

# CASE STUDY

## CUSTOMER

International, UK and local governments, land-users and NGOs

## DELIVERABLE

Recording systems and databases for thousands of non-native species

## OUTCOMES

Early detection and prevention of invasive non-native species, forestalling millions of pounds worth of damage

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*In the last few years the Centre for Ecology & Hydrology (CEH) has become an important global player in this field, particularly in relation to the development of the EU IAS Regulation, where CEH led on the assessment of the critical risk assessment methodology and the finalisation of the risk assessments that underpin the listing in the Regulation."*

**Dr Niall Moore**

Head of the Secretariat for the GB-NNSIP

## Invasive non-native species - monitoring, detection and prevention

Protecting biodiversity and saving millions of pounds on a national and continental scale

### The challenge

Invasive non-native species (INNS) can be devastating to biodiversity – the Millennium Ecosystem Assessment lists them as one of the main threats to biodiversity worldwide. INNS are also economically damaging, costing Britain and Europe an estimated £1.7 billion and €12 billion per year (respectively).

With non-native species (NNS) entering Europe at an unprecedented rate, it is critical that robust information is gathered to inform early detection, rapid response and prevention.

Non-native species (NNS)	Species introduced by humans to areas outside their natural distribution range. They can be introduced for a specific purpose or transported accidentally.
Invasive non-native species (INNS)	Non-native species that are detrimental to biodiversity, society or the economy. This is a small percentage of all NNS, constituting fewer than 15%.

### The research

The Centre for Ecology & Hydrology (CEH) leads many key NNS initiatives across the UK, EU and globally, including database development, horizon scanning and surveillance.

CEH co-developed harmonised terminology of NNS for the Convention on Biological Diversity, which they then used to map NNS pathways of entry. Subsequently we were appointed to lead a European Cooperation in Science and Technology Action, 'Alien Challenge', contributing to a network of experts from 36 countries.



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**Centre for Ecology & Hydrology**  
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*The Centre for Ecology & Hydrology has helped to develop innovative methods in recording invasive non-native species, including the use of new technologies such as smartphone apps... The data management support and mapping expertise provided by the Centre for Ecology & Hydrology staff is first class."*

**Dr Peter Brown**

Anglia Ruskin University



Harlequin ladybird



Quagga mussel

*The CEH projects described here have multiple partners across the UK, Europe and worldwide that are too numerous to mention individually. Please visit our website for partner details.*

The Great Britain Non-Native Species Information Portal, led by CEH, now holds distribution data on more than 3,000 NNS. CEH also leads the Defra early warning indicator for invasive species, reporting on 179 established INNS.

To identify future threats to the UK CEH convened a group of experts to conduct INNS Horizon scanning, identifying 30 INNS with a high risk of threatening biodiversity. We then successfully implemented this approach at the European scale, deriving a list of 127 species of which 95 were considered high or very high threat to biodiversity.

CEH's Harlequin ladybird (INNS) recording system was one of the first online recording systems for wildlife in the UK, attracting more than 50,000 records, while its iRecord website allows citizen scientists to record a diverse range of species through our apps. We also spearheaded the development of Recording Invasive Species Counts, an online-recording site for NNS, and created an ALERT system for recording INNS that pose a high threat to biodiversity.

## The outcomes

CEH has helped to tackle INNS, creating tools and actions to facilitate early warning, directing and informing responses, and underpinning policy evidence at the national and international scale.

Our systems and online portals have helped detect INNS at the early stages of invasion, such as:

- a shrimp (*D. haemobaphes*) which competes with, and preys upon, a broad range of invertebrates.
- the Schmallenberg virus which results in stillbirths in cattle, and has travelled across nine other European countries.
- water-primrose which affects water quality, raises flood risk, harms tourism and threatens fish and water fowl.

Our expertise has contributed to risk assessments for the European and Mediterranean Plant Protection Organization, affecting the quarantine of introduced pests such as the red foxtail, a plant that costs the Netherlands around €3 million/yr.

CEH also developed the framework for European Commission Risk Assessments standards, reviewing the assessments and subsequently informing the list of 'Invasive Alien Species of EU concern'.

Within months of CEH's Horizon Scanning exercise three of the top ten species on the list were spotted in the UK for the first time. These lists now underpin Europe-wide threat scoring for the European Commission, and for prioritising species of Risk Assessment.

CEH's INNS expertise and data management has protected both biodiversity and the economy throughout the UK and Europe.

