



Department  
for Environment  
Food & Rural Affairs

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## **Aquatic Animal Health Evidence Plan**

**Policy portfolio: Animal Health: Global trade and aquaculture health**

**Policy area within portfolio: Aquaculture Health**

**Timeframe covered by Evidence Plan: 2013/14 – 2017/18**

**Date of Evidence Plan: March 2013**

This evidence plan was correct at the time of publication (March 2013). However, Defra is currently undertaking a review of its policy priorities and in some areas the policy, and therefore evidence needs, will continue to develop and may change quite rapidly. If you have any queries about the evidence priorities covered in this plan, please contact

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# 1. Policy context

## What are the key policy outcomes for the policy programme/area?

This programme is aligned with the Defra Business Plan and Ministerial Priorities, specifically Departmental Priority One, to “**Support and develop British farming and encourage sustainable food production**” and a further responsibility to “**Prepare for and manage risk from animal and plant disease**”. It contributes to the commitment by Welsh Government to improved animal health and well-being through environment, countryside and planning initiatives and decision making in Wales. Ensuring well treated and healthy farm (and domestic) animals in Scotland contributes towards the Scottish Government’s strategic objectives of ensuring a ‘Healthier, Wealthier and Fairer’ Scotland.

This programme is also aligned with the Animal Health and Welfare Board for England (AHWBE) outcomes, in that it aims to reduce the risks of exotic disease incursion and facilitate rapid eradication where diseases are introduced. The evidence obtained through this programme will also inform and develop best practice on disease prevention.

In 2010 the UK aquaculture industry was worth over £506 million, made up principally of 154 thousand tonnes of salmon worth £442 million, 14164 tonnes of trout worth £34.9 million, and 30212 tonnes of mussels worth £20.7 million as “farm-gate” prices. In addition the value of recreational angling is high with 4 million anglers estimated to contribute £3Bn per year to the national economy.

Diseases of aquatic animals can have serious economic consequences for the aquaculture sector. For example in 2006 an outbreak of the exotic disease viral haemorrhagic septicaemia virus (VHSV) resulted in the culling of fish stocks on the affected farm, and the disinfection of the facility. The cost of the outbreak to the individual business was estimated to be in the order of £150K and the total cost to the wider industry and government was estimated at over £1.2 million.

The primary policy objective is to protect the already high aquatic animal health status and thereby the wider aquatic environment including its biodiversity, whilst facilitating national and international trade. This is described under several headings below:

1. **Emerging diseases:** diseases “emerge” on a regular basis in the aquatic environment and in fewer than seven years, 237 new and emerging diseases in aquatic animals were logged by Cefas’ (Centre for Environment, Fisheries and Aquaculture Science) horizon scanning project worldwide, including nineteen completely novel diseases. Where appropriate, Defra needs to understand the aetiological agent and prevalence and conduct risk assessment to determine a policy position. A new or emerging disease is most likely to manifest itself as ‘unexpected mortalities’ detected via surveillance activities and investigated by the Fish Health Inspectorate (FHI) funded through this evidence plan and the Environment Agency. Where the causative agent appears to be novel or remains unidentified, additional specialist facilities and laboratory investigations are undertaken to identify the agent concerned, determine the

potential threat to farmed and wild stocks and also the threat to public health. The information gathered provides policy teams with an evidence base to facilitate consideration of Government intervention. Continuous surveillance of a range of global electronic information sources (including internet newsletters and alerting services) provide a mechanism to detect potential threats to GB aquaculture and wild stocks. The information is shared with stakeholders and colleagues. The information is collated to allow retrospective analysis of drivers for disease emergence

2. **Notifiable diseases:** development of policy for notifiable diseases relies heavily on the characterisation of notifiable diseases of finfish, crustacean and molluscs, research into the pathogenesis of these infections, development of validated diagnostic tests and identification of new control measures. GB has a high aquatic animal health status and is free from a number of the most important diseases of aquatic animals. In addition to the protection of a valuable aquaculture industry, aquatic animal health controls contribute to the protection of wild fish stocks.
3. **Prevention and control of aquatic disease:** Defra's contingency planning for the prevention of disease and preparing the country for disease control where incursion takes place requires a knowledge base for aquatic diseases through transmission and susceptibility studies, pathway analysis, risk assessments and mathematical modelling.
4. **Implementation of Directive 2006/88/EC:** this Directive primarily focuses on identification and control of disease in farmed aquatic animals and one of the requirements is to implement risk based surveillance. The development of a risk based policy approach is informed by current research in the AAH programme.
5. **Maintenance of capabilities and resources** such as researchers' technical and academic expertise, laboratory equipment and archived material is a key priority to ensure preparedness for outbreaks.

There are a number of issues in this policy area that interface across the Department, for example, where aquatic animal health has an impact on biodiversity. Cross-cutting and multi-disciplinary work is therefore key to ensuring successful policy development and implementation.

The Animal Health and Welfare (AHW) research budget is held by Defra on behalf of GB administrations.

## 2. Current and near-term evidence objectives

**What are the current and near-term objectives for evidence and how do they align to policy outcomes?**

The current and near-term evidence budget focuses on applied research relevant to current AAH policy issues and whilst addressing statutory requirements will be a primary focus, the programme aims to strike a balance between flexible short-term reactive and strategic longer-term work, and maintenance of capability. Currently, the main notifiable

diseases being studied are koi herpes virus (KHV), oyster herpesvirus (OsHV1) and viral haemorrhagic septicaemia. The former affects a wide variety of cyprinid fish including common carp and as such is a potential threat to wild cyprinid fish species. The industry is strongly supportive of current research to investigate such disease issues but low margins prevent significant investment to support research. However, support ‘in kind’ (facilities, fish etc) is significant and in addition, a number of studentships have been directly funded by the industry.

The majority of the current evidence programme (approximately £1m/pa) is placed in support of research activities to guide and inform AAH policy and disease control. CEFAS is the principle service provider, with most R&D work directed through a wider Higher Level Agreement (HLA) that incorporates a majority of the AAH R&D work. Competitive calls are supported for specific research requirements where appropriate, as well as international research calls supporting collaborative bids. The remainder of the evidence programme (approximately £0.5m/pa) is managed through a Memorandum of Understanding (MOU) with CEFAS to support Departmental responsibility for the protection and health of farmed and wild populations of aquatic animals. This MOU covers a number of functions including surveillance activity, microbiological investigations and international reference laboratory status (World Organisation for Animal Health (OIE) and EU).

The results are used to underpin robust evidence-based policy as well as supporting the UK’s negotiating position in discussions at EU and wider international level.

In addition use is made of existing datasets to provide evidence. For example fish farmers are obliged to record the movements of live fish on and off the farm. This information is routinely collected by the FHI and entered into the Starfish database (for England & Wales). These data have been used in a series of projects (in E&W and Scotland) to assess the spread of both salmonid and cyprinid diseases through live fish movements. These investigations have supported the development of contingency plans for disease outbreaks and biosecurity. More recently the information has been used to support the ranking of farms based on the risk of disease introduction and spread.

High level detail of current and future high priority evidence needs aligned with policy outcome are provided in the table below.

Policy outcome	Current evidence	Future evidence
<b>Emerging diseases</b>	<ul style="list-style-type: none"> <li>Economics of disease control and eradication of a new or introduced disease, the costs and benefits of eradication and maintenance of disease freedom need to be assessed.</li> </ul>	<ul style="list-style-type: none"> <li>Disease and mortality in juvenile commercial shellfish (potential industry co-funding); there exists a basic lack of knowledge on the parameters which drive mortality in this animal group despite the value of the industry (estimated at £250m pa).</li> </ul>

<p><b>Notifiable diseases</b></p>	<ul style="list-style-type: none"> <li>• Effective and economically viable process of cleansing and disinfection of Aquaculture premises; the process of cleansing to remove disease is an important part of dealing with outbreaks of notifiable and other significant disease outbreaks in aquaculture premises.</li> <li>• The molecular basis for pathogenicity of e.g. spring viraemia (SVC) of carp virus or VHS; SVC is a contagious viral disease, Isolates of which can be divided into four genetic groups. Research can inform risk-based policy development regarding control dependent on which isolate is identified.</li> </ul>	<ul style="list-style-type: none"> <li>• Awareness of current and future threats, including assessment of risk, regarding notifiable diseases is paramount to maintaining an effective prevention and control policy. Maintaining sufficient expertise to advise and provide support for known and novel threats is a current evidence requirement.</li> </ul>
<p><b>Prevention and control of aquatic disease</b></p>	<ul style="list-style-type: none"> <li>• Economics of disease control, eradication and freedom from disease; for endemic diseases.</li> </ul>	<ul style="list-style-type: none"> <li>• Economic and social research will be informative where policy success is dependent on behaviour of the target population, for example: <ol style="list-style-type: none"> <li>1. Test whether knowledge developed regarding behaviours and culture of terrestrial animal farmers can be applied in the AAH regime.</li> <li>2. Investigation into production businesses' level of understanding of biosecurity and essential disease mitigation measures.</li> <li>3. Investigation of factors that determine biosecurity behaviour of finfish and shellfish farmers and drivers for influencing behaviour.</li> </ol> </li> <li>• There is a current requirement to maintain sufficient expertise to apply molecular typing techniques and necessary interpretive skills to provide sufficient epidemiological advise in support of disease control policy.</li> </ul>
<p><b>Implementation of</b></p>	<ul style="list-style-type: none"> <li>• This is wide ranging directive, covering premises registration</li> </ul>	<ul style="list-style-type: none"> <li>• Evidence requirements to maintain an effective risk based</li> </ul>

<b>directive 2006/88/EC</b>	and approval through to disease outbreak process. The implementation of risk based surveillance is driven by policy, informed by the current AAH research programme and MOU covering provision of expertise from CEFAS. Better understanding of specific diseases and associated risks will lead to better management of disease risk and potentially lead to freedom from disease.	approach to surveillance will require continuing support from the R&D programme and SLA to maintain and develop necessary expertise to inform policy
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### 3. Future evidence needs

#### What are the longer-term evidence needs for the policy area/ programme?

Future evidence commissioned will continue to contribute to the primary policy objective of the protection and health of farmed and wild populations of aquatic animals. Recognising and including the need to maintain sufficient expertise to advise on the control of notifiable and endemic diseases.

Future evidence needs will be identified and prioritised through outputs from current projects, internal reviews, development of policy requirements and in consultation with DAs and wider stakeholders as required.

The broad long term evidence needs of this programme are covered in the table for section 2 (see above).

### 4. Meeting evidence needs

#### What approach(es) will be taken to meeting evidence needs?

The approach to meeting R&D evidence needs is guided by standard Defra procedures. Prioritisation and specification of research is determined through discussion with policy colleagues (including SG & WG), veterinary advisors, disease experts, the Animal and Plant Health Evidence and Analysis (APHEA) team and livestock industry sector groups, as well as being informed by the Animal health and Welfare Risk Management Cycle. More recently, the AHWBE has also been involved in high level discussions over evidence needs.

The Animal Health and Welfare portfolio of R&D programmes is managed by a single Evidence Team, which enables very close working and easy identification of cross-cutting issues, which can be addressed in a complementary way. Amongst others, APHEA, the wider Defra Evidence & Analysis Community, and procurement processes also facilitate identification of opportunities for working across the Department on issues that affect disparate policy areas.

Nationally, aquatic animal health issues are discussed at various fora including joint meetings between Cefas and Marine Scotland for implementation of the EU Directive on fish health. Additional expert groups such as the GB Wildlife Disease Surveillance Partnership and Amphibian Health Advisory Committee consider aquatic animal disease issues. The Committee for Aquatic Health (CAH) meets annually and includes representation from stakeholders, devolved administrations and delivery agencies including Defra.

Within the aquatic animal health programme, evidence priorities are identified through a number of channels, including:

- Research programme review meetings that take place on an annual basis. The format of these meetings will be scrutinised to place more emphasis and systematic focus on policy relevance and value for money.
- Consultation between the policy, DAs and research team and use of information on emerging national and international welfare issues – using intelligence gleaned from EU and international contacts, industry stakeholders, NGOs, welfare research scientists and other experts.
- Recommendations for research stated in EFSA opinions, themselves an indication of possible future EU legislative proposals.
- Value for money considerations in proposed research projects, including potential for alternative sources of funding or collaboration involving DAs, OGDs, NDPBs, industry, NGOs and international research providers. Also use of competitive tendering and peer review processes.
- Close collaboration with Government colleagues working on policy areas with aquatic animal health implications, for example the marine programme and biodiversity programme.
- Ministerial and public interest concerns over specific AAH issues.

During the year priorities are identified through the channels outlined above and then meetings are held with the policy team, representatives of the devolved administrations and evidence specialists, where the evidence gaps are ranked based on short term and long term policy need, scientific likelihood of success, whether they will significantly augment our existing evidence base or help maintain essential scientific capability and the estimated cost of any proposed new research. Where appropriate, policy and science leads may convene to undertake a multi-criteria analysis that allows comparison of research across the programme.

Once identified and prioritised, research needs are procured mainly through direct commissioning of projects at CEFAS supported by some open calls that are competitively tendered. All applications are peer reviewed externally, complemented by internal expert review regardless of procurement route. Internal expert review engages appropriate policy colleagues, DAs, veterinary experts, scientists and, where appropriate, social researchers and economists to ensure that all proposed research is challenged for policy relevance in line with government strategic objectives. External peer review engages academic experts

as well as industry representatives to ensure there is both academic as well as operational challenge to all proposed research.

R&D projects are monitored by annual reports and site visits and regular formal reviews of projects and the programme are conducted. In addition final reports are peer reviewed where appropriate and revised if necessary prior to publication on the Defra web-site. Researchers are also strongly encouraged to publish their results in peer reviewed journals. The goal is to fund high quality scientific research that informs policy decisions.

All R&D is inherently risky and a balance needs to be struck across the research portfolio between short-term projects to address immediate needs and longer term projects that may answer strategic evidence needs and lay the foundations for short urgent pieces of work to address specific policy requirements. A balance is also maintained between low risk projects, with more limited projected outcomes and more ambitious projects which carry a higher risk of failure, but are consequently more informative and useful if successful.

Extensive and regular meetings are held between contractors, the Evidence Team in AHVLA, Defra policy colleagues, DAs and industry stakeholders to ensure that project results are transmitted and interpreted effectively for use in a policy context. This close relationship also allows feedback of changing policy priorities to the researchers during a project (which can allow for projects to be adjusted if necessary).

Defra engages in a range of international fora for the purposes of information exchange and research coordination and participation in, for example, the ERA-Net and the EU framework programme, has levered significant funds from EU organisations. The ERA-Net has resulted in a total expenditure of approximately €45M of which Defra contributed approximately €5M, in support of 2 research calls on Animal health including fish health. This kind of coordinated approach facilitates international collaboration, thereby increasing the availability of expertise from other national research groups and maximising the benefits to individual participants.

Scottish Government also funds research into aquatic animal health and Defra and Scottish Government regularly liaise to ensure that there is no duplication of effort and to seek to maximise synergies between the two programmes.

## 5. Evaluating value for money and impact

### **What approach(es) will be taken to maximise and evaluate value for money and impact from evidence?**

R&D is procured according to the Evidence Handbook and is subject to internal expert input and external peer review that provides an independent scientific challenge.

An effective multi- and inter-disciplinary approach to fulfilling evidence needs is ensured through use of relevant expertise, advisory bodies and collaboration with other funding bodies, both in GB and externally. There is also increasing engagement internally with

teams such as APHEA, which offer expertise in economic analysis and social science advice. This alongside external peer review ensures robust and high quality evidence.

Value for money is ensured through peer review of all project proposals (VFM is a specific question we ask peer reviewers to consider) and close monitoring of projects to ensure they do not drift off course.

Value for money is also ensured where possible through co-funding with the animal health industry or other UK research funders (e.g. BBSRC) and more recently with other European Member States and such strong links with other funders enable leverage of funds where possible.

Project specific dissemination strategies are developed at the start of every project to ensure effective communication including how the evidence generated from the work will be used by policy, how stakeholders will be involved and how knowledge will be retained and promoted. Each project is also evaluated once completed with regard to its delivery, timeliness and policy impact, either through internal or external review.

Policy objectives are regularly tested through discussions with internal and external stakeholders. European and international institutions, other Government Departments and Devolved Administrations are also used to inform policy development and implementation.

The evaluation of evidence in Defra is an important and current activity at project level and contributes toward ensuring that good quality, robust evidence is used to underpin departmental policy<sup>[1]</sup>. Evaluating the impact of evidence on policy development is complex and often only possible over the long term. Evaluation will necessarily be linked to Defra's Evidence Investment Strategy, which provides a strategic overview of how evidence fits with Defra needs. Programme level evaluation to assess the impact of evidence on policy will be explored (depending on available resource) following publication of the new Evidence Investment Strategy. It will be important that evidence currently being explored will have time to make an impact and for any new direction emerging from the new Evidence Investment Strategy to be tested and incorporated.

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<sup>[1]</sup> <http://archive.defra.gov.uk/corporate/docs/policy/evidence-policy-report.pdf>