Department
for Environment
Food & Rural Affairs

The Alien and Locally Absent Species in Aquaculture (England and Wales) Regulations 2011

Post Implementation Review

Date: 20 July 2023

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1. Introduction and summary of approach

1.1. Introduction

This document presents a review of the effectiveness of The Alien and Locally Absent Species in Aquaculture (England and Wales) Regulations 2011 (ASR). This legislation implemented European Council Regulation 708/2007 (the Council Regulation)[1], which is now retained EU law, on the use of alien and locally absent species in aquaculture in England and Wales. This review is focused on the implementation of the ASR in England only, however some data is presented as aggregated data for England and Wales. A previous Post Implementation Review (PIR) of these regulations was conducted in 2016.

Note on terminology: while the terms 'non-native,' and 'alien' are broadly used interchangeably, for the purposes of this document we will refer to alien species. An alien species is defined in the Council Regulation[2] as:

(a) a species or subspecies of an aquatic organism occurring outside its known natural range and the area of its natural dispersal potential;

(b) polyploid organisms, and fertile artificially hybridised species irrespective of their natural range or dispersal potential.

1.2. Background on the aquaculture sector

In 2020, the first sale value of produce from UK aquaculture was around £1bn. Molluscan shellfish production was worth £15m and the total finfish aquaculture production was worth £993m. Scottish salmon accounted for most of the finfish value. In 2021, UK aquaculture employed 3,390 people, of which 2,739 were employed full time.

Aquaculture in England is split into the finfish, shellfish, and aquatic plant sectors. The finfish sector is subdivided into fish farmed exclusively for human consumption and those produced for use in recreational fisheries. Both parts of the finfish sector keep and feed juvenile fish, either bred on the farm or supplied by other businesses, until they are of marketable size. Molluscan shellfish farming is similar, in that juveniles often supplied by other businesses or sourced from

[1] Full title being Council Regulation (EC) No 708/2007 of 11 June 2007 concerning use of alien and locally absent species in aquaculture

[2] Article 3, paragraph 6: https://www.legislation.gov.uk/eur/2007/708/article/3

the wild, are placed in areas to promote growth and are recovered when they reach a suitable size. There are a handful of farms rearing crustacean shellfish; alien prawns for human consumption and native lobsters for restoration projects. For aquatic plants, aquaculture encompasses watercress production, water reed production, algae for industry (including macro algae, or seaweed) and the production of ornamental aquatic plants.

In 2020, the total English finfish production was worth £21m. The main finfish species farmed in England is rainbow trout, with just over 4,000 tonnes produced in 2020, valued at almost £13m. This species is produced both directly for consumption and to restock put and take fisheries. The next most valuable species is common carp, to restock angling ponds and lakes, valued at just over £6m. Both rainbow trout and carp are considered alien species. The remaining £2m comes from a variety of other smaller value finfish.

Total molluscan shellfish production in England had a first sale value of around £5m in 2020. The main shellfish species farmed are mussels, with almost 3,000 tonnes of native mussels, valued at almost £3m, and around 700 tonnes of oysters, primarily Pacific cupped oysters, valued at around £2m. Finfish and molluscan aquaculture in England together contribute around £26m per annum.

In England and Wales there are 316 fish or shellfish aquaculture production businesses (APBs), authorised under The Aquatic Animal Health (England and Wales) Regulations 2009 (AAHR). They consist of 146 salmonoid farms, which are mainly rainbow trout, and 170 farms for other species the majority of which are carp.

2. What was the rationale for intervention?

2.1. Background

Alien species are recognised as one of the key causes of biodiversity loss in the world. The costs of damage to the environment caused by alien species are incurred by society. This would be considered an external cost, as the individual actor responsible for the release of an alien species would not bear the full costs of damage from the release of the species.

Aquaculture is a commercial, profit-driven, sector. Without government intervention, the aquaculture sector is unlikely to take account of the potential cost of alien species introductions, since the costs would not be borne by an individual company but instead would be spread more widely. It is important that industry considers and addresses the environmental risk associated with the use of new species in aquaculture. The ASR provide a framework for regulators to prevent and minimise the impact of the introduction and spread of alien animals and plants while enabling industry to realise the benefits of farming these species, where this is possible without undue risk to the environment.

2.2. Key aspects of this regulation

The Council Regulation sets the framework for the ASR in England and Wales. This section presents a summary of key definitions and principles, from the Council Regulation and how they have been implemented in England through the ASR.

Scope of regulation

Under the Council Regulation aquaculture is taken to include the cultivation or rearing of aquatic organisms, which use aquaculture techniques as their basis. This covers most aquaculture production in GB. However, ornamental fish and aquatic plants are only covered by this regulation when they are reared or commercially farmed in GB for onward sale. Those that are imported and held in pet shops, garden centres, or contained in garden ponds or aquaria are explicitly excluded from the regulation.

The Competent Authority

GB administrations are required to designate a competent authority, which will take responsibility for ensuring compliance with the Council Regulation. Each competent authority may also appoint an advisory committee that will incorporate appropriate scientific expertise.

Under the ASR the competent authority for England is the Secretary of State. This responsibility has been delegated to the Fish Health Inspectorate (FHI) at the Centre for Environment, Fisheries and Aquaculture Science (Cefas) for introductions[3] and translocations[4] of aquatic animals, with input from the Plant Health and Seeds Inspectorate (PHSI) at the Animal and Plant Health Agency (APHA), where aquatic plants are involved. The ASR comes under the remit of the Cefas advisory body (committee) for aquaculture authorisations.

Permits

The Council Regulation provides for a system of permits governing the use of alien and locally absent species in aquaculture. Its purpose is to minimise the possible impact of these species and any associated non-target species on the aquatic environment and contribute to the sustainable development of the sector. Anyone intending to undertake an introduction or

[3] Defined in the Council Regulation: 'introduction' means the process by which an alien species is intentionally moved to an environment outside its natural range for use in aquaculture.

[4] Defined in the Council Regulation: 'translocation' means the process by which a locally absent species is intentionally moved within its natural range for its use in aquaculture to an area where it previously did not exist because of bio-geographical reasons.

translocation of an aquatic organism must apply for a permit from the competent authority. The intention is that such permits are granted only if the risk associated with the activities proposed by applicants can be considered low, or if the risk can be reduced to a low level by mitigating action on the part of the applicant.

ASR states that an application for, or to make changes to, an authorisation to operate an APB under the AAHR will also be considered as an application for an ASR permit.

The Council Regulation has been implemented this way in to avoid duplication of effort by industry and regulators.

Decision making process

Under the Council Regulation movements, i.e., introductions and translocations, fall into two categories:

(1) 'routine movements' - the movement of aquatic organisms from a source which has a minimal risk of transferring non-target species and which, on account of the characteristics of the aquatic organisms and/or the method of aquaculture to be used, does not give rise to adverse ecological effects; and
(2) 'non-routine movements' - any movement of aquatic organisms which does not fulfil the criteria for a routine movement.

In the case of routine movements, the competent authority may grant a permit, with conditions, if required. In the case of non-routine movements, an environmental risk assessment shall be carried out before a decision can be taken. Further detail for this process is set out in the Council Regulation.

ASR states that the costs associated with environmental risk assessments, contingency planning and monitoring must be borne by the applicant. The regulations also allow the competent authority 90 days to respond in writing to any applications and sets out provision for applicants to appeal any decision.

Exemptions

The UK Government ensured that the Council Regulation would not apply retrospectively, meaning that those already farming alien species were not required to go through the application and risk assessment process. Administrations retain the right to impose restrictions and require an environmental risk assessment for any listed alien species.

Article 2(5) of the Council Regulation is of particular importance, as appropriate authorities can exempt certain alien species from the permitting requirements of the Council Regulation, including the risk assessment process set out in Article 9. These species, listed in Annex IV of the Council Regulation, while technically alien to the administration, have typically been established in aquaculture for so long that retrospective regulation would be inappropriate.

At the introduction of ASR in 2011, a policy decision was taken to continue to apply pre-existing Defra policy under the Import of Live Fish (England and Wales) Act 1980 (ILFA) to managing the use of some alien and locally absent species in aquaculture, which are listed in Annex IV. As a result:

- Pacific oysters, Manila clams, rainbow trout and common carp movements to/from aquaculture do not require ASR permits. The aquaculture industry for these species was already well established by 2011, without any specific non-native species (NNS_ controls and it was felt these should not be applied retrospectively.
- Sturgeon, grass carp, arctic char, brook trout, zander, Wels catfish, African catfish and goldfish movements to/from aquaculture do require ASR permits. These species already had NNS controls in place under ILFA which were continued under ASR.

Enforcement

Part 3 of the ASR provide for enforcement powers, which fall within the remit of Cefas, specifically under the FHI.

3. What were the policy objectives of this measure?

3.1. Objective

The aim was to enable the economic growth of the aquaculture sector whilst protecting the aquatic environment from the potential damage that might arise from the introduction of new alien and locally absent species to the wild. For instance, where their introduction might result in adverse biological interaction with indigenous populations or cause changes to local habitats.

4. How effectively has this order been enforced and complied with?

4.1. Evidence sought for this PIR

This PIR has been informed through discussions with Cefas about how the ASR are used to regulate aquaculture and about the enquiries that Cefas have received about farming NNS. The evidence sought for this PIR is considered proportionate to the scale of the industry and the expected impact of the regulation.

In completing the previous PIR in 2016, a survey was distributed to key stakeholder organisations asking their experiences with ASR. Respondents suggested that the regulations had allowed

businesses to continue farming established alien species but had probably also had a small effect in disincentivising the introduction of new alien species. A stakeholder survey was not replicated for this PIR, as given the low response rate of the previous survey it was not deemed proportionate to do so.

4.2. Overview of alien species farms

While most English aquaculture sites farm alien species, ASR permits are not required for movements of carp, rainbow trout, Pacific oysters, and Manila clams, due to the Annex IV exemption as noted in section 2.2. Therefore, most alien species aquaculture in England are exempt from ASR.

Type of Aquaculture Facility	2016	2017	2018	2019	2020	2021	2022
Closed[5]	7	10	11	13	14	15	16
Open[6]	69	76	78	82	86	82	82
Total	**76**	**86**	**89**	**95**	**100**	**97**	**98**

***Table 1**: Number of sites authorised to hold alien or locally absent species in England and Wales (excludes sites holding Pacific oysters, Manila clams, rainbow trout & common carp)*

From 2016 to 2022, a further 22 farms have received authorisation to farm alien or locally absent species in England and Wales. While there has been some growth, the number of authorised farms has remained relatively steady. Between 2019 and 2022 the number of farms plateaued.

The main species that are authorised to be farmed at the 98 farms in 2022 are predominantly goldfish, char, orfe, trout and carp. There are also a small number of authorised tilapia, shrimp,

[5]*Note that a 'closed aquaculture facility' means a facility where aquaculture is conducted in an aquatic medium, which involves recirculation of water, and which is separated from the wild aquatic medium by barriers preventing the escape of reared specimens or biological material that might survive and subsequently reproduce.*

[6]*An 'open aquaculture facility' means a facility where aquaculture is conducted in an aquatic medium not separated from the wild aquatic medium by barriers preventing the escape of reared specimens or biological material that might survive and subsequently reproduce.*

and barramundi farms. Most of the NNS which industry have sought to farm were already established in the UK before 2011 and are therefore exempt from the regulations or are species which could be treated as a routine movement due to the low chance of escape.

4.3. Compliance

Overall, the ASR appears to be robust as there have been no new recorded threats from alien and locally absent species in aquaculture since the previous PIR was conducted in 2016. Adherence with the authorisations has prevented the introduction of new alien species into the environment, the introduction of which may potentially have an adverse impact on the surrounding environment.

Compliance with the ASR is routinely monitored by the FHI through their Aquatic Animal Health Disease Surveillance and Compliance Inspection Programme. Under this programme all farms are inspected at least once per year.

If the operator of an APB fails to comply with the conditions of their ASR permit, then the FHI can issue enforcement notices which require that operator to rectify the problem to a specific standard and within a specified timescale. Failure to do so could result in prosecution, such as a fine, or in the revocation of the authorisation to carry out that operation.

In addition to compliance inspections, FHI can undertake enforcement inspections if they are concerned about an operation. Generally, FHI carry out between one and two enforcement inspections per year. These are usually for sites moving alien species onto a site and farming them without a permit and for sites supplying other sites without a permit, where operators fail to operate in line with the conditions of their permit.

5. What were the original assumptions regarding the costs and benefits of this regulation, in comparison to the realised costs and benefits?

5.1. Costs

Average monetised annual costs of the ASR in 2011 were originally estimated to be £25,000 for the public sector. This figure included costs to Cefas for implementing and enforcing the ASR. The current budget allocation for the operational delivery of the ASR is around £40,000 per year, which includes the authorisation administration and inspections, routine inspections, enforcement actions, and policy advice and support to Defra. Inflationary pressures and the original estimates proving to be lower than actual costs have contributed to most of this increase.

There is no monetary cost for private businesses wishing to make enquiries to discuss an application or make any enquiries relating to the ASR. The administrative burden on businesses is considered to be low and most of the record keeping conditions are already required under the AAHR. The main burden for farms supplying ASR species for angling is due diligence, checking with the site owners that they are correctly permitted under the Keeping and Introduction of Fish Regulations 2015 (KIFR) to allow the stocking. For closed sites rearing stock for human consumption the burden is minimal beyond the initial application.

5.2. Benefits

The original impact assessment for the ASR[7] demonstrated that successful implementation of the policy would reduce the risk of new alien species released from aquaculture businesses damaging the environment, while allowing the industry to exploit some commercially desirable alien species, in a controlled way.

In 2022, there were 14 enquiries and no formal applications to introduce novel alien species. The FHI have advised that there have been no recorded ecosystem threats from the escape of alien species from aquaculture farms. Therefore, the policy is likely to have yielded benefits via preventing the release of alien species into the environment and helped to manage the environmental risks associated with farming NNS.

Once an alien species is established in the environment, it is often either extremely costly, or even impossible, to eradicate it. It is difficult to put a monetary value on changes in the state of the environment and changes to native biodiversity. The regulations reduce the risk of alien species from escaping aquaculture and because of this the benefits to society could be high given the excessive cost of controlling or eradicating invasive alien species. The impact assessment calculated the costs of eradicating the alien species topmouth gudgeon at £3m per year, as an example. However, as the costs of eradicating other potential alien species in unknown, it would be inappropriate to use these figures for value transfer to another alien species.

Another benefit would be the constant access to varied fisheries for anglers. Fishing financially benefits local communities, and the policy was designed to enhance these benefits in allowing fisheries to thrive and to support local communities long term.

[7] The Alien and Locally Absent Species in Aquaculture (England and Wales) Regulations 2011 - Impact Assessment (legislation.gov.uk)

6. What is the overall evaluation regulations?

The FHI have expressed that the current legislation including the Retained EU Law which transposed the Council Regulation, and the ASR is more complex than it needs to be. The following illustrates how the FHI currently deliver their work under the ASR, the potential complexities, and shortfalls in the ASR in its current form:

1. ***Risk assessment***

The principle of the ASR, that introductions of alien or locally absent species for aquaculture should be subject to risk assessment to minimise the risk of environmental damage, is sound and it is recommended that this principle should continue to apply to the development of aquaculture.

Risk assessments have already been completed for some of the common alien species used in aquaculture and many of those listed on Annex IV of the ASR. These are expected to provide an adequate basis for regulating the use of Annex IV species, this allows for more effective targeting of risk assessments on novel species and routine movements. For novel species and non-routine movements, a comprehensive risk assessment is required before any permit is issued.

The full risk assessments needed in support of non-routine movements for novel species are extensive and cover a variety of issues, including transport pathways, the aquaculture facilities to be used, the species of interest, non-target organisms, and socio-economic impacts.

2. ***Scope of legislation***

The ASR apply to the movements of aquatic organisms for aquaculture, rather than to the aquaculture of animals per se. The FHI is of the view that the regulations should apply to the ongoing culture of the organism not just the movements of those organisms as it would not necessarily be an offence to carry out the aquaculture of a species if you were not the one who had moved those animals to the culture site without a permit in the first place.

However, the method for processing permitted movements of organisms for aquaculture meets the legislative requirements through FHI compliance visits every year which ensure the farm operators are adhering to the conditions set out in their ASR permit and authorisation certificate. All permitted releases into open aquaculture facilities, whether they are routine or non-routine, need to be monitored for at least two years following a release. Monitoring examines the level of spread or containment of the species. This supports the minimisation of the potential impact of alien and locally absent species and any associated non-target species on the aquatic environment and thus contributing to the sustainable development of the sector. For closed aquaculture facilities, an amendment to the ASR provisions exempted closed aquaculture facilities from the permitting requirements provided that the transport is carried out under certain

criteria[8] that prevent escape. If these criteria are met, and the potential for escape of the organisms to be farmed and of non-target organisms is addressed during transportation, and if well-defined protocols are applied at the receiving facility, then the degree of risk associated with alien and locally absent species in such facilities is regarded as being reduced to an acceptable level. Introductions and translocations for use in closed aquaculture facilities should only be exempted from the permit requirement if these criteria are met. The FHI carries out inspections of all farm sites prior to authorisation under AAHR and this inspection is also used to confirm that prospective closed aquaculture facilities meet the relevant criteria. This approach was taken to minimise administrative procedures for closed aquaculture facilities which can be considered as bio secure.

3. Pilot releases of species

The Council Regulation describes a pilot release as the introduction or translocation of a locally absent species to assess ecological interaction with native species and habitats to test the risk assessment assumptions. The FHI most commonly apply pilot releases in respect of non-routine movements; however, this approach is too high risk as a pilot study may introduce a species which will have an adverse impact and should it spread the chance of eradicating it might have passed. As mentioned above, a risk assessment is used to assess the impacts a species might have on the environment, which effectively falls in line with the ASR legislation.

The FHI advocate for a more precautionary approach. A pilot release for non-routine movements should not be an option where any uncertainty is assessed, such as the organism's ability to reproduce in the culture area and establish itself in the wild. The Great Britain Invasive Non-Native Species Strategy[9] advises protecting GB from the risk posed by invasive alien species and endorses a precautionary approach to minimise the risk of introduction and establishment of NNS.

4. Number of controls on non-target species

The FHI currently use the ASR to control the movement of organisms. The Council Regulation considers the need to assess the risk posed, not only from the movement of a proposed aquaculture species, but also from any non-target species which may be moved with it. The Council Regulation applies to every stock movement and the pathogens within that stock. It is not possible to prevent the movement of all non-target organisms and it is not possible to assess the risks of moving micro-organisms, which may pose risks to other plants and animals. The ASR are supposed to work without prejudice to AAHR, which set out rules concerning transmissible diseases of aquatic animals. The ASR work effectively to the World Animal Health Organisation

[8] Which involves recirculation of water and with a discharge(s) that does not connect in any way to open waters prior of being screened, filtered or percolated and treated to prevent the release of solid waste to the aquatic environment and the escape of the farmed species and of non-target species from the facility that might survive and subsequently reproduce; and prevents farm losses due to environmental factors, such as flooding, predators (e.g. birds), theft and vandalism and ensures appropriate disposal of dead organisms.

[9] https://www.nonnativespecies.org/assets/Uploads/The-Great-Britain-Invasive-Non-Native-Species-Strategy-2023-to-2030-v2.pdf

(OIE) standards which only allow the application of trade controls between countries, for specific, listed, high risk pathogens. It would therefore be inappropriate to prevent trade for aquaculture due to the presence of what are considered internationally to be minimal risk, parasites, or other potential pathogens. It is recommended that animal and plant pathogen controls should be left outside the scope of the ASR and non-target species controls should be operated under the AAHR. The FHI currently carries out inspections of all farm sites prior to authorisation under AAHR.

Any applications to farm novel alien species of fish or shellfish that are not listed on Annex IV, and which are not already present in England, will require a full risk assessment (as specified in Annex I of the ASR) and a satisfactory outcome in terms of the risk posed before any permit might be issued for use in aquaculture. To avoid unnecessary costs, the FHI make efforts to provide applicants with some indication of the likelihood of success based on a provisional assessment of potential risks.

5. Provision of scientific expertise

When the ASR were initially introduced there was limited interest in England with regard to the aquaculture of alien aquatic plants and seaweeds. However, given the growing interest in seaweed aquaculture, it is important to consider how the ASR will apply and how demand for these species could change. Further internal work will be required in determining the provision of expertise and responsibilities of competent authorities in regard to alien seaweeds and their introduction.

7. Conclusion

The ASR have been broadly implemented as intended, with a few minor changes. Applications to farm shellfish and fish under the ASR merged with the process for authorising aquaculture farms under the AAHR. This is considered to have helped reduce the costs to the public sector from implementing the ASR, preventing new administrative burdens being placed on businesses.

Although there are complexities within the ASR with respect to pilot releases and the number of controls on non-target species, there is no evidence arising from this PIR which points to how the implementation of the ASR has led to a failure to achieve their objectives, or how their operation could be improved for either the industry or the public sector.

The ASR provide a valuable tool for the sustainable development of aquaculture in England, but they are considered to be more complicated than they need to be. However, given the size of the change versus the potential benefit it would not be considered proportional to amend the legislation. As such, the legislation will remain in place in its current form, and the FHI will continue to administer their duties under the ASR.

Title: The Alien and Locally Absent Species in Aquaculture (England and Wales) Regulations 2011	Post Implementation Review
PIR No:	**Date:** 20/07/2023
Original IA/RPC No: 2011/2292	**Type of regulation:** Domestic
Lead department or agency: Defra	**Type of review:** Statutory
Other departments or agencies: Cefas	**Date measure came into force:** 10/10/2011
	Recommendation: Keep
Contact for enquiries: aquaculturereteam@defra.gov.uk	**RPC Opinion:**

1. What were the policy objectives of the measure? (Maximum 5 lines)

The aim was to enable the economic growth of the aquaculture sector whilst protecting the aquatic environment from the potential damage that might arise from the introduction of new alien and locally absent species to the wild. For instance, where their introduction might result in adverse biological interaction with indigenous populations or cause changes to local habitats.

2. What evidence has informed the PIR? (Maximum 5 lines)

This PIR has been informed through discussions with Cefas about how the ASR are used to regulate aquaculture and about the enquiries that Cefas have received about farming NNS. The evidence sought for this PIR is considered proportionate to the scale of the industry and the expected impact of the regulation.

3. To what extent have the policy objectives been achieved? (Maximum 5 lines)

there have been no new recorded threats from alien and locally absent species in aquaculture since the previous PIR was conducted in 2016. Adherence with the authorisations has prevented the introduction of new alien species into the environment, the introduction of which may potentially have an adverse impact on the surrounding environment.

Sign-off for Post Implementation Review: Chief economist/Head of Analysis and Minister

1. I have read the PIR and I am satisfied that it represents a fair and proportionate assessment of the impact of the measure.

2. Signed: **Anne Freeman** Date: 20/7/2023

Further information sheet

Please provide additional evidence in subsequent sheets, as required.

4. What were the original assumptions? (Maximum 5 lines)

Interest in new aquaculture species in England appeared to be low, this was likely due to the high costs of eradicating an invasive alien species (e.g. £2.5 million for topmouth gudgeon).

5. Were there any unintended consequences? (Maximum 5 lines)

No unintended consequences resulting from the implementation of these regulations were identified over the course of this review.

6. Has the evidence identified any opportunities for reducing the burden on business? (Maximum 5 lines)

There is some administrative burden which derives from the wording in the ASR but overall impact on the aquaculture industry is low and it is recommended that this regulation is retained.

7. How does the UK approach compare with the implementation of similar measures internationally, including how EU member states implemented EU requirements that are comparable or now form part of retained EU law, or how other countries have implemented international agreements? (Maximum 5 lines)

The Alien and Locally Absent Species in Aquaculture Regulations (2011) implemented EC Council Regulation 708/2007. The ASR is designed to provide protection from risks when using alien species in aquaculture. In 2016 a survey was sent to EU Member States about the implementation of these regulations, and the Member States' responses to the EU indicated that they implement the Council Regulation in a similar way to England.