



Stemming the flood of invasive non-native species in the UK

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Wildlife and
Countryside



Introduction

Invasive non-native species (INNS) are animals, plants or pathogens that have been introduced to an area outside their natural range as a result of human activities and not part of the natural spread of species, and cause a negative effect on the environment, population and/or economy. INNS play a key role in 60% of recorded global species extinctions and are the sole factor responsible for 16% of documented global animal and plant extinctions.¹

INNS cost the UK² at least £2-4 billion each year³. Globally the cost of INNS is £334 billion each year and by 2050 it is expected to rise by more than 36%.¹ Current measures are not effective at preventing species from establishing in the UK with the rates of INNS establishment increasing since 1960 with no indication that trends are changing.⁴

Since 2021, the Government has been piloting a GB Non-Native Species Inspectorate to help reduce the spread of INNS. The trial has identified approximately a 10% rate of non-compliance over 2,000 inspections and revealed that potentially over 300,000 contaminated units (containers, recreational boats and angling equipment) arrive in GB annually.

If Government were to invest £6 million each year into the Invasive Species regime we estimate this could save the UK economy a total of £2.5 billion over 20 years, providing a return investment of £21 for every £1 spent.⁵

Weather-related climate change impacts are increasing species invasions. Increased flooding accelerates the spread of species into new areas in high waters and makes managing INNS increasingly challenging – with March 2023 to February 2024 the wettest 12 months on record

¹ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Invasive Alien Species Assessment: Summary for Policymakers <https://zenodo.org/records/10521002>

² The division of INNS management between the UK and GB is such that the GB Non-native Species Secretariat supports the actions and undertakes a programme of work to meet the aims of the UK Programme Board and GB Committee. The UK Programme Board has representatives from across UK Governments and their agencies. The GB Committee was established in 2021 following the UK's departure from the EU, comprising members of the Programme Board and is a separate statutory body established to undertake the functions of the Committee within the retained EU Invasive Alien Species (IAS) regulation. The Committee has a fundamental role in advising on the potential listing of species on, or de-listing of species from, the list of species of special concern.

³ René Eschen et al (2023) 'An updated assessment of the direct costs of invasive non-native species to the United Kingdom,' 6 July, Biological Invasions. Available here: <https://link.springer.com/article/10.1007/s10530-023-03107-2>. The annual cost of invasive species in the UK is £4 billion every year, but excluding fungi from this figure it is closer to £2 billion each year.

⁴ <https://www.theoep.org.uk/report/government-remains-largely-track-meet-its-environmental-ambitions-finds-oep-annual-progress>

⁵ *Add link to the costings document

for England.⁶ Drought can also promote the proliferation of INNS by floodwaters as species adapted to hotter climates may outcompete native wildlife during drought conditions, and successfully reproduce, with more eggs, seeds or juveniles then available to be distributed by future floods.

It is encouraging that reducing INNS has been embedded into important internationally agreed targets such as Target 6 of the Convention on Biological Diversity⁷ to:

‘prevent the introduction and establishment of priority invasive alien species and reduce the rates of introduction and establishment of other known or potential invasive alien species by at least 50 per cent, by 2030.’

This target has also been incorporated into the Government’s Environmental Improvement Plan (EIP), however the Office for Environmental Protection (the OEP) have assessed the Government to be largely off track to meet this target due to inadequately limited resources and actions not being implemented at the scale required.⁴

Contributing to the lack of progress is that the majority of the recommendations made by the Environmental Audit Committee in 2019 for INNS management are still not securely in place.⁸ This includes the call to increase funding for Local Action Groups on a long term (five yearly) basis and increase annual funding to the Non-Native Species Secretariat to at least £3 million.

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) cite prevention and preparedness as the best and most cost-effective approaches to managing INNS, which has been particularly effective for island biosecurity.¹ The OEP assessment also states that to meet this target the UK should prioritise prevention and rapid response, strengthen compliance with legislation, remove the silos separating INNS and other biosecurity regimes and increasing public awareness and engagement.⁴

Without proper prevention and protection INNS continue to threaten to undermine habitat and species targets under the Environment Act 2021. The 2023 State of Nature Report found that controlling INNS is a vital and urgent conservation action for protecting species and habitats alike.⁹

⁶ <https://www.gov.uk/government/publications/water-situation-national-monthly-reports-for-england-2024/water-situation-february-2024-summary#:~:text=1.-,Rainfall,the%201991%20to%202020%20LTA%20>

⁷ <https://www.cbd.int/gbf/targets/6>

⁸ <https://publications.parliament.uk/pa/cm201919/cmselect/cmenvaud/88/88.pdf>

⁹ https://stateofnature.org.uk/wp-content/uploads/2023/09/TP25999-State-of-Nature-main-report_2023_FULL-DOC-v12.pdf

Policy recommendations

INNS are an ongoing threat to native wildlife which is already depleting and under threat from other pressures. INNS are already outcompeting native wildlife like the Red Squirrel (*Sciurus vulgaris*) and White-clawed Crayfish (*Austropotamobius pallipes*), and the spread of invasive plant species like Japanese Knotweed (*Fallopia japonica*) and Giant Hogweed (*Heracleum mantegazzianum*) continue to cause significant economic damage and harm for communities. *Rhododendron ponticum* is choking native woodland and shading out characteristic fauna, including important temperate rainforests which covers just 1% of land in the UK.¹⁰ Rapid action must be taken to protect further species and habitats from the same fate.

Increased trade and the growing impacts of climate change furthers the likelihood of new species entering the UK. As a top five driver of biodiversity decline, Government must consider and treat INNS as a priority issue. A failure to get a grip on INNS, and the pressure this places on struggling wildlife populations, will also make it harder to meet biodiversity targets and halt the decline in species abundance by 2030.

The Government can make progress to meet its target to halve INNS establishments by 2030, protect wildlife and become a world leader in biosecurity by taking six clear policy actions.

- 1) Put the invasives species inspectorate on a proper footing, by increasing the invasive species biosecurity budget to £3 million and providing a further £3 million to fund a permanent dedicated invasive species Inspectorate, on par with other biosecurity Inspectorates, ensuring that the funding is used on cost effective management methods.**

This investment would:

- Improve the preparedness and coordination of control efforts to invasive species biosecurity and management.
- Prevent the establishment of an estimated 24 new invasive species and eradicate 10 established invasive species by 2040. This constitutes a 50-67% reduction in the number of new introductions and a 5% reduction in established species.
- **Save the UK economy an estimated total of £2.5 billion over 20 years. That is a return on investment of £21 for every £1 spent.** The increase in funding of £6 million is a worthwhile investment to save the UK economy substantial amounts over the next two decades.

¹⁰ [A plan to recover England's temperate rainforests - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/consultations/a-plan-to-recover-england-s-temperate-rainforests)

2) *The Government should also increase the powers of the invasive species inspectorate so that it may carry out border inspections to prevent new invasive species entering the UK. Ministers should review whether other powers would further increase the effectiveness of the inspectorate.*

There must also be greater transparency of the work of the inspectorate. This could be easily achieved by utilising and regularly updating the GB NNSS website with outcomes of the inspectorate's work, for example, highlighting the positive eradication work that they have achieved so far.

This change would:

- Address the concerns noted in GB NNS Strategy of the need to increase capacity for inspections and investigations at both border and post-border to manage pathways of introduction.
- Support progress to meet the CBD target to 'prevent the introduction and establishment of priority invasive alien species and reduce the rates of introduction and establishment of other known or potential invasive alien species by at least 50 per cent, by 2030.'
- Improved transparency is essential to improve connectedness and cooperation of organisations with differing roles to play in the united goal to protect biodiversity from INNS.

3) *Secure funding for local INNS management, including long term (five yearly) and reliable funding for Local Action Groups (LAGs) to create a biosecurity "citizens army", as recommended by the Environmental Audit Committee.*

This investment would:

- Deliver the commitment of the Great Britain Invasive Non-Native Species Strategy to achieve 'relevant, long-term and timely funding mechanisms for LAGs'.
- Address the problem of current funding pots for local action only being able to stretch to a very small handful of projects, leaving areas of the UK unable to continue management practices which can be very expensive, particularly new and effective biocontrol methods from CABI.
- Allow LAGs to complete their work to eradicate harmful invasive species, bringing Government closer to achieving legally binding nature targets which England is currently largely off track for. 50% of Local Action Groups have expressed to the Regional LAG coordinator that funding is one of the main challenges that they face.

4) Reform the process of listing GB Invasive Species of Special Concern by speeding the process up to rapidly respond to new threats. When a species risk assessment begins this must launch a countdown of no more than two years for a Ministerial decision to be made. (More detail of the listing process on page 12)

Also, Government must proactively manage the species that are already listed, starting with publishing the implementation plans to do so.

Due to the nature of INNS, timing is crucial. The process of listing must be urgently sped up to reflect the latest threats. GB only has 66 listed species, all of which were transposed across from the EU Regulation. No new additions have been made since 2019. In contrast, a further 22 species have been added to the European list in past 5 years.

This change would:

- Allow the Invasive Species Secretariat and Inspectorate to work strategically to deliver essential and targeted rapid responses to the correct invasive species to prevent them from establishing. At present, many of the 66 listed species such as Muntjac Deer and the New Zealand Flatworm (*Arthurdendyus triangulates*) are widespread and causing harm to biodiversity without management plans in place and 10 of the current Alert Species are not listed as Species of Special Concern.
- Protect biodiversity. The UK cannot afford to wait years for species to be listed and for widespread legal action to be put in place.

5) Create a publicly available evidence base for all identified and potential INNS, kept up to date with climate change modelling and intel from our closest trading partners. This could be achieved by firstly disclosing which species need a risk assessment, then engaging with researchers to fill evidence gaps before it is reviewed by the Non-native Species Risk Analysis Forum (NNRAF).

Currently only 137 species have a risk assessment visible on the GB NNSS website, but there are approximately 311 INNS present.

This change would:

- Having a visible risk assessment for all species will increase citizen and stakeholder awareness and action.
- Utilise the network of researchers across the UK and allow more species to be screened at a faster pace, helping to track the likelihood of species establishing or spreading.
- Provide readily available data to speed up the process of determining if a species should be moved onto the list of Species of Special Concern at this time.



6) Increase public awareness of INNS, supporting the GB NNSS to deliver a strong and robust public communications and engagement plan to target the general public as well as private companies and businesses.

This change would:

- Help the public to assist in preventing the introduction of species, spot likely invaders and aid eradication efforts. By targeting messaging at consumers, particularly of the horticultural or aquatic pet trade, accidental INNS escapes could reduce.
- Dedicating resources to increasing public awareness is a worthwhile act of prevention which will ultimately save the UK money by reducing the need for intervention further down the line.

Factors increasing the spread of INNS

Pathways

Invasive species enter the UK through multiple pathways. In 2019, the GB Non-Native Secretariat (NNSS) identified six priority pathways of introduction and spread, including hull fouling, horticulture escapes, contaminants of ornamental plants, ballast water, stowaways on fishing equipment and zoo or botanic garden escapes.¹¹ In Scotland, the most significant pathway of arrival and spread of the established non-native species and INNS has been the horticultural and ornamental pathways, pets, contaminants and natural dispersal from an existing invaded range.¹² Effective regulation and inspections can reduce the risk of accidental introductions from these pathways, but these precautions are not yet in place in the way that they need to be to deal with the scale of INNS.

Biosecurity measures are not keeping pace with the growing volume, diversity and origins of global trade and travel. Pathway Action Plans (PAPs) intended to address pathways of introduction or spread of non-native species in Great Britain are a requirement under the Retained EU Invasive Alien Species (IAS) Regulation and are in the strategy, however consultations on these plans has been repeatedly delayed, such that some of the Plans are now already out of date before they have been consulted on and approved. The PAPs must be published for consultation as a matter of urgency so that they can swiftly be put in place to encourage best practice across the UK.

¹¹ <https://www.nonnativespecies.org/biosecurity/pathway-action-plans/>

¹² <https://www.gov.scot/publications/provision-horizon-scanning-analysis-pathways-spread-invasive-species-scotland/pages/6/>



Climate Change & Flooding

As the climate warms and seasons shift, the UK will become an increasingly welcoming environment for non-native species, increasing establishment conditions of new species introduced by non-natural pathways.¹³ Both climate change and INNS place additional challenges and pressures on already vulnerable habitats, weakening their chances of survival.

INNS are a significant additional threat to rivers on top of the already devastating chemical cocktail and barrage of farm agricultural and sewage pollution that they face. Damaging invasive species are easily dispersed through water bodies, aggravated during flooding events with high water carrying species into new areas.¹⁴ February's unusually warm and wet weather, for example, created the perfect conditions for invasive plants such as Giant Hogweed and Japanese knotweed to flourish.¹⁵



Images comparing giant hogweed growth in March 2024 and 2023. Left photo was taken on the 22nd March 2024 showing much greater giant hogweed growth than normal for this time of year due to the wet and warm weather in February, while the right photo was taken 6th March 2023.

Photos taken by Chloe Lawrence at the Tees River Trust.

¹³ https://www.wcl.org.uk/docs/Link_EAC_invasive_species_inquiry_evidence_April2019FINAL.pdf Species who migrate to the UK because climate change is impacting their habitat should not be considered an invasive species, but their impact on the UK should still be monitored.

¹⁴ <https://todaysconveyancer.co.uk/conveyancers-warned-flooding-helps-spread-japanese-knotweed/>

¹⁵ <https://www.warringtonguardian.co.uk/news/24178952.japanese-knotweed-thriving-warrington-due-wet-weather/>

A floodplain grazing marsh managed by Cheshire Wildlife Trust has experienced several large-scale flood events since Autumn 2023. Before the winter, the invasive species Water Fern (*Azolla filiculoides*) was isolated to one manageable stretch of ditch on the site. Following the wet weather events this species has spread to at least two ponds where it has never been observed previously. The Wildlife Trust for Lancashire, Manchester and North Merseyside have observed this effect in the River Yarrow. Japanese Knotweed has expanded downstream where pieces of the plant are broken upstream, carried and distributed onto the banks by floodwater. Travelling in water is also considered to be the greatest mode of spread for Himalayan Balsam (*Impatiens glandulifera*) in this area after seed pod dispersal. On the River Ribble they have observed Giant Hogweed growing at the flood line in the deposited debris after a major flood event.

Flooding is a well-recognised pathway for INNS spread across the globe. The U.S. Geological Survey estimates at least 1,400 INNS can spread via major flood events¹⁶ and it is documented that major flooding in the Australian Murray-Darling Basin allowed the European carp to significantly expand its population, which now accounts for 90% of the biomass in the river system.¹⁷

In Australia, Invasive Red Imported Fire Ants (*Solenopsis invicta*) travel on the surface of floodwater by joining together to create a raft and drifting to new areas.¹⁸ There is enough venom in the sting to cause pustules and potentially fatal allergic reactions in humans.¹⁹ In 2023 an established colony was spotted in Europe for the first time near the city of Syracuse, Italy, although it is believed that the colony may have been there undiscovered since 2019.²⁰ This colony had 90 wild nests stretching across an area the size of a football stadium. This species has been documented to cause structural damage to the buildings above their nests and to electrical equipment in their way. Models suggest that half of urban Europe is already suitable for this species to establish and under climate change this will further expand.²¹

Another pressing concern for the UK is the Chinese Mystery Snail (*Cipangopaludina chinensis*), as two populations have been identified in Sussex and Hampshire. This species is established

¹⁶ [The USGS estimates potential spread of invasive species carried by hurricane-induced flooding | U.S. Geological Survey](#)

¹⁷ <https://www.abc.net.au/news/2021-12-10/invasive-species-floods-central-west/100686180>

¹⁸ <https://edition.cnn.com/2024/01/17/australia/fire-ants-forming-rafts-to-cross-australia-flood-waters-intl-scli-scnc-climate/index.html>

¹⁹ <https://www.theguardian.com/environment/2023/nov/29/fire-ants-found-nsw-invasive-species-bites-sting-death>

²⁰ <https://www.nhm.ac.uk/discover/news/2023/september/invasive-red-fire-ants-found-europe-first-time.html>

²¹ <https://www.cell.com/current-biology/abstract/>

in areas of North America where it was introduced by aquarium releases and the flooding of riverside ponds to major river basins.²² They have been found to carry parasites and diseases and outcompete native species for food and habitat.²³

A total of 13 invasive species have been found to exacerbate the effects of floods²⁴, primarily invasive freshwater plant species such as Floating Pennywort (*Hydrocotyle ranunculoides*) by forming thick mats behind weirs and dams and obstructing sediment flow. When invasive riverside plants dieback in autumn the riverbank is exposed to sediment erosion over winter, which can increase nutrient loads, and choke fish spawning areas downstream.²⁵ Invasive animals which are well evidenced to also undermine flood defences include the American Signal Crayfish (*Pacifastacus leniusculus*) and Chinese Mitten Crabs (*Eriocheir sinensis*) by burrowing into river banks.²⁶ Invasive Zebra and Quagga Mussels clog water pipes, costing water companies over £8million each year.²⁷

Excessive rainfall and flooding also creates an extra challenge for INNS management. The South West Lakes Trust (SWLT) are working to manage the invasive aquatic plant species *Crassula helmsii* (also known as New Zealand Pigmyweed) from their reservoirs. If left alone, this fast spreading and highly adaptable species can completely cover water and land surfaces, monopolising habitats and outcompeting native plants. It is one of the biggest threats to freshwater environments in the UK as small plant fragments are very easily transported.²⁸

Since 2017, SWLT have trialled a biocontrol method with CABI to release a gall-forming mite, *Aculus crassulae*, at a small number of sites including one South West Water owned site. These have been largely effective unless the banks were immersed due to water levels rising as a result of high rainfall, since the mites do not react well to being submerged. The record wet weather of February 2024 flooded and completely submerged the test plots rendering them invalid and likely favouring the conditions required by the plant.

²² https://invasions.si.edu/nemesis/species_summary/70329

²³ <https://fviss.ca/other-invasives-1/chinese-mystery-snail>

²⁴ Gallardo, B., Bacher, S., Barbosa, A.M. *et al.* Risks posed by invasive species to the provision of ecosystem services in Europe. *Nat Commun* **15**, 2631 (2024). <https://doi.org/10.1038/s41467-024-46818-3>

²⁵ <https://www.innsa.org/japanese-knotweed-riverbank-erosion/#:~:text=Japanese%20knotweed%20was%20historically%20planted%20for%20the%20purpose,to%20be%20affected%20by%20both%20run-off%20and%20landslip.>

²⁶ <https://www.gov.uk/government/publications/invasive-non-native-species-challenges-for-the-water-environment>

²⁷ <https://www.cam.ac.uk/stories/biobullets-protect-uk-water>

²⁸ <https://www.wwt.org.uk/wetland-centres/washington/news/lets-talk-about-invasive-species-crassula-helmsii>



Freeports

Freeports are special economic zones created to favour business with lower taxes and cheaper customs than other ports. Since 2021, eight English freeports have been confirmed and a further four sites confirmed in Scotland and Wales.

Wildlife and Countryside Link previously expressed concern for the significant environmental risks associated with freeports. They have been identified as high-risk sites for the accelerated introduction and early establishment of INNS due to the relaxed rules associated with imports.²⁹ Reviews of existing freeports have highlighted issues of poor transparency and governance, furthering concerns about the ability for INNS to pass through unnoticed. In light of the issues with transparency already evident in Teesside, there must be increased regulation and spot inspections at freeports to monitor and enforce compliance.

Policy progress and missed opportunities

While there has been some progress over recent years this has been slow and piecemeal. It is concerning that INNS are still not receiving the same priority and funding as other animal and plant health biosecurity regimes despite the clear environmental and economic benefits of further action. The lack of reliable, long-term funding, even for priority species in high risk areas, is responsible for the growing number of INNS establishing in the UK each year.

GB Invasive Species Strategy

The strategy was released in February 2023 containing 55 key actions to guide INNS management and prevention up to 2030.³⁰ Missing from the Strategy is measurability and clarity on delivery as one year on from its publication there is no set timeline for when actions in the strategy will be delivered and how progress will be monitored. Without measurable and timely targets, there will be no way to monitor progress towards the 2030 goals. Government must publish fully resourced implementation plans and start delivering them without delay.

The strategy will not succeed without adequate long-term dedicated funding for monitoring and eradication strategies and public awareness campaigns yet no extra funding streams were mentioned in the strategy, despite the Environmental Audit Committee recommending that Government should increase the budget for tackling INNS to £6 million and that the INNS inspectorate should be similarly resourced similarly to other inspectorates.

²⁹ https://www.wcl.org.uk/docs/Link_freeports_consultation_response_July2020FINAL.pdf

³⁰ <https://www.nonnativespecies.org/assets/Uploads/The-Great-Britain-Invasive-Non-Native-Species-Strategy-2023-to-2030-v2.pdf>



Listing and de-listing restricted species

The process of placing species onto this list is harmfully slow. Under current practices the GB Committee determine which species to consider for listing then conduct risk assessments for them, overseen by the Non-native Risk Analysis Forum (NNRAF). The process of researching alone for the 15 species currently being considered at time of writing is expected to take two years. The risk assessments are then opened for stakeholder comments and consultations, the GB Committee reviews all evidence and makes a recommendation to list the species or not, until finally the Secretary of State, with the consent of Welsh and Scottish Ministers, has the power to add or remove species from the list.

This process must be sped up to address new and emerging threats and ensure rapid and targeted action where it is most needed to prevent INNS from establishing, with efficient coordination across the devolved administrations. Evidence of the sluggishness of the current UK process, is showcased by the fact the UK only has 66 listed species, all of which were transposed across from the EU Regulation. No new additions have been made since 2019. In contrast, a further 22 species have been added to the European list in past 5 years.

Slow reactions to new INNS threats risk the future of native species. For example, amphibians and reptiles are at significant risk of disease from emerging invasive non-native fungus and parasite species carried by other invasive amphibian species like the Alpine Newt (*Ichthyosaura alpestris*) which has already established some localised populations.³¹ The current inefficiency of this process is stopping the UK from achieving good biosecurity and meeting important and legally binding nature commitments.³²

Non-Native Species Inspectorate

A three-year trial of the Non-Native Species Inspectorate (NNSI) has been running since 2021, starting with just four staff but expanding to eleven by spring 2023. During the trial the Inspectorate has identified:

- approximately a 10% rate of non-compliance over 2,000 inspections.
- potentially over 300,000 contaminated units (containers, recreational boats and angling equipment) arrive in GB annually.

Though a small and stretched team, the NNSI has eradicated (subject to monitoring) two individual invasive species.

³¹ <https://www.froglife.org/info-advice/amphibians-and-reptiles/alpine-newt/>

³² https://www.wcl.org.uk/docs/assets/uploads/Biosecurity_and_infectious_diseases_threats_Briefing_note_1_6.01.24.pdf



Table 2: Species eradicated by the Non-Native Species Inspectorate

Name	Impact	NNSI Eradication
Sea Myrtle / Tree Groundsel - <i>Baccharis halimifolia</i>	An invasive shrub native to North America that grows in salty soil, reaching heights of 4m. It outcompetes native species, forming a dense understory of vegetation in coastal wetlands, saltmarshes and woodlands. It is an alert species on the NNS website after it was identified in the three coastal locations of Mundeford Quay, South Hampshire (1924); Hamworthy, Dorset (1958); and Machrihanish Links, Kintyre (1988).	As of 2021 a single population of this listed species was present in Dorset. NNSI liaised with the landowner (the local council), who carried out the actual treatment. NNSI has revisited several times and the council have re-treated the site. It now looks as if this species has been eradicated but NNSI will continue to monitor it to make sure.
Acrobat Ant / Cork Ant – <i>Crematogaster scutellaris</i>	Small ants native to the Mediterranean, identified by a curved ‘heart shaped’ abdomen which nest inside building structures. Two established indoor populations were identified in north London and Tamworth in the west Midlands in 2017. UK climate currently prevents the species from establishing outdoors.	The Inspectorate has overseen the attempt to eradicate the Acrobat Ant of which only two GB populations were known. NNSI has overseen the treatment since 2021 and it appears that both the Tamworth and London populations are extirpated. NNSI will continue to monitor this species in case it recurs.

The power of the inspectorate is limited, with staff unable to enter home dwellings to investigate whether an offence under Section 14 of the Wildlife & Countryside Act is being or has been committed. Increasing Inspectorate staff numbers is a positive step however this must also be reflected with confirmation of its permanence, increased powers and resourcing to allow the team to deliver their duties. The UK cannot secure world leading biosecurity when the team who are monitoring and delivering it are doing so on a shoestring.

New species sightings/establishments in last 3 years

Table 1: Species at risk of establishing in UK

Species	Sightings	Risks
Asian Hornet - <i>Vespa velutina</i>	Well established in Europe and increased sightings in the UK. 57 sightings in 2023 - more than double the number of the previous seven years combined.	A significant threat to wild bee populations as well as honeybees. The species has altered the biodiversity in regions of France. Limited action is taking place in addressing known pathways such as trade and horticulture.
Red Imported Fire Ants - <i>Solenopsis invicta</i>	An established wild colony was found in Europe for the first time in Italy in 2023 the size of a football stadium . This must be a wake-up call for the UK to protect against this species before it is too late. Likely introduced in contaminated plants or cargo ships.	One of the most damaging invasive species impacting ground-nesting birds, buildings and public health, documented to kill people and livestock. New Zealand successfully eradicated the species but Queensland, Australia have spent 22 years trying to contain it at an estimated cost of \$2bn. The lesson from Australia is that it should be a priority to prevent the species from establishing at all.
Citrus Longhorn Beetle - <i>Anoplophora chinensis</i>	Numerous interceptions in the UK associated with ornamental tree imports such as Japanese maple trees. A species of Anoplophora was intercepted in a Japanese imported Bonsai tree in September 2023.	The Larvae and beetles native to Asia pose a serious threat to horticulture and forestry as they can kill healthy native trees in the UK. The outbreaks in Europe demonstrate that there is a significant threat to the UK.
Red Lionfish - <i>Pterois volitans</i>	Spotted in Dorset in 2021 . Possible pathways for this species include the aquarium trade, ship ballast water or natural arrival from the Mediterranean.	Lionfish are excellent hunters, eating 50 species of fish. They have already harmed reef habitats and fishing stocks . Could have a detrimental impact to the fragile marine ecosystems and native fish populations. Lionfish fin venom can prove fatal to humans .
Pink Salmon - <i>Oncorhynchus gorbuscha</i>	Occasional sightings in UK waters since 1960s, with range expansion in 2017 when 200 captures were reported . There were then around 20 in 2019, 26 in 2021 and, due to their distinct two year life cycle, numbers are expected to have been high in 2023.	Can negatively impact native species such as the threatened Wild Atlantic Salmon through pathogens, competition and replacement. The species spread through Europe following translocation to Russia in the 1950s. By 2021 this had become the most abundant fish species in many Norwegian rivers . A similar rapid establishment of pink salmon in the UK is highly plausible.

<i>Dikerogammarus bispinosus</i> (a freshwater crustacean)	Not yet in the UK, but introduction could occur as a hitchhiker through ballast water, boats or angling gear.	A freshwater crustacean spread across Europe from the Black Sea basin. It is similar to the 'Killer Shrimp (<i>Dikerogammarus villosus</i>)' and may negatively impact native crustacean species through competition, predation and the introduction of novel parasites.
Chinese Mystery Snail - <i>Cipangopaludina chinensis</i>	Found a breeding population in the Pevensey Levels SAC in 2018 and then also in two Southampton lakes in 2022. Popular in aquariums, the likely pathway is deliberate release.	Native to Asia, this species could reduce native snail populations through competitive exclusion and potentially as a host for parasites. These snails can be spread by boating or water channel management equipment, and establishment is very likely.
Round Goby - <i>Neogobius melanostomus</i>	Not yet in the UK but a possible new arrival. It is a fresh and brackish water fish having negative impacts in Europe.	A High risk with major impacts from GBNSS. The impact is expected to be negative towards endangered native bottom dwelling fish species , with an economic cost too.
Giant Reed/Cane - <i>Arundo donax</i>	Widely propagated and sold for ornamental use as a replacement for bamboo. Not yet found in the wild but garden escape is plausible.	A highly invasive grass species in riparian habitats. On the river Rio Grande it has been found to increase flooding events by trapping sediment, narrowing rivers and reducing the aquatic habitat available for native species.
Ponto-Caspian amphipod - <i>Chelicorophiu robustum</i>	Recorded in GB , and most likely the UK and Ireland, for the first time in October 2021 on the River Thames. 12 other non-native macroinvertebrate species were also found at the same site in Hampton in 2021. Spatial distribution models have found that the south-east of England is at greater risk, so attention should focus on the lower reaches of the Great Ouse, Broadlands, Thames and Severn rivers.	A tube-dwelling, filter feeding amphipod that has expanded its range to Europe and is a threat to native freshwater species. It is important to note that this amphipod is just a single example of invasive Ponto-Caspian species which are a close threat to the UK. There are 4 species already present which are Killer Shrimp, Demon Shrimp (<i>Dikerogammarus haemobaphes</i>), Bloody-Red Shrimp (<i>Hemimysis anomala</i>), and Caspian Mud Shrimp (<i>Chelicorophium curvispinum</i>) and due to the spread throughout Europe, a further 19 species are projected to be brought to the UK.

Prevention will save the UK money

If Government fully implements our policy recommendations and invests £6 million a year into the invasive species regime, our calculations estimate that by 2040 that the cost of INNS will not have increased far beyond the £2 billion that it currently costs now.

By 2040 this could create a saving of around £2.5 billion, which is a return on investment of £21 to every £1 spent.

DEFRA estimated that increased funding for the INNS regime could prevent 24 species from establishing here and eradicate 10 species by 2040.³³

The trial period of the Non-Native Species Inspectorate has revealed high rates of non-compliance with biosecurity regulation and significant risks of introduction associated with contaminated containers, recreational boats and angling equipment. Increased funding and powers to mirror the threat that INNS pose will improve their ability to eradicate and prevent invasive species from establishing.

A further £3 million should be dedicated to funding a biosecurity citizens' army.

To help to manage and eradicate INNS, Local Action Groups (LAGs) remain an incredibly valuable resource, as reiterated in the GB INNS Strategy. However, they are heavily dependant on ad hoc pots of funding which remain a significant challenge to come by every year, and makes it hard to deliver meaningful sustained action. This does not reflect the scale or threat of invasive species. Without long-term funding and resourcing for Local Action Groups, there can be no 'biosecurity citizens' army' to assist with INNS eradications on the ground, which the EAC recommendations call for.

50% of Local Action Groups have expressed to the LAG coordinator that funding is one of the main challenges that they face to eradicate invasive species. The total DEFRA budget for LAG groups 2023-2025 is £310,725 (just over £150,000 per year) awarded to 12 individual LAG projects across the country. But with over 72 LAGs who rely on funding to eradicate harmful species, this is not ambitious enough. LAGs rely heavily on volunteers with just 19 groups totalling nearly 17,500 hours of volunteer time in 2022. The UK is extremely lucky to have dedicated volunteers willing to tackle invasive species at the root. However, each year that funding is not secured is another year that the will and capacity of this network might decline.

³³ <https://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/environmental-audit-committee/invasive-species/written/104755.pdf>

LAG funding case studies

Case study 1: West Cumbria Rivers Trust, Derwent INNS project.

Izzie Mullin, Project Officer – Invasive Species



West Cumbria Rivers Trust & the National Trust assessing the winter extent of INNS in Crummock Water.



A biosecurity stand hosted by the West Cumbria Rivers Trust and volunteers on Derwent Water, West Cumbria.

The INNS project within the Derwent Catchment in West Cumbria has been running for two years. 67% of the Catchment is within the Lake District National Park which receives 18 million visitors annually and includes six lakes of Thirlmere, Derwent Water, Bassenthwaite Lake, Buttermere, Crummock Water and Lowes Water. These lakes are extremely popular for recreational sports such as canoeing, stand up paddle boarding, angling, rowing, sailing and open water swimming, with no regulated permitting system.

The popularity of the National Park makes these lakes and the surrounding landscape extremely vulnerable to new INNS introductions, so much so that all but one lake (Buttermere) have a considerable presence of INNS.

The Derwent Invasives Partnership (DIP, formed of West Cumbria Rivers Trust, National Trust, Environment Agency, Natural England and Cumberland County Council) focuses on increasing the awareness of INNS through a biosecurity campaign and tackling invasives in the catchment. Currently, the project focuses on Himalayan Balsam, American Skunk Cabbage, Japanese Knotweed and waterweeds such as New Zealand Pigmyweed (*Crassula helmsii*) and Nuttall's Waterweed (*Elodea nuttallii*). The project has a huge focus on biosecurity, but also works to control and eradicate Japanese Knotweed, Himalayan Balsam and American Skunk Cabbage from the catchment, starting from the source points, working down.

The West Cumbria Rivers Trust relies entirely on grants to support this work. Often the project must be adapted to fit the criteria of the funding pot, funding is short term and cannot be



used for staff time. The current West Cumbria INNS project officer was funded primarily (60%) by the Defra 'Farming in Protected landscape' (FiPL) fund as part of a wider project in the trust and their work focused on the Cocker catchment (a sub-catchment of the Derwent). The remaining funding was sourced from various, small charitable trusts and funds.

Working in this way is inefficient, time consuming and irreflective of the scale of action needed to protect this landscape from the threat of invasive species.



Before and after Himalayan balsam removal at Maggie's Bridge. West Cumbria.

Case study 2: Water Primrose eradication at Round Pond Breamore Marsh

Joanne Gore, Hampshire & Isle of Wight Wildlife Trust

Water Primrose (*Ludwigia grandiflora*) is a rapidly growing freshwater plant species native to South America, introduced to the UK as an ornamental garden plant. It can double its biomass in just 15-20 days smothering water bodies, outcompeting native species and increasing the risk of flooding.

It is listed as a priority species to eradicate from the UK due to its potential to cause serious damage to the aquatic environment, as experienced in France, The Netherlands and Belgium.

Water Primrose was discovered growing in the wild at Round Pond, Breamore Marsh Site of Special Scientific Interest (SSSI) in the New Forest District of Hampshire in August 2009. There is an urgent need to eradicate the Water Primrose population at this site due to the proximity of the river Avon (which is recognised as being of national and international ecological importance) and to protect the rich assemblage of aquatic and semi-aquatic plants at Breamore Marsh SSSI. The SSSI is one of only four sites of the Common Mudwort (*Limosella aquatica*) in Hampshire and Round Pond hosts the important plant species Brown Galingale (*Cyperus fuscus*), making protection of this unique habitat extremely important.

This site has been fortunate to receive funding for eradication and monitoring, although it is an annual challenge for the Project Officer to apply for funding from either Natural England or the Environment Agency which is often met with very late confirmation. At the time of writing, funding is still being sought to enable monitoring and control to be undertaken at this important site during 2024/25 after failing to receive commitments from either organisation.

Protecting a SSSI and its rare plants, plus preventing flooding, habitat loss in the wider catchment and economic consequences to the local community is an extremely worthwhile investment.



Trevor Renals



Joanne Gore

Image on the left showing Water Primrose at the site. Image on the right showing past management methods at Round Pond, Breamore Marsh.

Case study 3: The consequences of an unsuccessful funding bid for the Tees Rivers trust

Chloe Lawrence, Project Officer

The Tees River Trust in the Northeast of England have worked on invasive species for the last 12 years. Current work in the Tees Catchment is predominantly focused on tackling giant hogweed, Himalayan Balsam, Japanese Knotweed and more recently Floating Pennywort. Previous efforts also focused on Rhododendron Ponticum.

As of 2020 the Tyne Rivers Trust, Northumberland Rivers Trust, Tweed Forum and Wear Rivers Trust have become a regional working group to target:

Black List INNS: Alert species that are not currently present in the region but assessed as a high risk and threat. Includes Killer Shrimp, Demon Shrimp, Quagga Mussels, Water Hyacinth, Mosquito Fern and Sour Fig (*Carpobrotus edulis*) amongst other species.

Red List INNS: High-impact species that are present in a small number of sites but not well established or abundant. Includes Zebra Mussel, Chinese Mitten Crab, Carolina Fanwort



(*Cabomba caroliniana*), Curly Waterweed (*Lagarosiphon major*) and Three-cornered Leek (*Allium triquetrum*) amongst other species. While continuing work on **amber list** INNS: Well-established species whose eradication is difficult or not feasible, but control is important due to their impact.

Funding for the Tees Rivers Trust has previously been supplied through the National Lottery Fund (NLHF), including the five-year Tees Operation Giant Hogweed project (TOPHOG) which has only recently ended in 2024 and achieved an 85% reduction in Giant Hogweed over 40 sites. Giant Hogweed is a human health hazard as contact with the sap under sunlight can cause very painful skin blisters, even leaving the skin sensitive for a number of years after.

This project would not have had this success without the commitment of over 60 regular volunteers.

Unfortunately, the application for further NLHF led funding for the regional partnership to tackle INNS within the Northeast was unsuccessful. Consequently, this has led to contractor redundancies, as well as a staff member who has worked at the trust for 12 years.

This had greatly impacted what the Trust will be able to achieve going forward until funding bids are successful. The focus of the trust will be working with the resources they still have to not lose the amazing work and progress to manage INNS that has been achieved so far, especially Giant Hogweed. A long term monetary commitment is needed to continue work in this area, and so the time-consuming search for funding continues.



Giant hogweed removal and habitat restoration in Round Hill at Ingleby Barwick on the River Leven, as part of the TOPHOG project. The far left image shows a large extent of Giant Hogweed in 2019 compared to Summer 2023 on the far right.

Wildlife and Countryside Link (Link) is the largest nature coalition in England, bringing together 83 organisations to use their joint voice for the protection of the natural world and animals. Wildlife and Countryside Link is a registered charity number 1107460 and a company limited by guarantee registered in England and Wales number 3889519.

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The following organisations have inputted into this briefing



Images

Page	Common species name & image credits (if applicable)	Status of UK establishment
1	American Signal Crayfish © Tees Rivers Trust	Yes, widespread
2	Asian Hornet	Likely established
3	Himalayan Balsam	Yes, widespread
4	Grey Squirrel	Yes, widespread
5	Zebra Mussels © Paul Beckwith BWW	Yes, widespread
6	Oak Processionary Moth	Localised populations present
7	Purple Pitcher Plant (<i>Sarracenia purpurea</i>) © Catherine Chatters	Localised populations present
8	Reeves Muntjac	Yes, widespread
9	Water Hyacinth (<i>Eichhornia crassipes</i>) © Chris Evans, Bugwood.com	Yes, widespread
10	Japanese Knotweed	Yes, widespread
11	Fallow Deer	Yes, widespread
12	Floating Pennywort © Trevor Renals, Environment Agency	Yes, widespread
13	Round Goby	Not yet present
14	Red Imported Fire Ant © Michael Merchant, Bugwood.com	Not yet present
15	Carolina Fanwort	Not yet present
16	Rhododendron Ponticum	Yes, widespread
17	Chinese Mitten Crab	Yes, widespread
18	Chinese Mystery Snail	Localised populations present
19	Asian Longhorn Beetle © Gillian Allard, Bugwood.com	Not yet present
20	American Mink	Yes, widespread
23	Giant Hogweed © Jennifer Gant	Yes, widespread



**Report and economic analysis by Wildlife and
Countryside Link, with input from members of
the Invasive Non-Native Species Working Group**

Wildlife and
Countryside

