenges. She mentioned that examples of support actions could be:



- Promoting consumption of products coming from local sustainable aquaculture facilities;
- Facilitating linkages with other actors in the community – e.g. gastronomy, tourism – and with research;
- Capacity building for producers to improve product quality and reduce the environmental impact;
- Raising awareness about sustainable aquaculture products.

In conclusion, Urszula Budzich-Tabor presented several initiatives managed by FLAGs which vary according to the different types of aquaculture instalments.

[Thue Holm](#) and [Björn Geelnard](#) presented examples of sustainable land based aquaculture recirculation systems.

[Thue Holm](#) presented the experience of *Atlantic Sapphire AS*, a Norwegian company founded in 2010 by entrepreneurs coming from the land base aquaculture industry and from the Norwegian organic salmon industry. He observed that the main area of consumption of organic salmon in the world is the US and that exporting fish to this country always meant huge logistical and transport costs for the Norwegian industry and resulting delay on the freshness of the fish. Therefore, these producers decided to merge their knowledge of farming “on land” with the knowledge of salmon farming in order to enable the farming of salmon directly in the US.

Thue Holm explained that this new emerging technology started to develop in Europe, where there are adequate subsidies for aquaculture, with the elaboration of a commercial-scale *BlueHouse* in Denmark, in 2011. He argued that, despite initial disease issues, early maturation and off-flavour problems, this farm proved to be successful and attractive to investors. Indeed, the company raised 150 million euros over two years to finance and expand operations in Denmark and Florida.

He then observed the major critics towards this land-based system which are related to:

- high investment costs;
- high depreciation on equipment in order to have feasible production costs.

Thue Holm counter-replied that traditional fish farming is also facing increasing costs related to fish mortality (sea lice) and to bring and keep fish on land, especially due to the lack of fishing space in the sea. Instead, he emphasised that farming on land:

- takes the logistical costs away;
- makes handling, harvest and traceability easier.

In conclusion, Thue Holm affirmed that finding alternative sources of supply growth is important for the whole industry while new technologies and methods – e.g. closed facilities and the traffic light



system – could change the picture of sustainable in-land farms, both economically and environmentally.

**Björn Geelnard** presented *FIFAX AB*, a Finnish company that aims to farm rainbow trout in an innovative and environmentally friendly manner through land based aquaculture. The company is based in the Åland Islands, where almost 50% of farmed rainbow trout in Finland comes from.

Björn Geelnard explained that FIFAX – a land-based fish farm – took off in 2014 and it will be completed by the end of 2018. He then described the structure and the capacity of the plant, highlighting all the aspects the company had to consider in the construction of the plant, that were:

- The increasing output of phosphorus and nitrogen in the process water, which is not allowed in the Åland Islands and which has led the plant to be a closed system;
- The high cost of transporting water from the Baltic Sea.

He then identified the main challenges the plant may face:

- Feed and eggs, which represent a constant risk in terms of disease;
- Legislation, e.g. the water legislation does not acknowledge the phenomenon of fish-farming on land;
- Technology, e.g. suppliers of technology don't meet the demand of the sector and deliver invalid technology;
- Water management within the plant.

In conclusion, Björn Geelnard emphasised that sustainability constitutes the core of the whole project, even if the company needs to bear the deriving costs such as energy, seawater usage, process water cleaning, chilling the water in the plan, processing of by-products, re-usage of heath. In addition, there are investment costs that can affect the company's competitiveness compared to farms that operate in cheaper circumstances; however, he affirmed that there are market sectors ready to pay for sustainability.

### **Reaction from the European Commission**

**Felix Leinemann** – Head of Unit for Blue Economy Sectors, Aquaculture and Maritime Spatial Planning of the European Commission - congratulated the speakers for the interesting exchange of view.

He first commented that Norway produces as much as fish in volume as the EU as a whole. He then added that in the EU 30 % of aquaculture covers Finfish, 20 % fresh water fish and 50 % molluscs; however, production of Finfish could be reduced by a third after Brexit.



He stressed that the objective of the Commission is to have a sustainable “blue growth” and that aquaculture is fully included in this objective. He argued that any decision that affected aquaculture has been taken at national level - e.g. environmental assessment, licencing decisions, special planning, the marine strategy framework directive (whose tasks are mostly carried out by Member States). Accordingly, the Commission encourages Member States to make good use of the maritime spatial planning directive when they allocate space to the farms.

He then spoke about the open method of coordination between the European Commission and the Member States in which the Commission promotes best practices and encourages dialogue among stakeholders. He mentioned that the main forum of discussion is represented by the Aquaculture Advisory Council.

Felix Leinemann affirmed that a financial support of 1.2 billion euros is available under the EMFF for innovative and green solutions for fish farming; this funding should be spent according to the multiannual national plans. On the research side, he also explained that the Commission invests in research projects on topical issues such as sea lice, aquaponics, multi-trophic aquaculture, closed containment systems, off shore aquaculture, disease management etc. He added that these projects are all funded under the Horizon 2020 programme and that also Norway is involved.

He then informed that Commissioner Karmenu Vella asked a high-level scientific advice group *“how to get more food and biomass from the ocean while keeping them sustainable for future generations”*. The results were included in the Report [“Food from the Ocean”](#) which points to sustainable fisheries, comprehensive capture and culture policies and integrating aquaculture and maritime culture.

## Debate

[Jan Kappel](#), Secretary General of the EAA, asked how reliable the traffic light system in Norway is and how it is managed.

[Øyvind Fieldseth](#) and [Petter Arnesen](#) replied that the system will be fully in force in 2020 and still needs to be improved to be science-based. They explained that in the red zone farmers would be allowed to increase their production if they document they can manage the sea lice issue.

[MEP Nils Torvalds](#) asked how the dialogue between the industry and the anglers association works in Norway.

[Øyvind Fieldseth](#) and [Petter Arnesen](#) replied that Norway has a history of open dialogue between legislators, industry and NGOs. Discussions are often difficult but is still important to come together. Common problem in these discussions is the need to increase production. To achieve this, they replied that effective solutions to sea lice and escapees must be found.



[Jan Kappel](#), Secretary General of the EAA, asked how the speakers would define organic farming and if land based aquaculture could still compete with the “organic” labelling.

[Thue Holm](#) replied that in the EU organic salmon farming is only possible in net pens at sea and that companies like Atlantic Sapphire cannot certify their products as organic since they do not meet the conditions required by the Organic Regulation. About the labelling issue, he affirmed that there is a problem in the EU with respect to seafood traceability and that consumers hardly get the right information.

[Felix Leineman](#) replied that, according to EU legislation, “organic” means “close to nature” and that “organic” is not a synonym of “good for the environment”. In addition, he stressed that the EU has a precise regulation on labelling and that lack of information is more related to cultural issues rather than a lack of rules. He concluded that the examples previously presented clearly are cases of environmentally friendly and sustainable aquaculture.

[Emil Bremnes](#) from the North Norway European Office asked how far the research has come in the field of sterilised farmed salmon and if the speakers see any viable future where sterilised salmon can be farmed.

[Petter Arnesen](#) replied that the current method is the triploids even if it raises some animal welfare concerns. He explained that research for viable solutions is still ongoing and includes gene editing through the CRISPR project.

[Claudia Orlandini](#) from LIFE asked what the impact of the landing obligation on the European feed market for aquaculture will be, especially in terms of trends, prices and quality of the feed.

[Felix Leineman](#) replied that the European Commission’s report [Food from the Oceans](#) also deals with the issue of species that are usually not caught. In addition, he suggested that fishermen associations should create campaigns to promote less popular fish, stressing that there is a lot of fish processing waste which could be used in other ways.

[Petter Arnesen](#) added that feeding is extremely important in aquaculture. He stressed that there should be an obligation for every fisherman to bring the caught fish to land and use it as feed in aquaculture.

[MEP Nils Torvalds](#) affirmed that the landing obligation is a controversial topic as well as some of the methods that are suggested to improve selectivity such as pulse fishing.

He concluded the event by asserting that there are many challenges ahead for both the Norwegian and European aquaculture industries. Sustainable aquaculture will likely remain a topical issue in the European Parliament’s Committee on Fisheries (PECH).