Cynulliad Cenedlaethol Cymru | National Assembly for Wales

Invasive alien species

April 2013

Introduction

Non-native or 'alien' species are those that have been moved outside their natural range by human activity, either accidently or deliberately. If the species subsequently survives and reproduces in the new area it is said to have established. Alien species are classified as invasive when their presence is considered to have negative consequences in the area where they are introduced, such as causing decline in native biodiversity, causing economic damage or impacting human health.[1]

The rate of invasive alien species (IAS) establishment in Britain has steadily increased since 1800 and hence the total number of IAS has risen exponentially. A DEFRA commissioned study reported that in 2012 there were 280 IAS in Britain[2], including fungi, microorganisms, plants and animals. Between 2000 and 2010, an average of 1.4 additional IAS established in Britain each year.[3]

It is predicted that the rate of IAS establishment will continue to rise, with growth in trade and travel increasing introduction rates and climatic change and habitat fragmentation favouring invasive over native species.[4]

Impacts of invasive species

The costs associated with IAS are the cost of adverse impacts they cause and cost of controlling or eradicating them. A DEFRA commissioned report by the Centre for Agricultural Bioscience International (CABI) estimated market costs incurred by IAS to be £1.7 billion per year in the UK and £125 million per year in Wales. The direct costs of IAS to economic sectors in Wales are shown in Table 1.[5]

IAS can also cause significant non-market costs by reducing native biodiversity and disrupting ecosystem service provision.[6] Estimating a monetary value for the disturbance of ecosystems caused by IAS is very difficult but a review of 16 published assessments from grey and scientific literature found estimates of non-market costs of IAS to be, on average, 57 times higher than estimated market costs. This suggests the total cost of IAS in the UK is in the region of £96 billion and in Wales, £7 billion.[7]

[1] Terminology is as defined in the **Convention on Biological Diversity glossary** [Accessed 13 March 2013]

[2] H. E. Roy, J. Bacon, B. Beckmann, C. A. Harrower, M. O. Hill, N. J.B. Isaac, C. D. Preston, B. Rathod, S. L. Rorke, J. H. Marchant, A. Musgrove, D. Noble, J. Sewell, B. Seeley, N. Sweet, L. Adams, J. Bishop, A. R. Jukes, K. J. Walker and D. Pearman (2012) **Non-Native Species in Great Britain: establishment, detection and reporting to inform effective decision making.** NERC Centre for Ecology & Hydrology, 110pp.

[3] *ibid*

[4] Shine, C., Kettunen, M., ten Brink, P., Genovesi, P. & Gollasch, S. 2009. **Technical support to EU strategy on invasive species – Recommendations on policy options to control the negative impacts of IAS on biodiversity in Europe and the EU**. Report for the European Commission. Institute for European Environmental Policy, Brussels, Belgium.

[5] F. Williams, R. Eschen, A. Harris, D. Djeddour, C. Pratt, R.S. Shaw, S. Varia, J. Lamontagne-Godwin, S.E., Thomas, S.T. Murphy (2010) **The Economic Cost of Invasive Non-Native Species on Great Britain** DEFRA commissioned report from CABI 2010

[6] See Research service Quick guide, **Ecosystems and the Ecosystem Approach**, March 2012 [Accessed 15 March 2013]

[7] F. Williams, R. Eschen, A. Harris, D. Djeddour, C. Pratt, R.S. Shaw, S. Varia, J. Lamontagne-Godwin, S.E., Thomas, S.T. Murphy (2010) **The Economic Cost of Invasive Non-Native Species on Great Britain** DEFRA commissioned report from CABI 2010 [Accessed 18 March]

Table 1: Direct costs of invasive alien species in Wales, by sector

(£ Million per year)

Sector	Examples	Cost to Wales
Agriculture	Wild oat (*Avena fatua*) competing with spring cereal crops	71.11
Forestry	Fallow deer (*Dama dama*) stripping bark leading to yield loss	14.95
Aquaculture	Chinese mitten crab (*Eriocheir sinensis*) predating native fish eggs	2.05
Tourism and Leisure	Floating pennywort (*Hydrocotyle ranunculoides*) restricting angling access	5.76
Construction, infrastructure and transport	Japenese knotweed (*Fallopia japonica*) destabilising houses and roads	19.85
Utilities	Zebra mussels (*Dreissena polymorpha*) blocking pipes for water extraction	0.48
Biodiversity	Costs of research and control measures	6.22
Human health	Giant hogweed (*Heracleum mantegazzianum*) causing skin rashes	5.82
Total direct costs		125.12

Source: Williams et al. (2010) The Economic Cost of Invasive Non-Native Species on Great Britain. DEFRA commissioned report from CABI

IASs can decrease native biodiversity in a number of ways:

- Competition;
- Predation;
- Hybridisation; and
- Transferring pathogens and parasites.

This has resulted in IASs being considered a main driver of global biodiversity loss.[8]

Convention on Biological Diversity

The parties to the Convention on Biological Diversity recognise IAS as a priority issue and in 2010 agreed the target:

> 'By 2020, invasive alien species and pathways are identified and prioritised, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment' (Aichi target 9).[9]

The guiding principles agreed at the sixth Conference of Parties to the Convention on Biological Diversity in 2002 encouraged Member States to prioritise preventing introductions of alien species, as the most cost-effective method of IAS management.[10] This principle promotes horizon scanning, with early warning and rapid response systems, and enhancement of border controls and quarantine.

For IAS already established, early detection and eradication is preferable over long term containment. This may be achieved by physical, chemical or biological means.[11]

EU legislation

There is currently no single piece of legislation which governs IAS management across Europe. In 2003, the Council of Europe developed an invasive species strategy to facilitate international commitments and promote best practice for minimising adverse impacts of IAS.[12] In response to the recommendations of the 2003 strategy, the Delivering Alien Invasive Species Inventories for Europe (DAISIE) project was established to coordinate a Europe-wide inventory of IAS.

In 2008, the European Commission issued a report, 'Towards an EU strategy on invasive species', which outlines policy options to address IAS impacts.[13] In response to this, the EU biodiversity strategy 2020, adopted in May 2011, included a target to:

> 'Establish a dedicated instrument on Invasive Alien Species.'[14]

[8] Convention on Biological Diversity, **Invasive Alien Species Introduction** [Accessed 14 March 2013]
[9] Convention on Biological Diversity, **Aichi Biodiversity Targets** [Accessed 15 March, 2013]
[10] Convention on Biological Diversity, **COP Decision 6 VI/23** [Accessed 15 March 2013]
[11] *ibid*
[12] Genovesi P. and Shine C. (2003) **European Strategy on Invasive Alien Species**. [Accessed 18 March 2013]
[13] Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions - Towards an EU strategy on invasive species (2008)[Accessed 18 March 2013]
[14] *ibid*

The European Commission is currently working on a dedicated legislative instrument on Invasive Alien Species which is due to be published in 2013.

However, there are a number of existing pieces of EU legislation in relation to nature conservation and fisheries which have an impact on IAS management. The most notable are:

- Council Directive 79/409/EEC on Birds;[15]
- Council Directive 92/43/EEC on Habitats;[16]
- Council Directive 2000/29/EC on Plant Health;[17]
- Council Regulation 708/2007 on Alien and Locally Absent Species in Aquaculture;[18] and
- Commission regulation 811/2008 on suspending introduction into the community of specimens of certain species of wild fauna and flora.[19]

Framework Strategy for Great Britain

In 2003, DEFRA commissioned a review of IAS policy which found a lack of coordinated efforts for IAS management in Britain and hence a failure to maximise the efficacy of existing resources.[20]

In response to this, the Great Britain Non-Native Species Programme Board was established in 2005.

The Programme Board aims to deliver a coordinated IAS management strategy and comprises representatives from DEFRA, the Welsh Government, the Scottish Government and their relevant agencies.

The Programme Board is supported by the Non-Native Species Secretariat, which acts as a central database for IAS information, and the Non Native Species Risk Analysis Panel which has the role of identifying potential IAS and pathways of introduction.

The Programme Board produced a Framework Strategy for IAS in Britain in 2008.[21] This strategy is not legally binding but lays out key recommendations for IAS management, as follows:

- Develop codes of responsible behaviour in order to reduce introductions of IAS to Britain;
- Develop monitoring and early warning systems;
- Develop individual Invasive Species Action Plans presenting the best management option for each IAS;
- Ensure public awareness of IAS issues and engage stakeholders;
- Ensure actions are supported by scientific research; and
- Implement a coordinated legislative framework.

Several existing pieces of legislation contain provisions relevant to IAS management in Britain. The most notable are section 14 of the *Wildlife and Countryside Act 1981*[22], which controls the release and escapes of non-native species, and the *Natural Environment and Rural Communities Act 2006*[23] which requires that all actions undertaken by public bodies to have regard for biodiversity.

[15] **OJ L 103, 25.4.1979** [Accessed 15 March 2013]
[16] **OJ L 206, 22.7.1992** [Accessed 15 March 2013]
[17] **OJ L 169, 10.7.2000** [Accessed 15 March 2013]
[18] **OJ L 168, 28.6.2007** [Accessed 15 March 2013]
[19] **OJ L 219 , 14/08/2008** [Accessed 15 March 2013]
[20] Great Britain Non-Native Species Programme Board (2008) **The Invasive Non-Native Species Framework Strategy for Great Britain** [Accessed 15 March 2013]

[21] DEFRA (2003) **Review of non-native species policy** [Accessed 12 March 2013]
[22] **Wildlife and Countryside Act 1981** (amended 1985, 1991) (Section 14) [Accessed 18 March 2013]
[23] **Natural Environment and Rural Communities Act, 2006** (Chapter 16) [Accessed 18 March 2013]

Welsh Government's Action

Implementation of the 2008 Framework Strategy for IAS in Wales is the responsibility of the Wales Invasive Non-Native Species working group. Established in 2008 and chaired by the Welsh Government, the working group has the remit to[24]:

- Coordinate and support stakeholder actions;
- Provide a forum for policy development;
- Coordinate IAS research;
- Raise awareness of IAS issues;
- Assess impacts of IAS; and
- Implement monitoring schemes, prioritising prevention of new IAS establishing.

No explicit mention of IAS is made in either the Environment Strategy for Wales 2006[25] or the Living Wales consultation document 2012[26] but both documents set out the Welsh Government's commitment to protecting Wales' ecosystem services and biodiversity, with the specific target to halt the loss of biodiversity and see recovery from losses that have already occurred by 2026.[27]

In May 2012, the then Minister for Environment and Sustainable Development, John Griffiths announced a £1 million Ecosystem Resilience and Diversity fund for projects that promote ecosystem health in Wales. His written statement specifically mentioned IAS as a key challenge that the funded projects will focus on.[28]

[24] GB Non-native species secretariat, **Welsh working group** [Accessed 15 March 2013]
[25] Welsh Government (2016) **Environment Strategy for Wales** [Accessed 15 March 2013]
[26] Welsh Government (2012) **A Living Wales – a new framework for our environment, our countryside and our seas, Consultation document** [Accessed 15 March 2013]
[27] Welsh Government (2008) **Environment Strategy Action Plan 2008 – 2011** [Accessed 15 March 2013]
[28] Welsh Government written statement, May 2012 **Ecosystem resilience and diversity funding, in line with the 'Living Wales' approach.** [Accessed 18 March 2013]

Further information

For further information about **Invasive alien species**, please contact **Nia Seaton** (**Nia.Seaton@Wales.gov.uk**), Research Service.

See also:

- GB Non-Native species secretariat **website**
- Welsh Government Living Wales **website**
- Convention on Biological Diversity **website**
- European Commission Invasive Species **website**

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Enquiry no: 13/0730