CALL FOR VIEWS

Response Document

Call for views - draft Scottish INNS Action Plan 2026-2032

22nd January 2026

Introduction to CIEEM

The Chartered Institute of Ecology and Environmental Management (CIEEM), as the leading membership organisation supporting professional ecologists and environmental managers in the United Kingdom and Ireland, welcomes the opportunity to comment on this consultation.

CIEEM was established in 1991 and has over 9,000 members drawn from local authorities, government agencies, industry, environmental consultancy, teaching/research, and voluntary environmental organisations. The Chartered Institute has led the way in defining and raising the standards of ecological and environmental management practice with regard to biodiversity protection and enhancement. It promotes knowledge sharing through events and publications, skills development through its comprehensive training and development programme and best practice through the dissemination of technical guidance for the profession and related disciplines.

CIEEM is a member of:

- Scottish Environment Link
- Wildlife and Countryside Link
- Northern Ireland Environment Link
- Wales Environment Link
- Environmental Policy Forum
- IUCN – The World Conservation Union
- Society for the Environment
- United Nations Decade of Restoration 2021-2030 Network
- Irish Forum on Natural Capital (working group member)
- National Biodiversity Forum (Ireland)
- The Environmental Science Association of Ireland

CIEEM has over 880 members in Scotland who are drawn from across the private consultancy sector, NGOs, government and SNCOs, local authorities, academia and industry. They are practising ecologists and environmental managers, many of whom regularly provide input to and advice on land management for the benefit of protected species and biodiversity in general.

This response was coordinated by Members of our Scotland Policy Group with input from the wider CIEEM membership.

Linked documents

- Draft INNS Action Plan for Scotland - December 2025
- Scottish List of INNS Priorities - Prevention Priority Species - November 2016
- Scottish List of INNS Priorities - Management Priority Species - November 2016

1. Do we have the right set of actions, and can they be strengthened in any way?

Overall, the draft Scottish INNS Action Plan 2026–2032 provides a clear and comprehensive framework, with outcomes that appropriately reflect the key areas that need to be addressed.

However, it is unclear how this plan will create or drive the change required. Few of the actions listed are SMART (Specific, Measurable, Achievable, Relevant , and Time-bound), and there is insufficient detail on how these actions will be delivered. As demonstrated by later iterations of the Scottish Biodiversity Delivery Plan, clearly defined SMART targets are essential to support and drive effective delivery. As it stands, this plan appears to require an accompanying delivery plan to translate its ambitions into action.

This INNS plan cannot exist in isolation and needs to be embedded across all areas of policy and conservation. For example, for water pathways it should dovetail with the River Basin Management Plans and the National Marine Plans.

INNS amendments are being lodged in the Natural Environment Bill, with Stage 3 being debated in January 2026. What is legislated for in the Natural Environment Act with regards to INNS will need to be updated in this National INNS Plan. Likewise the findings of the Environmental Standards Scotland (ESS) Call for Evidence on INNS[1] and ongoing analysis and outputs needs to be reflected in the National INNS Plan. For example, in October 2025, ESS called on the Scottish Government to commit to a review and update to the Code of Practice for invasive non-native species (INNS) in Scotland[2]. Therefore, we would like to hear how these concurrent developments are going to link together.

Outcome 1 – Prevention and Captive Management

There needs to be more emphasis on prevention and prioritisation of INNS set out in the action plan. Looking at where species have become invasive elsewhere allows predictive modelling of future risks. There has been a lot of research done on species traits to inform which species are likely to become invasive. The Non-Native Species Inspectorate (NNSI) is tasked with carrying out inspections at premises and events, compliance checks, enforcement and assisting with early action on new incursions. However, it remains a very small unit relative to the scale of invasive species challenges, and resourcing for early detection and enforcement should be increased as a priority.

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1 https://environmentalstandards.scot/our-work/our-analytical-work/control-and-impact-of-inns-summary-of-call-for-evidence-responses/

2 https://environmentalstandards.scot/keep-up-to-date/review-and-update-to-code-of-practice-for-controlling-invasive-non-native-species/

Early warning and rapid response systems need to be in place for the arrival of new high-risk non-native species, which have the potential to become invasive under a changing climate. Non-native species also have a lag time before they potentially become 'invasive'. Rapid response is crucial to avoid them establishing undetected.

For example, the Pacific oyster (*Crassostrea gigas*) is the mainstay of Scottish oyster production, yet it represents a threat of becoming invasive in Scotland. Due to rising sea temperatures, it has become invasive on the south coast of England and has become a significant issue in Southeast England and should be monitored closely. There ought to be an action to consider how oyster cultivation in Scotland should adapt to avoid this becoming a problematic INNS here, particularly given the number of projects that are reintroducing native oysters (*Ostrea edulis*) to the Scottish seas. Feral populations of the Pacific oyster in Ireland already seem to be self-recruiting. There will be an increasing spread of marine INNS, particularly with warmer seas.

Forward thinking of potential risks needs to be embedded across all areas. For example, in the planting of local green spaces and road verges there should be a proviso for the use of native species of a local provenance wherever possible. Section 14.2 of the WANE (Scotland) Act 2011 makes it an offence for any person who plants or otherwise causes to grow any plant in the wild at a place outwith its native range. Even if it could be argued that urban local green spaces are not considered 'wild' they could provide a pathway for dispersal into the wild. Best practice on native species/local provenance should be applied. This is where public awareness is crucial, so that well-meaning planting using seed mixes of non-native species is not conducted. Even for habitat creation and restoration[3], a recent report published by the Scottish Plant Health Centre found that the risks of plant pests to our semi-natural habitats is rarely considered, with organisations failing to carry out a biosecurity risk assessment prior to work being undertaken. The published biosecurity best practice guidance[4] for habitat restoration and creation should be followed to prevent accidental spread of unwanted plant pests and pathogens.

The sentence under 'Inspections, Enforcement and Permitting - *Legal powers designed to enable inspections and enforcement have yet to be fully tested.'* illustrates that we need a stronger regulatory framework to block pathways. In the Environmental Standards Scotland Call for Evidence on the Control and Impact of Invasive Non-Native Species Summary report[5] It details that 'respondents identified enforcement as a significant weakness in current INNS legislation.' Although the WANE Act has provision for Species Control Agreements and Species Control Orders, it is not clear if any have been issued. There doesn't appear to be a publicly available central list or official record (on NatureScot, Scottish Government or other UK government sites) that clearly shows specific Species Control Agreements or Species Control Orders that have been issued in Scotland to

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3 https://www.planthealthcentre.scot/sites/www.planthealthcentre.scot/files/2023-09/phc2020_03_plant_health_the_natural_environment_fellowship_final_report.pdf

4 https://www.planthealthcentre.scot/sites/www.planthealthcentre.scot/files/2023-09/biosecurity_best_practice_for_conservation_web.pdf

5 https://environmentalstandards.scot/wp-content/uploads/2025/02/ESS-Call-for-Evidence-Control-and-impact-of-invasive-non-native-species-Summary-of-responses-February-2025.pdf?utm_source=chatgpt.com

date. So although there is guidance that explains the mechanisms and powers available to create Species Control Agreements and Species Control Orders there is no evidence of their use.

The 2023 report on horizon scanning[6] identifies pathways of spread of INNS into Scotland and provides ranked lists of species based on their impact and likelihood of arrival and establishment. That report should inform an update to the associated documents,'Prevention Priority Species' and 'Management Priority Species', both of which date from 2016. In the intervening 10 years, additional species could be categorised as having higher invasive potential and therefore these lists should be reviewed and updated as a matter of priority.

Outcome 2 – Early Detection and Rapid Response

There needs to be more acknowledgement of and emphasis on the costly nature of managing INNS and therefore additional efforts and resourcing directed at early detection and rapid response, which are more cost-effective.

As an example, there is clear scientific evidence[7] of the impact of two emerging threats to wild Atlantic salmon; invasive Pink Pacific salmon and 'red skin disease'. Early biodetection and implementation of biosecurity is paramount, with proactive monitoring in remote areas key to detect species with significant invasive potential. Likewise, there needs to be rigorous monitoring of high risk species in islands.

The role of citizen scientists has been highlighted but this could be expanded to apply to land managers (farmers, foresters, estate workers) as well as consultants and other field ecologists In helping to achieve the below objective:

'Detect emerging INNS threats early, through increased targeted surveillance and vigilance of citizen scientists, and quick action to prevent their establishment and spread.'

The intention to develop risk-based surveillance frameworks is welcome. We recommend the promotion of the role of professional ecologists, environmental managers and invasive alien species control specialists to contribute to the recording and mapping of invasive alien species, undertaking evidence-based risk assessment and recommending appropriate management with follow up monitoring and remedial action, where feasible in collaboration with local action groups and other local stakeholders. The Clyde Marine Planning Partnership, Clyde Forum and the Solway Firth Partnership would be useful fora to link in with. Not only have they produced marine biosecurity plans, but the Solway Firth Partnership is ideally placed to encourage cross-border working with counterpart agencies in England, which will be critical for coordinating early detection and rapid response actions.

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6 https://www.gov.scot/publications/provision-horizon-scanning-analysis-pathways-spread-invasive-species-scotland/pages/9/

7 Atlantic Salmon Trust (2022). Pink Salmon and Red Skin Disease: Emerging Threats for Atlantic Salmon https://www.flipsnack.com/juinpublish/tast-blue-book-dec-2022/full-view.html

Outcome 3 – Long-term Management of Established Species

Clear and well-evidenced prioritisation of INNS control, based on risks/impacts is required.

We very much welcome the intention to work at landscape or catchment scale as this is definitely required. However, at present that is very difficult to do given the lack of obligation and co-ordination on different management units.

For landscape scale intervention to work, there has to be the capacity and resources in place, and a mechanism to oblige land managers to take part, or to intervene on their land or riparian ownership if they don't - and recoup the costs of doing so. There are plenty of examples of piecemeal intervention that have failed because of reluctant land/riparian managers - and a few where concerted effort has worked.

For control of riparian and wetland plants on and adjacent to water courses, targeted landscape scale approaches need to be adopted to control and manage INNS. Co-ordinated control programmes involving a wide range of partners and stakeholders have a much greater chance of success in the long term. Valuable lessons can be learnt from long-term control work already conducted in Scotland, e.g. the highly successful giant hogweed eradication and control across all 5,000km^2 of the Tweed catchment by the NGO Tweed Forum[8]. With a changing climate and increased high flows events, an increase in water transfers and other pathways such as water-based recreation, there is more risk of introductions and non-native species that are already present extending their ranges[9,10]

Eradication is unlikely to be feasible for some aquatic invasive species once they become established. The North American signal crayfish (*Pacifastacus leniusculus*) is a key example, as eradication efforts are complicated by the presence of native and potentially protected species. Signal crayfish burrow into riverbanks, causing structural damage and destabilisation, and their ability to travel over land creates a high risk of spread across catchments. They are large, aggressive competitors that out-compete native white-clawed crayfish (*Austropotamobius pallipes*) and prey on their juveniles. They also carry crayfish plague, which is fatal to the white-clawed crayfish.

Management efforts have therefore focused on containment and control, including the installation of screens and licensed trapping at the outlets of standing waters. A targeted eradication programme was undertaken in 2012 at a small disused slate quarry in Ballachulish, Lochaber[11]. The Lochaber Fishery Trust, in partnership with Ayrshire Rivers Trust, SEPA, NatureScot (SNH), and Highland Council, treated the pond with the pyrethroid biocide Pyblast, followed by four years of intensive trapping at a total cost of £73K. This approach has been effective in small, isolated waterbodies in England and Wales. However, while suitable for discrete standing waters with minimal connectivity, it is not appropriate for use in running water systems.

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[8] https://tweedforum.org/our-work/projects/tweed-invasives-project/

[9] Truscott, A.M., Soulsby., C., Palmer, S.C.F., Newell, L. & Hulme, P.E. (2006). The dispersal characteristics of the invasive plant *Mimulus guttatus* and the ecological significance of increased occurrence of high-flow events. Journal of Ecology, 94, 1080-1091. https://doi.org/10.1111/j.1365-2745.2006.01171.x.

[10] Čuda, J., Rumlerová, J.B, Skálová, H. & Pyšek, P. (2017). Floods affect the abundance of invasive Impatiens glandulifera and its spread from river corridors. Diversity and Distributions, 23, 342-354.

[11] https://www.sepa.org.uk/media/37362/managing-invasive-non-native-species_plan.pdf

Outcome 4 – Whole of Society Approach

Too often, responsibility for controlling invasive species falls between authorities, landowners and stakeholders. A whole of society approach to INNS is therefore essential, and it needs to be clear who has lead responsibility and the key delivery partners with agreed implementation strategies and timescales for delivery. While key responsible authorities have been identified for their relevant area, they will not always be the ones delivering on the ground. This raises important questions about how the INNS plan will be coordinated, governed and reported on. A lack of clarity on roles and responsibilities, and how the delivery will be supported through funding, resources and expertise, remains a significant barrier to effective implementation. Responsibilities across agencies need to be better defined, coordinated and joined up, and INNS control should be embedded within the routine operations of all organisations that own or manage land.

A responsibility matrix covering each key action with clearly identified 'leads' and 'delivery partners' for the actions would be helpful. Developing a pipeline of strategic INNS projects requires clear allocation of responsibility for the delivery of actions.

In terms of partners and stakeholders required to deliver this action plan there needs to be more mention of landowners and communities who can support the delivery of action. At present, there is very little mention of landowners and managers in the action plan, however, these are key stakeholders/actors when considering INNS management. There needs to be greater capacity building to support the control of INNS across all land and inland water sectors - this should include awareness raising around the risks and the provision of resources to ensure that land managers can effectively prevent and control the spread of INNS. This should also be done through greater collaboration. There is an effective INNS control programme (Giant Hogweed) established on the River Tyne (East Lothian) involving both farmers and citizen scientists for the local community.

Public awareness and outreach

Raising public awareness is really important and this should include how to prevent or reduce the sale of species on the internet which is a significant problem with many of these invasive species and is largely unregulated. This is a pathway of introduction for non-native flatworms, for example. For key INNS species, management measures aimed at widely spread species should include an awareness raising programme to help the public understand why the measures as proposed need to be undertaken.

A mission-driven approach, as outlined at the recent INNS Finance Summit[12], is a useful approach to consider action around INNS. Likewise, Theory of Change approaches are useful to consider as they can serve as a strategic planning tool, helping organisations clarify goals, design effective programs, and build frameworks for monitoring and evaluation by detailing the "missing middle" between actions and results.

[12] https://scottishwildlifetrust.org.uk/news/invasive-non-native-species-finance-summit/

2. Are there other actions/considerations that should be included?

Resourcing

The issues around resource allocation need to consider opportunities across the public and private sectors and fully acknowledge that prevention and early detection can make significant cost savings. So far there is very little reference to the funding required to deliver the INNS plan, which should be provided through a strategic INNS control funding strategy. We would like to see an Investment Plan with clearly laid out strategies to drive funding and deliver at the scale needed.

There is a need for more detail with respect to how INNS control will be funded in Scotland in the future. Although prevention is by far the most cost-effective approach to INNS management, where INNS control is required, clear funding strategies will be necessary to ensure that adequate resources are available to ensure that ecological benefits are maximised and time-sensitive risks are minimised. There needs to be continued support and upscaling of INNS control work to ensure that control efforts are not wasted when restricted to the length of funding bids.

Other actions/considerations to be included

Spread of non-native conifers

Sitka 'rain' of seed, especially on adjacent peatlands is a major and growing issue in Scotland, placing large demands on already constrained resources. The BSBI Plant Atlas 2020 found that Sitka had undergone the greatest increase in range of any plant species in the UK, with researchers warning of the need to carefully control and manage its spread.

This issue is highlighted in the Scottish Environment LINK report - Invasive Non-native Species in Scotland: A Plan for Effective Action[13].
One of the 10 principles for action in the report is that:
The Polluter Pays Principle should apply to INNS action (as in the Articles of the EU Invasive Alien Species Regulation as transposed into Scottish legislation), with industries, businesses and individuals responsible for – deliberately or accidentally/incidentally – introducing the target species paying for all remedial eradication, control and biosecurity actions, e.g. the forestry industry should bear the costs of the removal of non-native commercial conifer trees seeding onto important peatland habitats and native woodlands.

Commercial forestry needs to play more of a role in managing the impact of Sitka and other non-native conifers spreading from its operations onto neighbouring land. This can be achieved through the application of the "Polluter Pays" principle, whereby profits from planting and harvesting these conifers should pay for removal of invasive seeding conifers or for the costs of remedial action on invasive seeding. Commercial forestry should also be required to ensure better buffering of plantations near sensitive sites to reduce the risk of seeding.

The impact of tree seed rain on blanket bog in Scotland is already extensive causing issues such as drying out of the bog and potentially undermining the extensive peatland restoration efforts that are

[13] https://www.scotlink.org/wp-content/uploads/2024/05/Invasive-Non-native-Species-Report.pdf

underway via Peatland Action and other schemes. In the Royal Society of Edinburgh Report, '*Inquiry into public financial support for tree planting and forestry'*, (Section 111) assessments were made of proximity of peatland to forest plantations. This estimates that 267k hectares (ha) of peatland are at high risk of colonisation (within 200m of the forest edge), and 579k ha are at lower risk (200m – 1km from the forest edge). Much of the forestry is pole stage Sitka spruce (the stage when Sitka spruce first starts producing seed and it becomes likely that invasive seeding will become a problem). These extents are concerning given the Scottish Government target of restoring 250,000 ha of degraded peatland by 2030, at a cost of £250 million.

Many lessons can be learnt from approaches in New Zealand where the New Zealand government has established management plans and policies to address biosecurity threats and manage its forests sustainably[14].

Released gamebirds

Tighter regulation and screening with respect to the introduction of non-native game birds such as Pheasants and Red legged partridges should be considered. This practice may increase the risks through opening up new pathways for the spread of INNS. There has been a number of studies published on the ecological consequences of the release of non-native game birds[15,16].

3. What kinds of information and support do organisations in Scotland need in order to prepare for supporting the delivery of this approach?

Pathways

Good information on the principal pathways of INNS spread in Scotland is really important and this should be made available and targeted to the right stakeholders and partners across Scotland. The Biosecurity for life project has provided good awareness raising material about the pathways and threats of INNS to seabird Islands. This model of pathway awareness raising should be developed for other INNS issues/areas.

Data and mapping

There are multiple routes where people submit records of INNS - local record centres, local authorities, SISI, species or taxa specific recording schemes, etc. Is the flow of data to responsible authorities happening and if so is it quick enough? The verification process is very reliant on volunteers which can introduce another time delay.

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14 https://www.mpi.govt.nz/biosecurity/about-biosecurity-in-new-zealand/an-action-plan-to-strengthen-new-zealands-biosecurity-system

15 Madden J.R. & Sage, R.B. 2020. Ecological Consequences of Gamebird Releasing and Management on Lowland Shoots in England: A Review by Rapid Evidence Assessment for Natural England and the British Association of Shooting and Conservation. Natural England Evidence Review NEER016. Natural England.

16 https://www.rspb.org.uk/helping-nature/what-we-do/influence-government-and-business/policies-and-briefings/outcome-of-the-rspbs-review-of-gamebird-shooting

Spatial maps showing where priority INNS have been reported or occur do exist e.g. INNS mapper[17]. However, it is not well known or searches for individual species can be done on NBN Atlas. Is there value for a map or heatmap showing locations of priority INNS species? Would any of the emerging spatial analysis and biodiversity tools being deployed by NatureScot such as InformedINSIGHT™, Big Biodiversity Layers or Natural Capital Tool perform help here? There needs to be a co-ordinated and well publicised forum/platform for reporting with responsible authorities outlined.

Sharing Good Practice and Emerging Techniques

Where management of INNS is conducted, monitoring should also be included to ensure that the actions and operations being undertaken are achieving the required results and, if not, the actions and operations should be modified. Sharing of this information will help provide a more comprehensive picture of the benefits or failure of eradication in a given area.

Sharing good practice events like those previously run by NatureScot, CIEEM Member Network events and other forums/events play a really important role in knowledge exchange and sharing lessons learned. These knowledge exchange fora are especially important for sharing novel techniques for the management of INNS. For example, the use of sheep grazing to control giant hogweed as evidenced in trials conducted in Macduff[18] and the use of technological advances e.g. the integration of drone technology and AI, offers a step change in invasive species management. These enable early detection at scale in inaccessible locations, automated identification and mapping of infestations, and more precise, cost-effective management actions with improved conservation outcomes.

Significant uncertainties remain regarding the risks posed by INNS and their potential future spread. It would be helpful if there was co-ordinated work across research institutes with respect to the applied research priorities to improve our surveillance, control and containment of INNS. This should include research on INNS pathways (and how these should be blocked). Therefore we advocate that strategic research partnerships are established to identify critical evidence gaps and to set research priorities around INNS management and control. Sustained investment in research into viable early detection, risk assessment, control and eradication methods, especially in relation to climate change, is essential to inform policy and operational responses. As suggested at the INNS Finance Summit consideration should be given to an INNS Centre of Expertise in Scotland along the lines of CREW and ClimateXChange.

As outlined under the whole of society outcome in question one, there needs to be clear governance and responsibilities.

4. Additional comments

In the document both 2030 and 2032 are used e.g.

[17] https://innsmapper.org/map

[18] https://invasivespecies.scot/wp-content/uploads/2025/04/Sheep-Grazing-as-a-Management-Tool-to-Control-Giant-Hogweed_0.pdf

- *Prevent the establishment of species of special concern and reduce the rate of establishment of other known or potential INNS by at least 50% by 2030 compared to 2000 levels.*
- *We will monitor the indicators and other metrics annually and assess progress against targets in 2030 and 2032.*

Although we appreciate why these two dates are used, i.e. to tie in with the Scottish Biodiversity Strategy and Delivery Plans, it would be useful to make this clear.