



Agenda item 6.2  
For information

**Council**

**CNL(16)47**

*Supporting sustainable aquaculture growth  
alongside a thriving recreational fisheries sector*

*Reducing the impacts from sea lice and escapes on wild fish in Scotland in  
parallel with NASCO's international goals*

*(Tabled By EU – UK (Scotland))*



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## Introduction

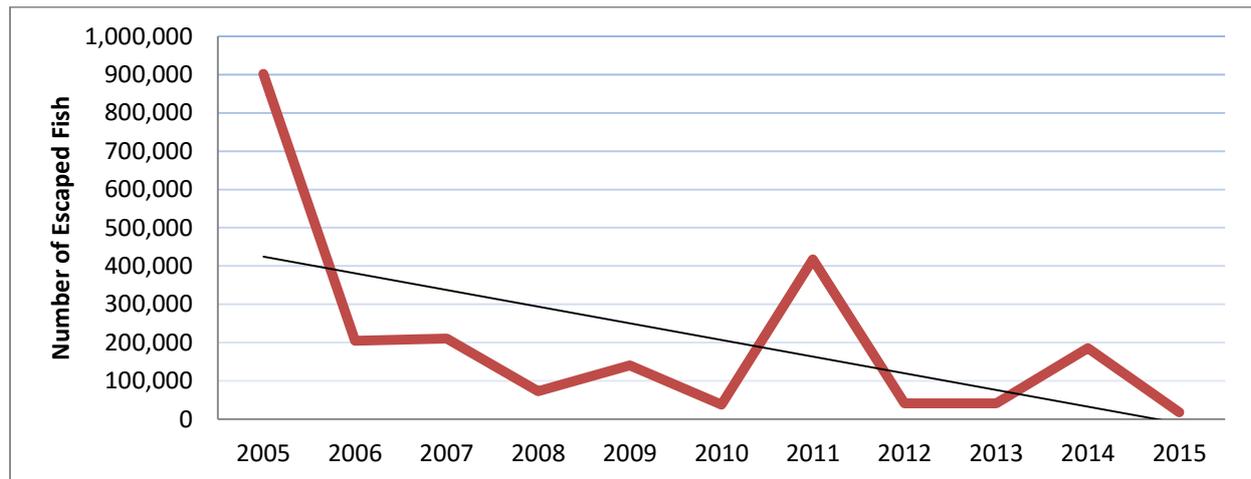
Scottish Government is fully supportive of the sustainable growth of aquaculture alongside a thriving recreational fisheries sector. Scottish Government supports the aquaculture industry to achieve its sustainable growth targets of 210,000 tonnes (whole wet) finfish and 13,000 tonnes shellfish by 2020, with due regard to the environment. If these targets are met the Scottish aquaculture industry will be estimated to have an annual turnover of well in excess of £2 billion and support over 10,000 jobs in some of Scotland's most fragile rural communities. The EU has committed to pursuing significant growth of the aquaculture sector under the Blue Growth Agenda. Scotland has the most developed salmon farming industry in the European Union with 94% of the EU's total farmed salmon production and is Scotland's No. 1 food export.



Marine Scotland's mission is to manage Scotland's seas for prosperity and environmental sustainability, and develop aquaculture in line with the European Union's Blue Growth Agenda and Scotland's National Marine Plan (NMP). The NMP [<http://www.gov.scot/Resource/0046/00465865.pdf>] sets out our national strategy to ensure sustainable economic growth of marine industries while taking into account environmental protection, and sets out policies with economic, social and marine ecosystem objectives. The NMP outlines protection for marine and special protected areas and the continuing presumption against finfish aquaculture development on the North and East coasts of Scotland in order to help safeguard migratory fish species. Scottish Government recognises the need to mitigate the impacts of salmon farming on wild fish, including salmon and trout, which are iconic and economically important species in Scotland, and supports NASCO's goals of minimising any potential impacts of aquaculture on wild Atlantic salmon. It is the aim of both the Scottish Government and the Scottish aquaculture industry to reduce interactions of aquaculture with wild fish by lessening incidences of escape and managing sea lice to the lowest achievable level.

## Containment

The Scottish fish farming industry has made significant improvements in containment in recent years (Fig. 1) and Scottish Government continue to promote best practice. Escapes reported in 2015 are the lowest on record since statutory reporting was introduced in 2002. All authorised fish farm businesses are inspected under the Aquaculture and Fisheries (Scotland) Act 2007 for satisfactory measures to contain fish and prevent escapes. Escapes, suspected escapes, and circumstances which give rise to a significant risk of escape, must be reported to Scottish Ministers.



**Figure 1 - Timeline of Scottish Fish Farms Escapes (2005 – 2015)**

The Aquaculture and Fisheries (Scotland) Act 2013 enables Scottish Ministers to make regulations requiring the Scottish finfish farming industry to adopt a Technical Standard for fish farm equipment and ensure a suitably trained workforce. In June 2015 the Scottish Government published a Technical Standard for Scottish Finfish Aquaculture [<http://www.gov.scot/Publications/2015/06/5747>]. Fish farms will have until 2020 to comply with the new standards. Alongside statutory training, the new Standard will ensure all finfish farms in Scotland have site specific appropriate equipment and operational procedures to help prevent escapes in the future. Many farms are well on the way to meeting that standard already.

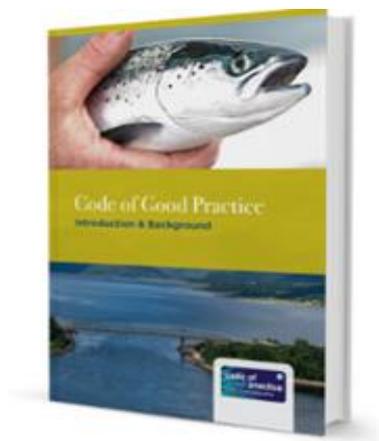
## Sea Lice

### *Current Regime*

Scotland has a legislative and regulatory framework in place which provides the right balance between growing aquaculture and protecting the environment. All new and modified fish farm developments are assessed by the relevant Local Authorities to determine whether planning permission should be granted. Advice is sought from statutory consultees including District Salmon Fishery Boards. Farms are licensed and controlled by the Scottish Environmental Protection Agency to ensure environmental impacts are assessed and managed and all farms are required to comply with stringent Environmental Impact Assessment legislation.

In Scotland Fish Health Inspectors are appointed by Scottish Ministers to enforce fish health legislation. Fish farm businesses are authorised and subject to inspection for containment measures, disease control and sea lice management. Sea lice are regulated by several key pieces of legislation:

- The Aquaculture and Fisheries (Scotland) Act 2007: allows assessment of sea lice levels on-site and requires that satisfactory measures are in place for the prevention, control and reduction of sea lice.
- The Aquaculture and Fisheries (Scotland) Act 2013: any such person carrying out fish farming must be party to a farm management agreement or maintain a farm management statement.
- The Fish Farming Businesses (Record Keeping) (Scotland) Order 2008: records in relation to staff sea lice training, sea lice records, medicinal records and sea lice responsibility on farm.



Alongside legislative requirements, the Code of Good Practice for Scottish Finfish Aquaculture (CoGP) provides a standard against which farms are measured through independent auditing. The CoGP includes the National Treatment Strategy for sea lice and Integrated Sea Lice Management (ISLM) which is based upon current scientific knowledge and practices, and is presently being reviewed by industry.

Fish Health Inspectors conduct a risk based surveillance schedule of all registered fish farms. In addition to the surveillance schedule the Fish Health Inspectorate operate a risk ranked enhanced sea lice inspection regime, based on several indicator factors and previous sea lice performance, and fully investigate sea lice control practices on site against legislation and CoGP recommendations.

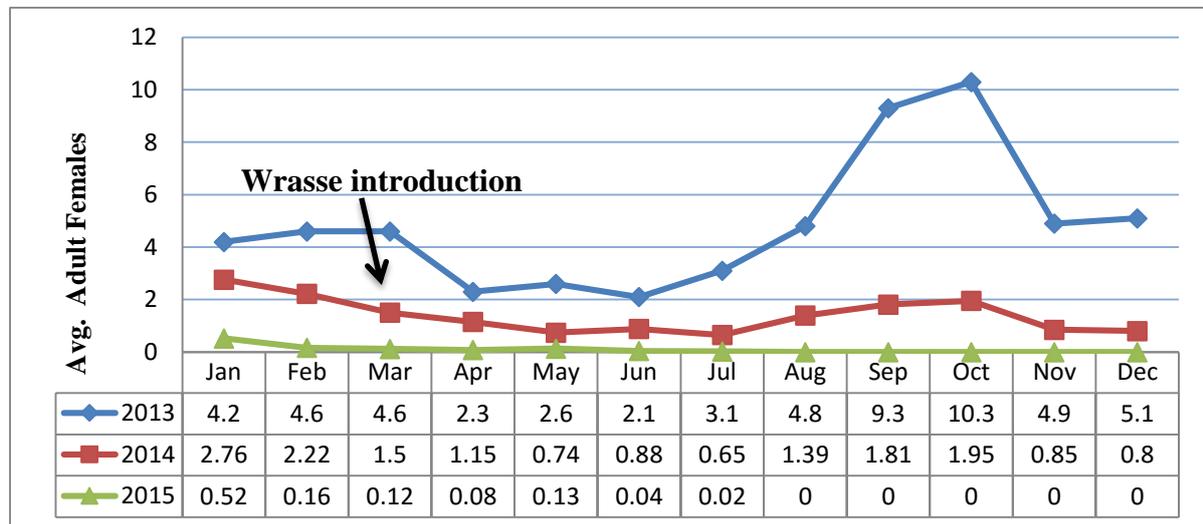
The Scottish Salmon Producers Organisation produce quarterly reports on fish health management, providing information for 30 regions across Scotland broadly mirroring those of the salmon and sea trout fisheries. Fish health reports include information on farm management areas, stocking, fallowing, strategic sea lice treatments and average sea lice counts [Published online: <http://scottishsalmon.co.uk/category/industry-information/sspo-publications/>]

**Recent improvements to on farm sea lice management and investment in cleaner fish**

The use of cleaner fish to control sea lice as an environmentally friendly biological control is recognised as one of the key tools to control sea lice on Scottish fish farms. In 2014 Scottish Government match funded £22 million to establish the Scottish Aquaculture Innovation Centre with improved sea lice control as a key priority. Scottish Government is supporting the development of cleaner fish hatchery technology in order to produce cleaner fish on a commercial scale. In 2015 250, 000 wrasse and 800,000 lumpfish were produced and deployed from hatcheries in Scotland. We will continue to monitor and support the development of this important production sector.



In several areas, the use of cleaner fish have been shown to significantly reduce sea lice levels on site. In some cases this has resulted in zero or close to zero lice treatments alongside zero medicinal lice treatments [Figure 2].



**Figure 2 – Wester Ross Salmon Sea Lice Levels (Leps) Pre and Post Wrasse Introduction**

The Scottish industry are sharing information relating to cleaner fish use and best practice. They are also sharing knowledge on other innovative sea lice control methods such as the use of freshwater treatments, thermolicers, brush systems and the possible use of closed containment in the early production stages.

**Government and Industry Commitment to Improved Management**

The Aquaculture and Fisheries (Scotland) Act 2007 (AFSA) requires that satisfactory measures are in place for the prevention, control and reduction of sea lice. Scottish Government committed to review the interpretation of ‘satisfactory measures’ under AFSA 2007 and, in cooperation with the industry, has created a new sea lice management policy. This will work alongside the recommended treatment criteria in the CoGP with farms now being required to report to Marine Scotland’s Fish Health Inspectorate when set sea lice levels are reached.

All farms are now required to produce a site specific escalation action plan, to be triggered at levels above 3.0 average female lice. This reporting system will allow increased monitoring

during any escalation in sea lice numbers and intervention where it is demonstrated that satisfactory measures to control sea lice are not in place. Exceeding a level of 8.0 average female adult lice will result in enforcement action, including the potential to require reduction in biomass.

Scottish Government have worked cooperatively with the aquaculture industry to agree this new policy and industry in turn are also revising their own integrated sea lice management strategy. This will lead to future updates to the industry Code of Good Practice.

### ***Research and Future Interaction Management Improvements***

Scottish Government published its Aquaculture Science and Research Strategy in 2014 as an output from the Ministerial Group for Sustainable Aquaculture, and is providing the best science in order to address the issue of sea lice management in Scotland [<http://www.gov.scot/Resource/0045/00456584.pdf>]. This includes sea lice dispersal modeling of the Loch Linnhe system, one of the largest management areas in Scotland, and the recent publication of the Scottish Shelf Model (SSM).

In light of the SSM and dispersal modelling, Scottish Government along with industry, have committed to review the boundaries of Farm Management Areas to ensure that they are optimal for sea lice management. Latest science is also informing new planning advice being issued by Marine Scotland, including measures to protect Special Areas of Conservation and Marine Protected Areas, as recognised by Scotland's National Marine Plan, providing additional safeguards for wild salmonids.

Marine Scotland has embarked on a long term programme of strategic research to investigate potential risks to wild salmon from sea lice in the Scottish coastal environment. It will complement and extend an existing project currently being undertaken through the Scottish Aquaculture Research Forum, looking at the scale of sea lice impact on numbers of wild salmon returning to spawn. The objectives of the programme are to inform on interactions and impacts of sea lice of aquaculture origin on wild salmon populations, and to develop principles and tools which can help to improve management of sea lice on farms and reduce levels in the environment.

### **Future Vision for the Scottish Aquaculture Industry**

Aquaculture is an increasingly important industry for Scotland, helping to sustain economic growth in some of our most fragile rural, coastal and island communities, contributing towards local and international food security challenges and is a leading example for Scottish food and drink industries.

A challenge exists in growth capacity in inshore environments, where it is important to share resource responsibly and allow growth of all marine sectors, whilst safeguarding the natural environment. In the shorter term it is expected that expansion of the aquaculture industry will occur in higher energy, more exposed sites. Coupled with improved sea lice management, the added capacity of commercial cleaner fish production, new cage technologies and innovative production methods, the industry will aim to achieve its 2020 sustainable production targets under improved management in a shared space, beginning to design out current sustainability challenges.

In the longer term, Scottish Government will engage with the aquaculture sector to enable expansion of the aquaculture industry further offshore into the open sea using innovative engineering and design. Salmon producing nations will continue to share knowledge to allow industry development. Expansion into offshore waters should reduce interactions with migratory fish, and help to mitigate against some of the current fish health issues, including sea lice management.

Scottish Government will continue to support the sustainable growth of the Scottish aquaculture industry alongside a thriving recreational fisheries sector and continue to promote further reduction of fish farm escapes and better management of sea lice.