



RIVER DEE AND RIVER DON BIOSECURITY PLAN
2021 -2030

ACKNOWLEDGEMENTS

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ABBREVIATIONS

ACC	Aberdeen City Council	MS	Marine Scotland
AC	Aberdeenshire Council	NESBReC	North East of Scotland Biological Recording Centre
AHB	Aberdeen Harbour Board	NNSS	Non-Native Species Secretariat
CNPA	Cairngorms National Park Authority	RDT	River Dee Trust
DCP	Dee Catchment Partnership	RDonT	River Don Trust
DSFB	District Salmon Fisheries Board	SEPA	Scottish Environment Protection Agency
DeeDSFB	Dee District Salmon Fisheries Board	SISI	Scottish Invasive Species Initiative
DonDSFB	Don District Salmon Fisheries Board	SFCC	Scottish Fisheries Co-ordination Centre
DGG	Dee Ghillies Group	SG	Scottish Government
FHI	Fish Health Inspectorate	UoA	The University of Aberdeen
FLS	Forestry and Land Scotland		
FMS	Fisheries Management Scotland		
NHLF	National Heritage Lottery Fund		
NENNIS	North East Non-Native Invasive Species Forum		

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INTRODUCTION

Non-native species are any animal or plant that occurs out with its natural range either directly or indirectly because of human activity. Only a fraction of these non-native species can spread rapidly and cause significant problems to the environment, economy, or human health. These are termed invasive non-native species (INNS) and alongside climate change are recognised as a global threat to biodiversity. INNS will prey upon, out-compete, and displace native species and can also spread disease and parasites.

In association with freshwater marine and riparian environments often INNS can go unnoticed until populations become established, by which point eradication is no longer an option and ongoing control is required. Therefore, the prevention of introduction and or spread is the most effective way to protect the environment.

Biosecurity is defined as a set of measures aimed at preventing the introduction and or spread of animals, plant, pests and diseases, parasites, and non-native species. It is vital that our biosecurity measures are consistent with this rapidly evolving environment to reduce the risk to the Dee and Don catchments.

SECTION 1 BACKGROUND

This document follows on from the first Biosecurity Plans produced in 2009 by the River Dee Trust (RDT) and the River Don Trust (RDonT) which covered the period 2009-2015. It was agreed to combine the plans into a single document due to the current management of the two catchment areas. As with the preceding plans, this document details work that has been undertaken and recommends actions required to address biosecurity issues within the area. The plan duration is ten years and will therefore remain active throughout this period, being updated to accommodate new research or legislative changes.

Although prepared by RDT, this plan is one of a set of ten biosecurity plans being produced around Scotland as part of a regional programme of action implemented through the Scottish Invasive Species Initiative (SISI) with backing and support from the National Lottery Heritage Fund (NLHF) and NatureScot.

SISI operates over approximately 29,500 km² of northern Scotland and is a partnership project led by NatureScot with ten fishery trust and District Salmon Fishery Board (DSFB) delivery partners – including RDT - and one academic partner – the University of Aberdeen (UoA). The project runs from 2017-2021 and is delivering a programme of prioritised management and control of a suite of invasive plant species (Giant hogweed, Himalayan balsam, Japanese knotweed, American skunk cabbage and White butterbur) and the American mink as well as raising public and community awareness of invasive non-native species and biosecurity issues.

The SISI project delivers INNS control through a combination of staff, contractor and community and volunteer-based control. Further information about the project can be found on its website – [SISI](https://www.sisi.org.uk/).

The need for action on biosecurity issues has been identified in the [River Dee 2020-2025 Fisheries Management Plan](#)¹ and the [River Basin Management Plan 2015-2027](#)² for the Scotland River Basin District.

¹ <http://www.riverdee.org.uk/organisation/fisheries-management-planning>

² <https://www.sepa.org.uk/environment/water/river-basin-management-planning/>

SECTION 2 THE CONTEXT

2.1 BIOSECURITY: THE NATURE OF THE PROBLEM

Biosecurity issues are of increasing economic and ecological significance. Globalisation has expanded the extent and complexity of world trade, and growth of the tourism market has expanded the number of destinations for activity holidays and travellers. This is particularly true in the Dee and Don districts, with Aberdeen a global hub for the oil industry where its harbour is used daily by international vessels, as well as the large numbers of anglers visiting the Dee and Don from overseas every year. This trend in globalisation has led to the increased probability of intentional and unintentional introduction, establishment and spread of INNS, parasites and diseases in Scotland and the UK. In the context of this plan, biosecurity issues are considered in relation to the potential introduction and spread of a priority list of INNS and fish diseases to the catchments of the Dee and Don.

Invasive non-native species are the second greatest threat to biodiversity, being capable of rapidly colonising a wide range of habitats and excluding native flora and fauna ([CBD, 2006](#)³). Furthermore, over the last 400 years INNS have contributed to 40% of animal extinctions where the cause is known. Marine and freshwater environments are an excellent transport medium for the dispersal of many of these species, rivers and lochs and their banks and shorelines are amongst the most vulnerable areas to their introduction, spread and impact. Ecological changes wrought by INNS can further threaten already endangered native species and reduce natural productivity and amenity value of riverbanks, shorelines and water bodies.

The threat from INNS is growing at an increasing rate assisted by climate change, pollution and habitat disturbance with a correspondingly greater socio-economic, health and ecological cost. Many countries, including Scotland, are now facing complex and costly problems associated with invasive species for example:

- 🌿 [DEFRA](#) have estimated that INNS cost the UK economy at least £2 billion per year
- 🌿 In the UK, Japanese knotweed is thought to affect an area roughly the size of London and a report of the [Review of Non-Native Species Policy \(2003\)](#)⁴ has estimated the total cost of its removal using current techniques at £1.56bn.
- 🌿 A Scottish Government [Report](#)⁵ estimated the potential Net Economic Value loss to Scotland of the introduction of *Gyrodactylus salaris* at £633 million, with severe consequences for rural communities.
- 🌿 A Forestry Research [Report](#)⁶ estimates the current cost of clearing invasive *Rhododendron ponticum* from Argyll and Bute as £9.3m that could rise to £64m in the next 50 years.
- 🌿 Invasive species have already changed the character of iconic landscapes and water bodies in Scotland, reducing the amenity value of those areas.

³ <http://www.cbd.int/gbo2/>

⁴ <http://www.defra.gov.uk/wildlife-countryside/pdf/wildlife-manage/non-native/review-report.pdf>

⁵ www.scotland.gov.uk/resource/doc/1062/0042434.pdf

⁶ [http://www.forestryresearch.gov.uk/pdf/Argyll_Bute_rhododendron_2008_costs.pdf/\\$FILE/Argyll_Bute_rhododendron_2008_costs.pdf](http://www.forestryresearch.gov.uk/pdf/Argyll_Bute_rhododendron_2008_costs.pdf/$FILE/Argyll_Bute_rhododendron_2008_costs.pdf)




There is also a growing recognition of the impacts of translocated species. Translocated species are those native to Great Britain that have been transported outside their natural range. They can have severe ecological impacts. Examples of translocated species that are impacting the ecology of Scotland's waters are minnow (*Phoxinus phoxinus*) and ruffe (*Gymnocephalus cernuus*). Translocated species were originally introduced for a variety of reasons, ranging from those escaping from environments where they have been stocked as ornamentals to deliberate introduction for angling or aquaculture.

Without a coordinated, systematic approach to preventing introduction and spread of INNS, it is likely that the ecological, social and economic impacts will continue to increase, as will costs for mitigation, control and eradication. This plan attempts to set out and implement such an approach at a local level for selected species and diseases that significantly impact freshwater fisheries and their aquatic environments. This plan and its implementation are also part of a strategic and coordinated approach to INNS management being undertaken across Northern Scotland by SISI members.

The following Biosecurity Plan provides a platform for local action to identify and address these biosecurity issues. It has a lifespan of ten years and as part of an adaptive management cycle its outcomes and impacts will be reviewed throughout. The success of this plan will rely on the formation of strong local partnerships founded on solid legal and policy principles by a range of interested parties.

2.2 POLICY AND LEGISLATION

The actions presented in this plan will conform to, and be supported by, UK and Scottish Government legislation associated with the prevention, management and treatment of INNS, fish diseases and parasites. A summary page on legislation in Scotland can be found on the [SISI website](#)⁷ and further information from the GB Non-Native Species Secretariat specific to Scottish legislation can be found in, Appendix.

-  Section 14 of [The Wildlife and Countryside Act \(1981\)](#)⁸ (as amended in Scotland by the Wildlife and Natural Environment (Scotland) Act 2018) makes it an offence to release an animal, allow an animal to escape from captivity or otherwise cause an animal not in the control of any person to be at a location outside its native range, or to plant or otherwise cause to grow a plant in the wild at a location outside its native range.
-  [Code of Practice on Non-Native Species](#)⁹ was issued in 2012 by the Scottish Government. The Code sets out guidance on how you should act responsibly within the law to ensure that non-native species under your ownership, care and management do not cause harm to our environment.
-  Section 179 of the [Town and Country Planning \(Scotland\) Act 1997](#)¹⁰ empowers local authorities to serve notice requiring an occupier to deal with any land whose condition is adversely affecting the amenity of the other land in their area.

⁷ <https://www.invasivespecies.scot/law-non-native-species>

⁸ www.opsi.gov.uk/RevisedStatutes/Acts/ukpga/1981/cukpga_19810069_en_1

⁹ <https://www.gov.scot/publications/non-native-species-code-practice/>

¹⁰ www.opsi.gov.uk/acts/acts1997/ukpga_19970008_en_1

- 🌿 The [Possession of Pesticides \(Scotland\) Order 2005](#)¹¹ regulates the use of pesticides and herbicides for control and eradication of INNS.
- 🌿 [Environmental Protection Act 1990](#)¹² contains a number of legal provisions concerning “controlled waste”, which are set out in Part II. Any Japanese knotweed or giant hogweed contaminated soil or discarded plant material is likely to be classified as controlled waste. This means that offences exist with the deposition, treating, keeping or disposing of controlled waste without a licence.
- 🌿 [The Waste Management Licensing Regulations 1994](#)¹³ define licensing requirements which include “waste relevant objectives”. These require that waste is recovered or disposed of “without endangering human health and without using processes or methods which could harm the environment”.
- 🌿 [Controlled Waste \(Registration of Carriers and Seizure of Vehicles\) Regulations 1991](#)¹⁴ and the [Environmental Protection \(Duty of Care\) Regulations 1991](#)¹⁵ provide guidance for handling and transfer of controlled waste.
- 🌿 The [Aquaculture & Fisheries \(Scotland\) Act 2007](#)¹⁶ regulates against the unauthorised introduction of fish to inland waters.
- 🌿 The [Prohibition of Keeping or Release of Live Fish \(Specified Species\) Order 2003](#)¹⁷ requires that a licence be obtained for the keeping or release of species listed on Schedules 1 and 2.
- 🌿 The [NetRegs](#)¹⁸ website contains useful guidance on INNS and their control

The procedures for detection, notification and control of fish diseases are already well defined by fisheries legislation. This stipulates that Marine Scotland (MS) acts on behalf of Scottish Government (SG) in response to the occurrence or suspicion of notifiable fish diseases and organises and coordinates the response to that outbreak. As such the actions in this plan will raise awareness and provide mechanisms for the realisation of those procedures at local level.

SECTION 3 BIOSECURITY ISSUES IN THE DEE AND DON DISTRICTS

3.1 BIOSECURITY – OVERVIEW

The River Dee and River Don Biosecurity Plan (RDRDBP) covers the river catchments of the Dee, Don, Cowie and Carron along with a number of coastal burns north and south of the city of Aberdeen. The rivers are within the Aberdeen City, Aberdeenshire and Cairngorm National Park Authority regions.

¹¹ www.opsi.gov.uk/legislation/scotland/ssi2005/20050066.htm

¹² www.opsi.gov.uk/acts/acts1990/ukpga_19900043_en_1

¹³ http://www.opsi.gov.uk/si/si1994/uksi_19941056_en_1.htm

¹⁴ www.opsi.gov.uk/si/si1991/uksi_19911624_en_1.htm

¹⁵ www.opsi.gov.uk/si/si1991/uksi_19912839_en_1.htm

¹⁶ <https://www.legislation.gov.uk/asp/2007/12/contents>

¹⁷ <https://www.legislation.gov.uk/ssi/2003/560/contents/made>

¹⁸ <https://www.netregs.org.uk/>



Map illustrating the River Dee and River Don Biosecurity Plan Area.

Thirty-nine INNS and fish diseases have been included in the Biosecurity Plan of which twenty-four high priority species will be the main focus for action. These high priority species were identified as those that:

- 🌿 Already exist within the Dee and Don districts,
- 🌿 If introduced would have severe consequences for local biodiversity and economy; and/or
- 🌿 Have a high risk of introduction due to nature of transport pathways and their current geographic proximity.

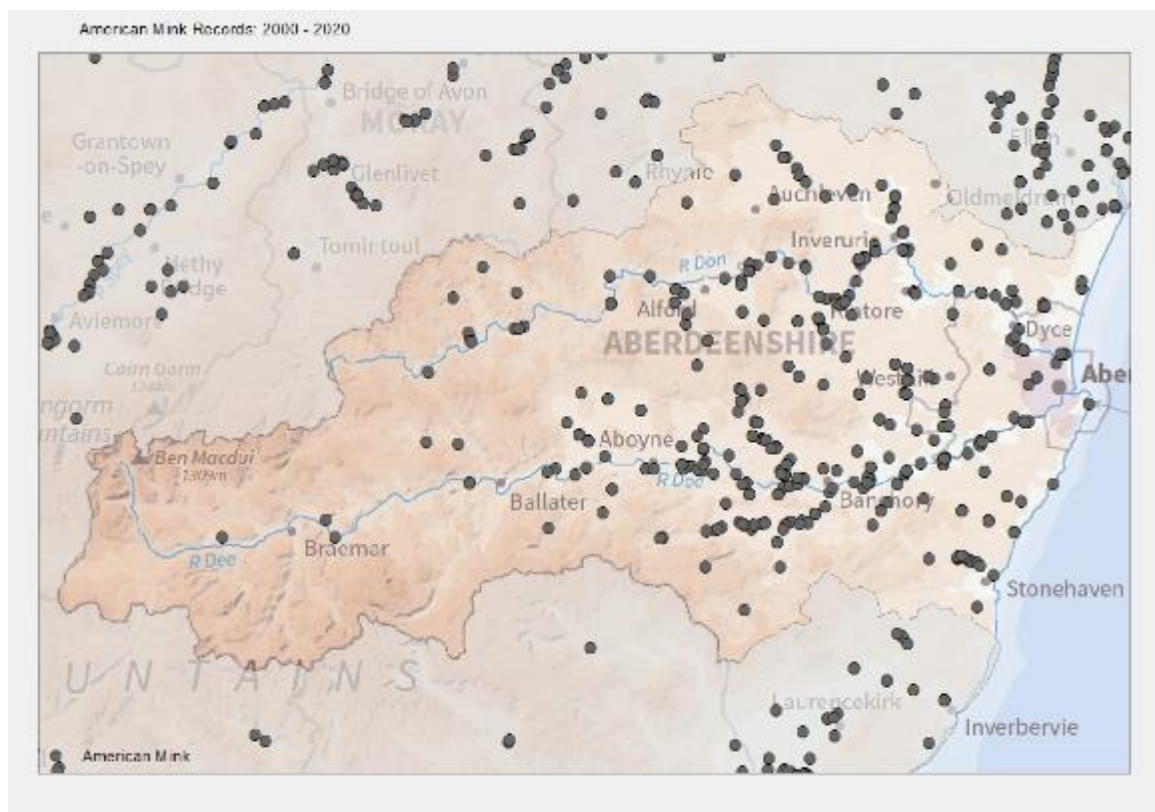
3.2 CURRENT BIOSECURITY ISSUES

Current biosecurity issues in the Dee and Don districts are associated with fifteen INNS and two translocated native species: 'All maps kindly produced by the North East Scotland Biological Records Centre (NESBReC) based on data held in the NESBReC database up to December 2020. All maps contain OS data © Crown copyright and database right 2020.' All images unless otherwise stated credit to River Dee Trust.

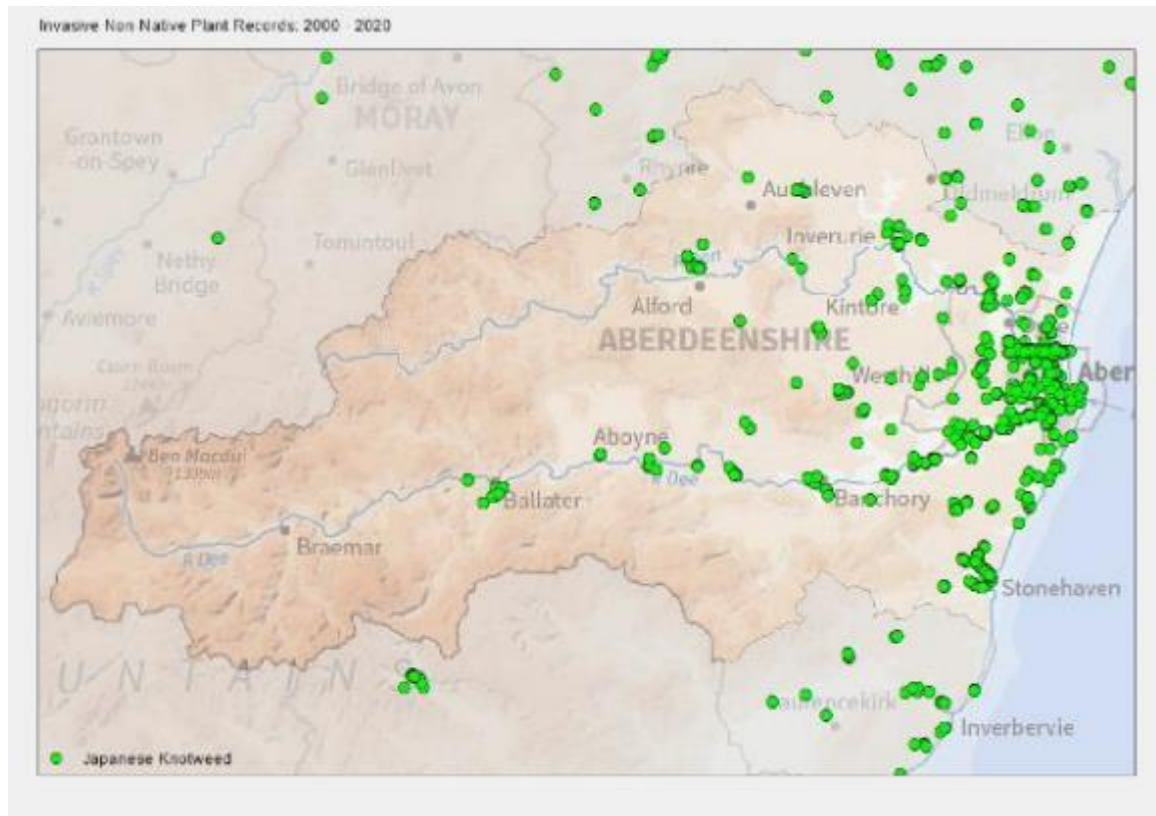
- 🌿 **American mink (*Neovison vison*)** is present throughout the two districts, however abundance is low following a sustained control programme using volunteers (since 2006) and traditional control effort across the two districts. Incursions West of Aboyne on the Dee, and Alford on the Don, are infrequent with highest mink abundance in the lower reaches of both catchments. Mink are effective predators, eating birds and their eggs (native and domestic fowl), small mammals, fish, amphibians, shellfish, and crustaceans. In particular, water vole and ground nesting bird populations are at risk from mink predation.




Image credit Tomasz Wesolowski

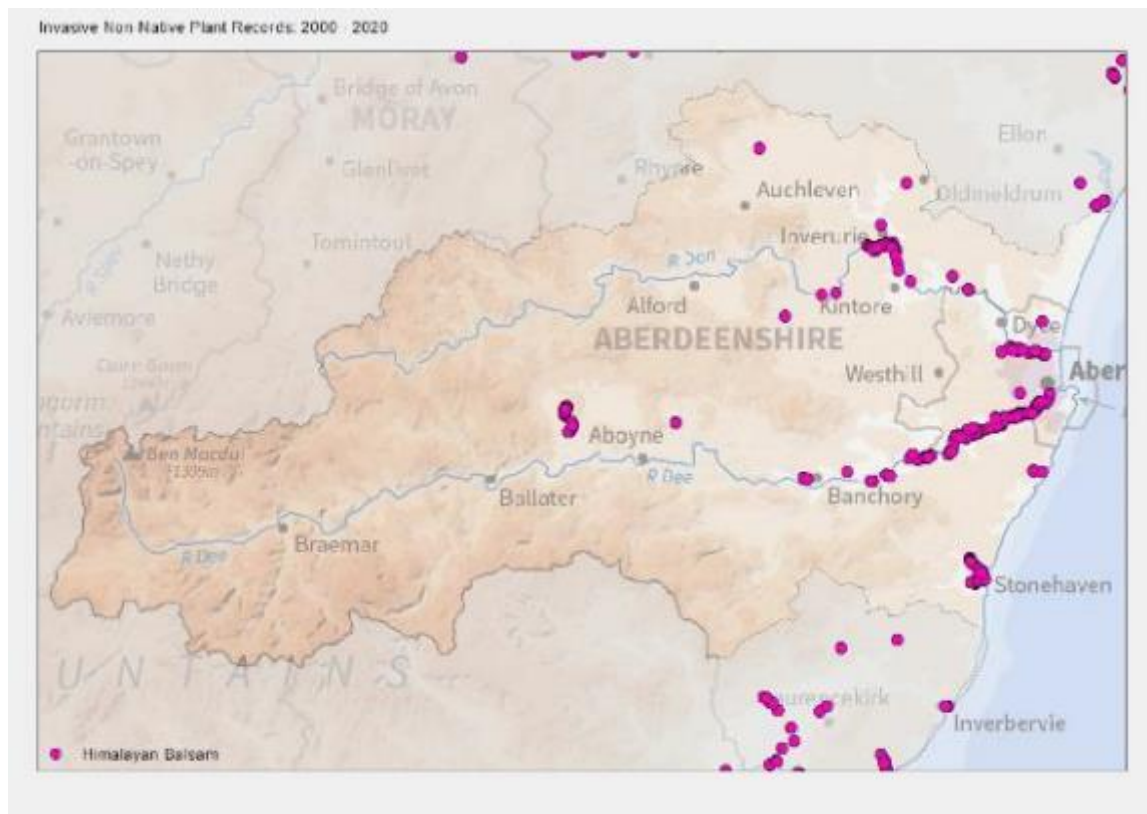


- 🌿 **Japanese knotweed (*Fallopia japonica*)** where it is associated with watercourses, is primarily present in small sporadic stands in the Dee catchment, from just above Ballater downstream. The Don catchment also has small, isolated stands from just above Alford downstream with a few large stands present in the city. There are dense stands in the lower Cowie catchment and localised pockets in the lower Carron by Stonehaven. Its spread along rivers by movement of plant fragments in water and is found in many other areas through the movement of plant debris in soil and on vehicles. It forms dense thickets which can exclude native plants and prohibit regeneration. Dense stands can also hinder access, reduce biodiversity and alter the habitat for wildlife. Winter dieback of the plants exposes soil to erosion.



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Himalayan balsam (*Impatiens glandulifera*) is present in scattered populations throughout the Dee district below Dinnet until Drumoak where dense stands occur along the riparian corridor to the City. On the Dee the effects of Storm Frank floods (31 Dec 2015) resulted in a significant increase in plants across the lower catchment. It is thought that excessive erosion during the flood spread the dormant seedbank far and wide in the lower Dee resulting in almost the entire flood plain from Drumoak downstream now populated. Its presence on the Don is much sparser and more limited to the reach downstream of Inverurie. Significant but small populations are present on the Cowie and Carron catchments. It spreads through natural dispersion by wind or water from areas in which it has been planted or introduced through the transport of contaminated soil. It forms thick monospecific stands that can shade out low level native plants reducing biodiversity and denuding riverbanks of understory vegetation. It also creates competition for pollination with native species due to its high volume of nectar produced. Winter dieback of the plants exposes soil to erosion.

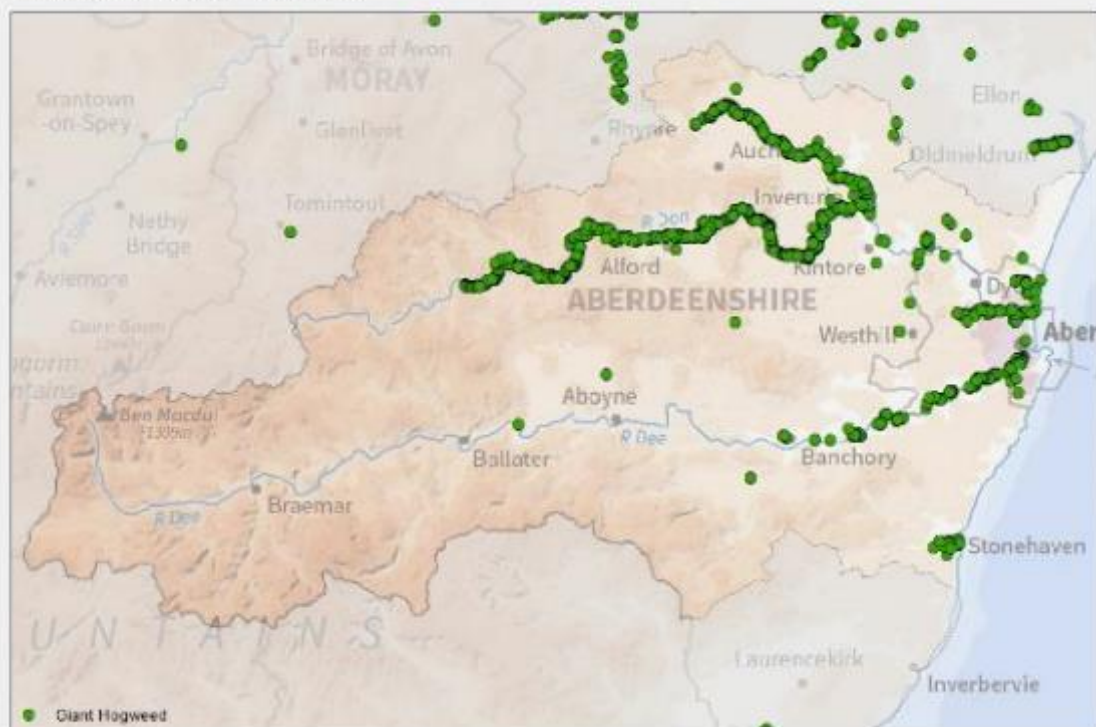




- 🌿 **Giant hogweed (*Herculeum mantegazzianum*)** is present as individual plants and localised small groups in the Dee and Cowie catchments. A denser population is present in the Carron on the outskirts of Stonehaven. Plants are present throughout the mainstem Don from Strathdon downstream to Aberdeen. The River Urie - the Don's largest tributary - is also heavily infested from its source on the Kellock Burn by Insch to Inverurie. An ongoing control programme on the Don from Strathdon to Alford started in 2011 and has significantly reduced the abundance and extent of plants in this reach. Further control programmes have also reduced density across the middle Don and River Urie. It spreads through seed dispersal, sometimes by birds, and movement of soil contaminated by seeds. It is a public health hazard due to the toxins in the sap reacting with UV light to cause blisters to the skin. Dense stands can hinder access, it out-competes native vegetation for space and resources and can result in a loss of plant and invertebrate diversity. Winter dieback exposes soil to erosion with loss of riverbanks and increased sedimentation.

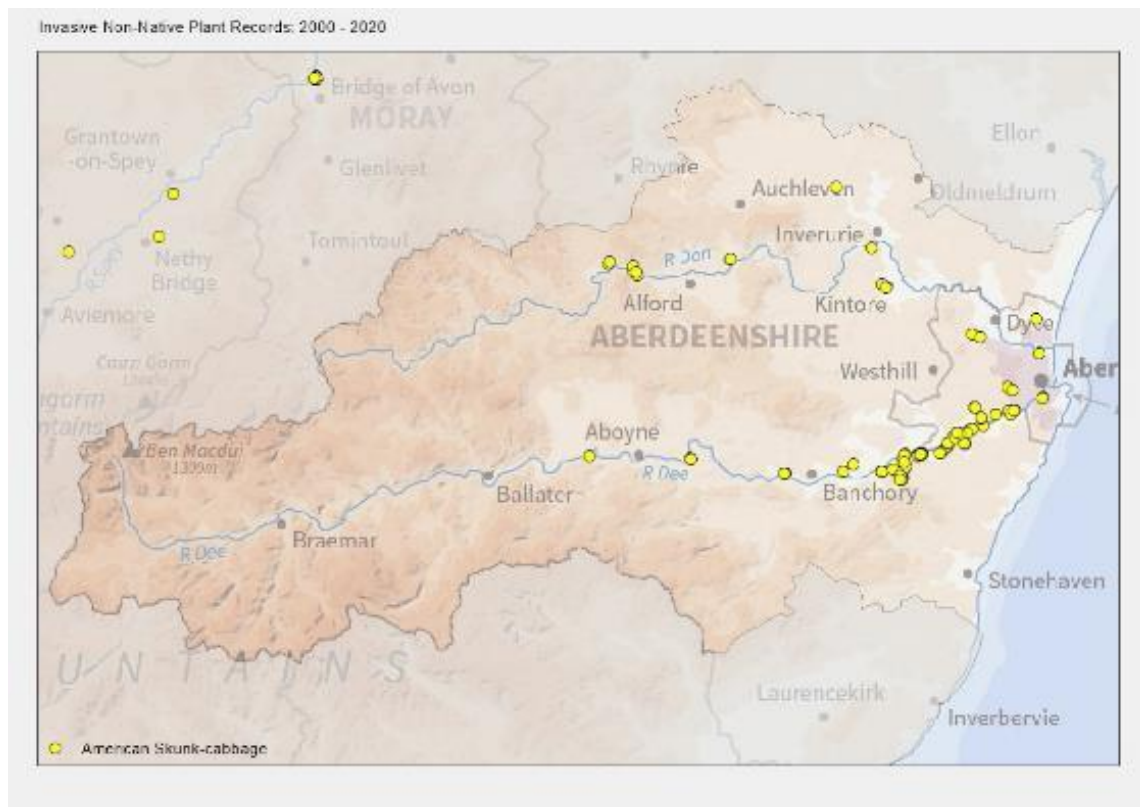


Invasive Non Native Plant Records: 2000 - 2020

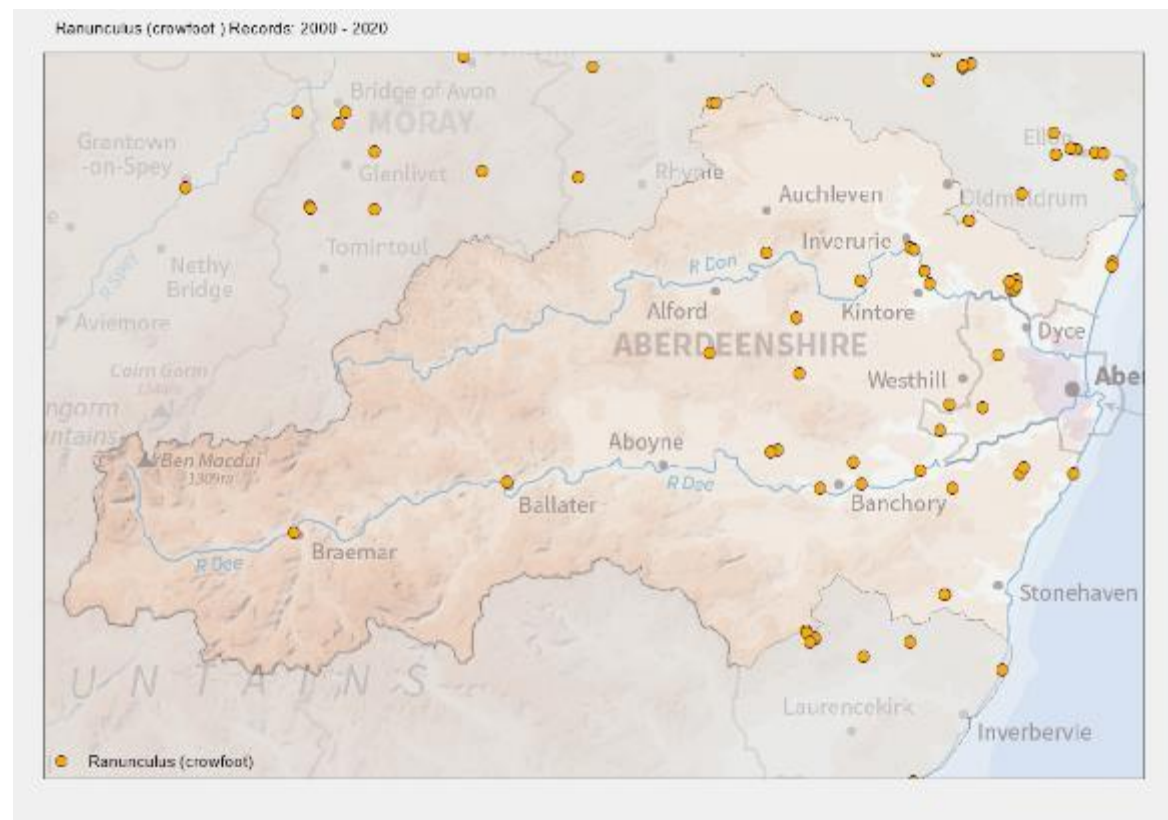



- 🌿 **American skunk cabbage (*Lysichiton americanus*)** is present in both districts with sporadic populations present from Kildrummy downstream on the Don and Dinnet downstream on the Dee. Significant riparian populations are present on the mainstem Dee at Quithel Woods by Ballogie and in the City by Robert Gordon's University. The Drumallan burn from Durris Woodlands is also heavily infested. Most of these populations emanate from an obvious source such as a country house or estate with an extensive ornamental garden. It is found in pond margins, riparian and boggy areas and can grow to over 1 m in height. It can grow in very dense stands blocking out light to native vegetation. Winter dieback of the plants exposes soil to erosion.





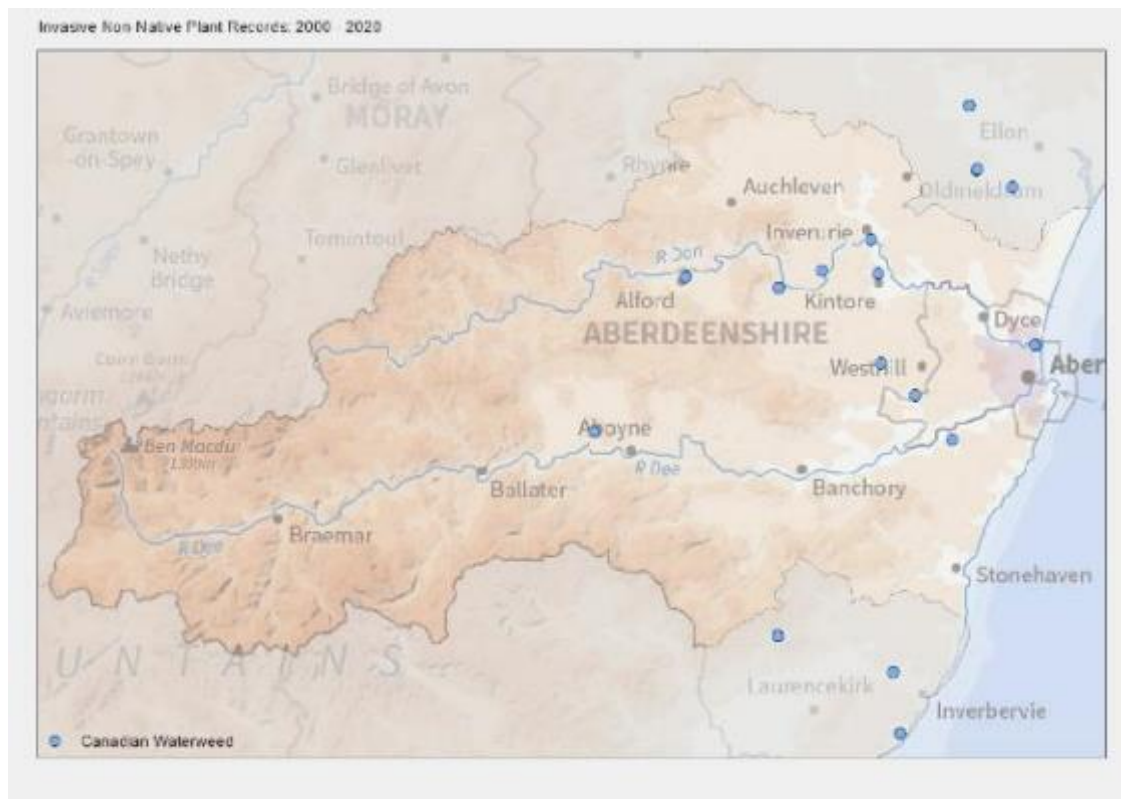
- 🌿 **Water crowfoot (*Ranunculus sp. hybrid*)** is native to Britain but not northern Scotland. An aquatic plant which has been translocated to the Dee and Don during the 1970s, it is present from the middle river downstream of Dess on the Dee and from Kildrummy downstream on the Don. It spreads in high-nutrient waters and so inputs from arable land, water treatment plants and septic tank overflows contribute to its extent. It creates deposition of fine sediments which reduces habitat for juvenile fish, spawning gravels and freshwater pearl mussels. It can also make angling difficult. However, in its native rivers it provides benefits such as shading effects, oxygen creation and invertebrate habitat. Removal techniques have been tried on the Dee, including manual cutting, digging out and herbicide application. None have been successful. A chemical treatment previously used successfully on the Spey is now banned. Eradication of water crowfoot is unlikely unless new chemical controls are found.

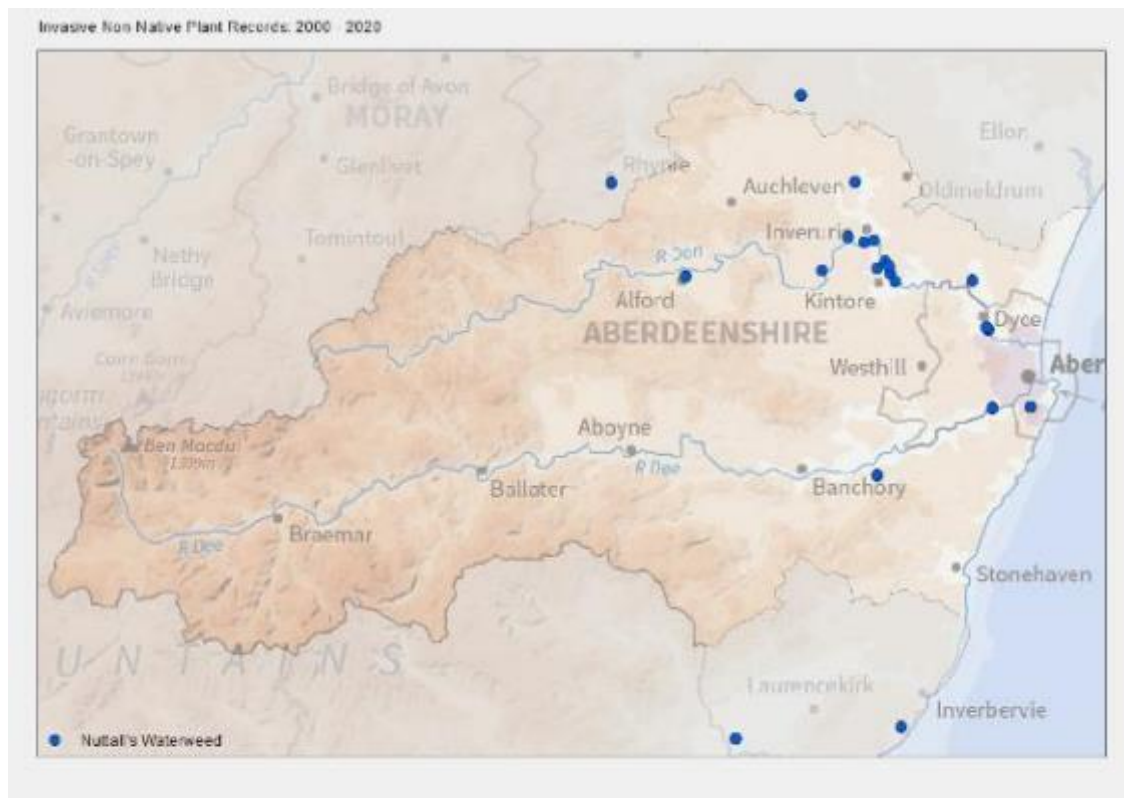


-  **Himalayan knotweed (*Elodea canadensis*)** where it is associated with watercourses, is present in various locations throughout the Dee and Don districts although records are limited. There are dense stands in the lower Cowie catchment and localised pockets on the Dee by Banchory and the Don by Kintore. It's broadly similar to Japanese knotweed in its habits and impacts. Its spread along rivers by movement of plant fragments in water and is found in many other areas through the movement of plant debris in soil and on vehicles. It forms dense thickets which can exclude native plants and prohibit regeneration. Dense stands can also hinder access, reduce biodiversity and alter the habitat for wildlife. Winter dieback of the plants exposes soil to erosion.

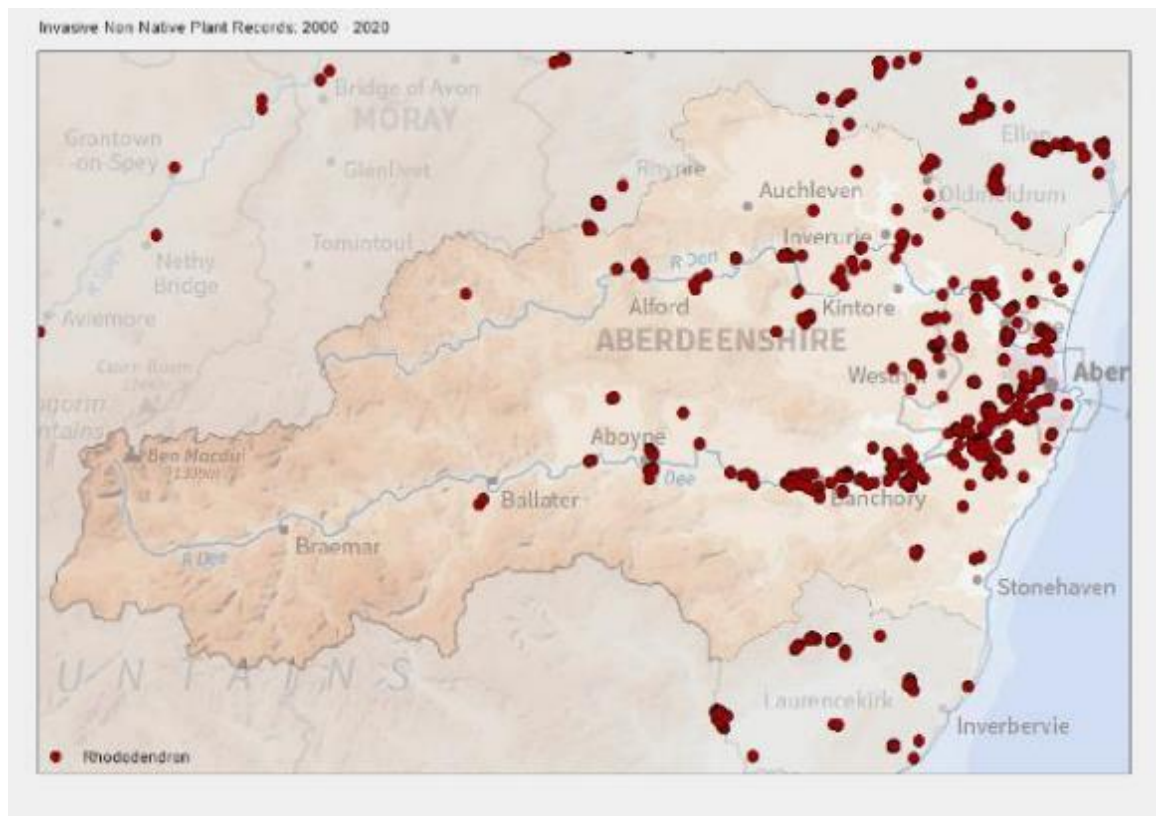


- 🌿 **Canadian pondweed (*Elodea canadensis*) and Nuttall's pondweed (*Elodea nuttallii*)** are present in various locations throughout the Dee and Don districts although records are limited. They spread by disposal of plants or plant fragments near waterways, escapes from garden ponds during flood episodes and possibly by birds and other animals. They are present in slow flowing reaches of the Don as well as lochs and ponds connected to both catchments. They can dominate native macrophyte communities, which can lead to their extinction and thereby impact local invertebrate communities. They can increase metal loads within water bodies, compounding impacts on native flora and fauna.

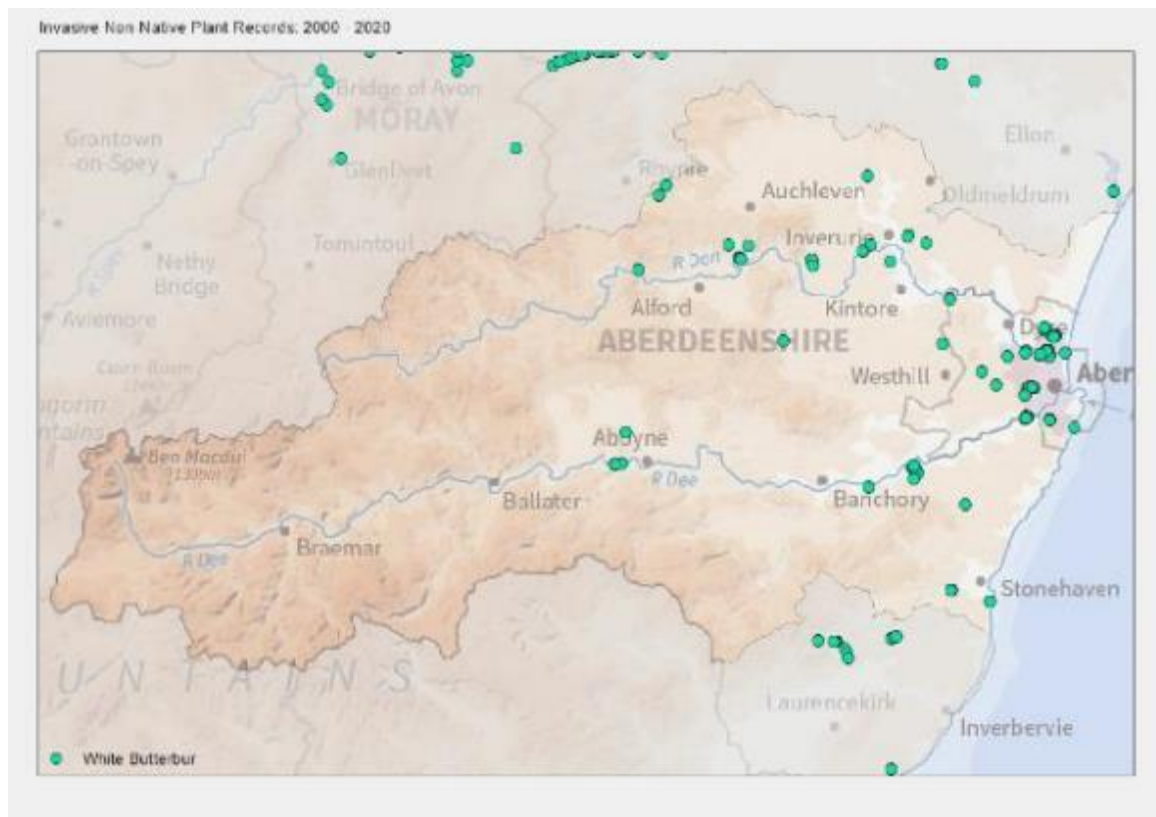




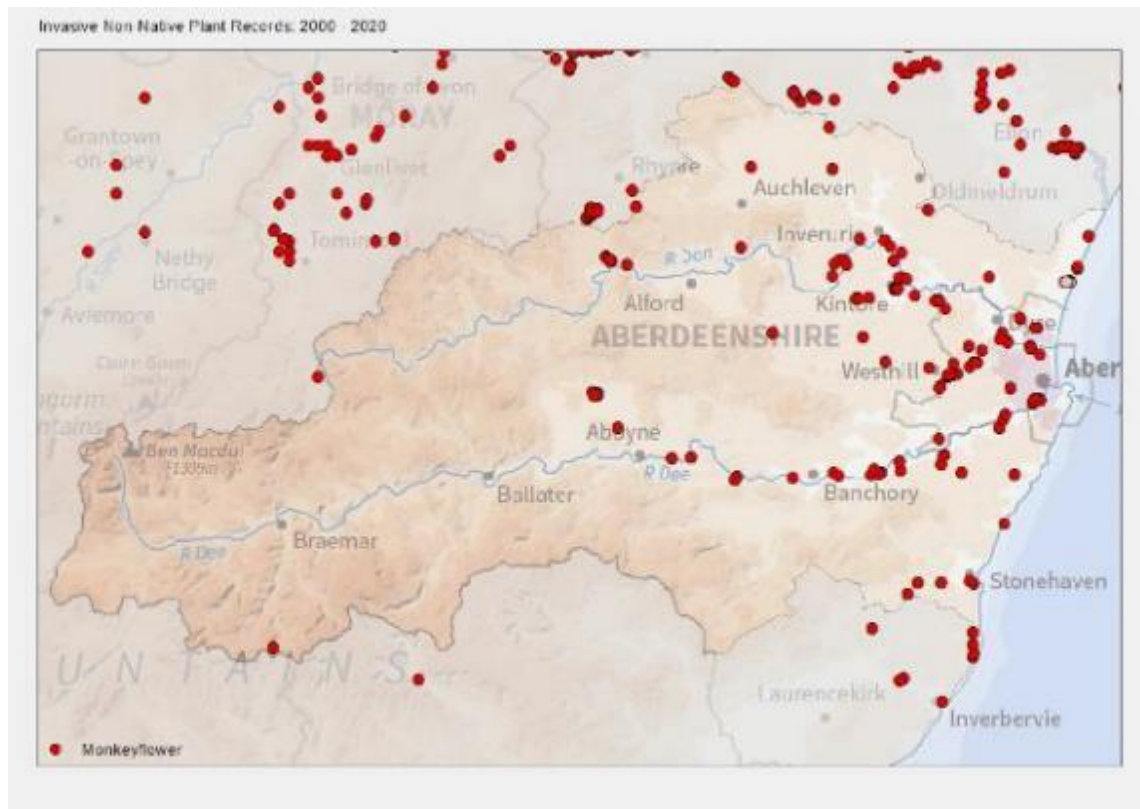
- 🌿 **Rhododendron (*Rhododendron ponticum* & hybrids)** is widespread across the middle and lower Dee and Don districts. Whilst it is abundant, there are presently few dense stands which negatively impact watercourses. It spreads by natural seed and vegetative dispersal after intentional planting in gardens, parks and demesnes. It forms dense thickets and out-competes native plants for space and resources with impacts on fish and invertebrate communities as well as preventing site access. It is not presently a significant threat to either catchment, but local scale impacts are being monitored.



- 🌿 **White butterbur (*Petasites albus*)** is present across both catchments and is particularly dense on areas of the River Urie by Pitcaple, the Carron by Stonehaven and on stretches of the lower Dee by Drumoak. It has large, rounded leaves, up to 30cm, which comes into leaf early and form dense carpets of leaves resembling rhubarb, which suppresses any native vegetation growth and reduces the variety of native wildlife on the site. It can regenerate from fragments of rhizome, which can be carried along river corridors by the water. It has invaded many areas of disturbed flood-prone ground to the detriment of native vegetation. The plant's rhizomes are not as strong and branched as the roots of native plants and so the bank is more prone to erosion, which leads to the loss of riverbanks and increased sedimentation.

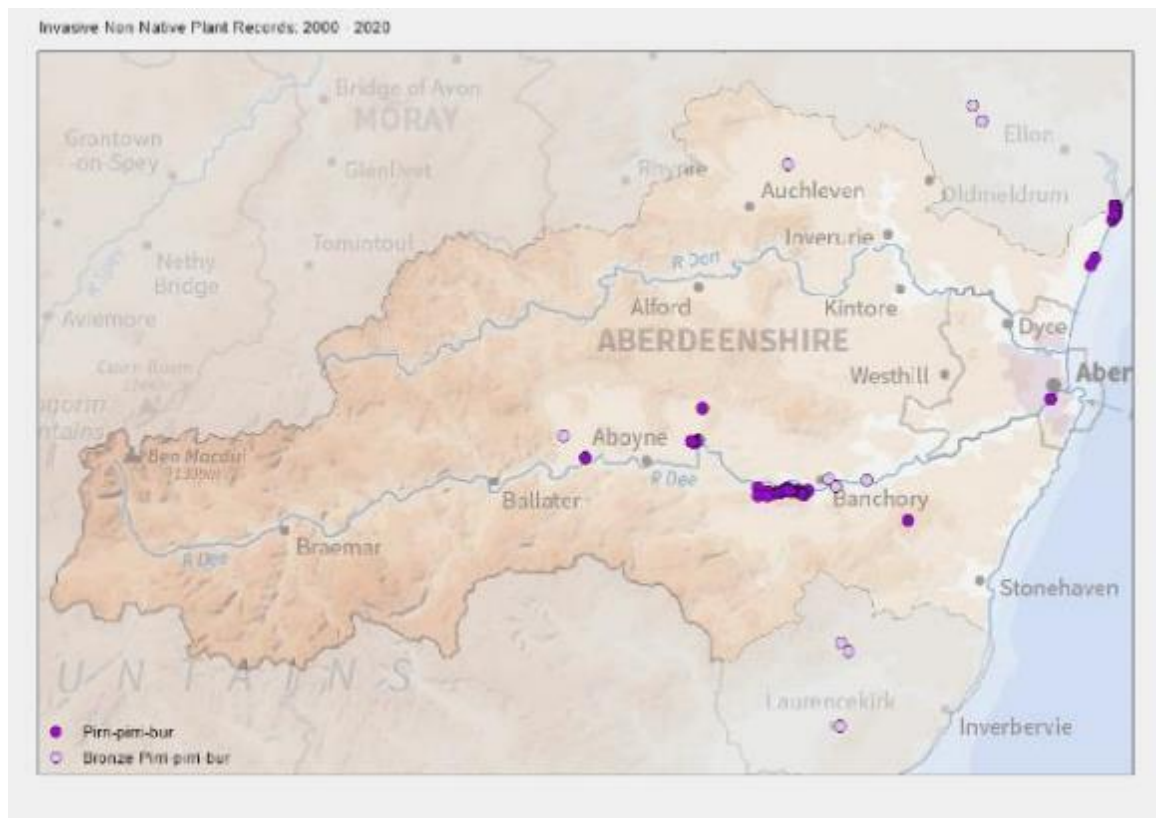


- 🌿 **Monkey flower (*Mimulus luteus*, *cupreus*, *guttatus* and hybrids)** is present throughout the middle and lower River Dee and Don and coastal river catchments. It spreads by natural seed and vegetative dispersal after intentional planting in gardens and parks. Ongoing investigations¹⁹ into the impacts of *Mimulus* sp. have suggested that it is already a successful invader and is becoming more widespread, which could exclude native species, decrease diversity and obstruct waterways.



- 🌿 **Pirri pirri bur (*Acaena novae-zelandiae*)** is rapidly becoming a concern throughout Britain. It is naturalising in the wild and spreads easily, displacing native ground cover species. In North East Scotland it has been identified in coastal sand dunes (Foveran to Balmedie) and along Deeside from Banchory eastwards. A low-growing evergreen perennial sub-shrub, growing to approximately 10 cm high, Pirri pirri bur spreads across the ground surface by rooting stems. In the summer, the plant produces a small flower (with no petals) in spherical clusters on an upright stem, above the foliage. They change from red to brown as they mature and have spiny hooks, known as burs (seed heads), which can become attached to animal fur and clothing increasing the spread of this plant.

¹⁹Truscott, Anne-Marie; Palmer, Steve C.; Soulsby, Chris; Westaway, Sally; Hulme, Phil E.. 2008 Consequences of invasion by the alien plant *Mimulus guttatus* on the species composition and soil properties of riparian plant communities in Scotland. *Perspectives in Plant Ecology Evolution and Systematics*, 10 (4). 231-240.



- 🌿 **Rainbow trout (*Oncorhynchus mykiss*)** and variants have been introduced into commercial and angling club fishing ponds throughout the districts. Escapees have been caught by anglers in the vicinity of some of these ponds. Escaped fish are a potential source of viral and bacterial diseases affecting wild fish, and they compete for resources with native species. (Distribution map not available)



- 🌿 **Minnow (*Phoxinus phoxinus*)** is a translocated species that has been introduced throughout the two districts by anglers. Minnows compete for food and territory with native species, but they also provide another food resource for kingfishers, herons, sawbill ducks and other, larger fish species. Minnows have been caught across the mainstem Dee and Don and in some tributaries where angling occurs within the districts. (Distribution map not available)

- 🌿 **Pacific pink salmon (*Oncorhynchus gorbuscha*)** Unprecedented numbers of pink salmon were captured across the Dee and Don in 2017, and further returns of this species occurred at a much lower level in 2019. Pink salmon are not native to Scotland and are likely to have 'strayed' from some of the rivers in northern Norway or Russia after being introduced to some Russian rivers in the 1960s. These fish spawn at a different time from Atlantic salmon and have a two-year lifecycle. Due to their two-year lifecycle, juvenile fish will be derived from distinct 'odd' or 'even' years, with the Russian/Norwegian fish being odd-year stocks. It is therefore possible that they will occur again in Scottish rivers in 2021 and beyond. Their eggs and fry were shown to survive initially in Scottish rivers. However, they emigrate from the river in winter rather than spring and are then unlikely to survive. The impacts of a spawning pink salmon population on the native species within our waters are currently unknown but may include competition for resources both in freshwater and marine areas. Through the national pink salmon advisory group, we will support research into the impacts of pink salmon in Scottish waters. Such work will likely be opportunistic if pink salmon reappear in Scottish rivers in 2021 or thereafter. (Distribution map not available)



- 🌿 *Anisakis sp* is a nematode worm of salmon that causes [Red Vent Syndrome \(RVS\)](#)²⁰. RVS has been found in salmon in over 50 Scottish rivers since June 2007. The impact of the parasite on the fish is not fully known, but after three years of observations, there is no evidence that the condition has either prevented salmon from spawning successfully or led to mortality during their freshwater life stage. However, it can cause varying degrees of bleeding and swelling to salmon vents. The parasite may also affect humans who become infected from eating raw fish (for example, sushi) or fish that is under-cooked. (Distribution map not available).

3.3 POTENTIAL BIOSECURITY ISSUES

The INNS listed below are not currently present within the Dee and Don districts (Tables 1 and 2). They have been classified as High or Medium level threats, depending on their potential impact on the local economy and biodiversity in combination with likelihood of introduction. Level of introduction risk was based on introduction pathways for the INNS, their current geographic proximity and land uses within the Dee district.

High Threat:	<u>Species with Severe consequences for local biodiversity and the economy and a High to Medium risk of introduction</u>
Medium Threat:	<u>Species with Moderate consequences for local biodiversity and the economy with a Low to High risk of introduction</u>

There are **seven High Threat** species that could be introduced into the district, including the fish parasite *Gyrodactylus salaris*, four freshwater invertebrates and two aquatic plant species (**Table 1**).

²⁰ <https://www.gov.scot/publications/diseases-of-wild-and-farmed-fish/pages/red-vent-syndrome-rvs/>

Table 1 High Threat level species risk of introduction and their impacts

SPECIES	RISK OF INTRODUCTION	LOCAL IMPACTS
<i>Gyrodactylus salaris</i> (Freshwater external parasite of salmon)	High - Through unintentional introduction from anglers and water sport enthusiasts through: <ul style="list-style-type: none"> Contaminated fish Clothing/equipment which has been in contact with infected water including canoes Ballast water 	<ul style="list-style-type: none"> Projected catastrophic impact on salmon (<i>Salmo salar</i>) populations throughout Scotland. (It has largely exterminated <i>Salmo salar</i> in 41 Norwegian rivers)
North American signal crayfish (<i>Pacifasticus leniusculus</i>)	High - Through intentional/ unintentional introduction or natural spread from an existing population nearby.	<ul style="list-style-type: none"> Burrows into riverbanks causing destabilisation. Diet includes small fish, fish ova and invertebrates. Competes for 'within substrate' shelter with fish species
Australian swamp stonecrop (aquatic plant) (<i>Crassula helmsii</i>)	High – Through introduction from two existing populations nearby. Other pathways include: <ul style="list-style-type: none"> Garden trade³⁰ Disposal of garden waste Spread by animals and human activity 	<ul style="list-style-type: none"> Suited to a wide range of slow-moving freshwater systems. Out-competes native species. Forms dense carpets choking ponds and ditches. Reduced light levels below dense growths can cause 'die off' of waterweeds and algae and reduce water oxygen levels.
Zebra mussel (<i>Dreissena polymorpha</i>) Freshwater bivalve	Medium - through unintentional introduction from contaminated boat/canoe hulls and engines and bilge water.	<ul style="list-style-type: none"> Major economic impact on all subsurface water structures e.g. blocking pipes and impacting upon hydro-electric schemes Varied and unpredictable ecological impacts including changes to freshwater nutrient cycles, extinction of local mussels and changes to stream substrate affecting spawning areas
Killer shrimp (<i>Dikerogammarus villosus</i>) Freshwater shrimp	Medium - through unintentional introduction from contaminated boat/canoe hulls and engines and bilge water.	Varied and unpredictable ecological impacts including changes to freshwater nutrient cycles, extinction of local species and wide scale changes to the aquatic ecosystem.
Chinese mitten crab (<i>Eriocheir sinensis</i>) Resides in freshwater but migrates to the sea for breeding.	Medium - through unintentional introduction from boat hulls and live food trade.	<ul style="list-style-type: none"> Burrowing in high density populations damages riverbanks Concern over impacts on local species

		<ul style="list-style-type: none"> Intermediate host for the mammalian lung fluke <i>Paragonimus ringer</i>, known to infect humans
Curly waterweed (<i>Lagarosiphon major</i>)	<p>Medium – found in a small number of locations throughout Scotland especially in the central belt area. Potential for spread through:</p> <ul style="list-style-type: none"> Disposal of garden waste Animals and human activity Fragmentation by wind dispersal, boat movement, angling equipment and possibly water fowl 	<ul style="list-style-type: none"> Capable of forming very dense infestations in suitable habitats and occupying the full water column in waters up to 6m deep with significant impacts on native plants, insects and fish. It is a serious threat to tourism, angling, boating and other recreational pursuits as well as conservation goals








There are also **15 Medium Threat** level species of which there is a high risk of introduction for two species, a medium risk for eight species and a low risk for five species (see **Table 2** below).

Table 2 The risk of introduction of Medium Threat level INNS.

SPECIES		RISK OF INTRODUCTION
Ruddy duck (<i>Oxyura jamaicensis</i>)	High	Could migrate from several locations in eastern Scotland
Orfe (<i>Leuciscus idus</i>)	High	Through intentional/unintentional introduction from an existing population nearby.
Water primrose (<i>Ludwigia grandiflora</i>)	Medium	Unintentional introduction from boat hulls and ponds
Water fern (<i>Azolla filiculoides</i>)	Medium	Through intentional/unintentional introduction from numerous locations throughout Scotland, especially central belt
Slipper limpet (<i>Crepidula fornicata</i>)	Medium	Unintentional introduction from boat hulls
Didemnum Tunicates / sea squirts (<i>Didemnum vexillum</i>)	Medium	Unintentional introduction from marine fishing boat hulls
Wireweed (<i>Sargassum muticum</i>)	Medium	Unintentional introduction from marine fishing boat hulls
Ruffe (<i>Gymnocephalus cernuus</i>)	Medium	Currently recorded in central Scotland and could be introduced as live bait or in ballast water
Bullhead (<i>Cottus gobio</i>)	Medium	Translocated species recorded in central Scotland that could be introduced deliberately or as live bait
Common cord grass (<i>Spartina anglica</i>)	Medium	One location near St Andrews
Large flowered waterweed (<i>Egeria densa</i>)	Low	Only found to date in East Lothian. Possible introduction from ponds

Floating pennywort (<i>Hydrocotyle ranunculoides</i>)	Low	Currently only in England up to the midlands. Possible introduction from ponds
Parrot's feather (<i>Myriophyllum aquaticum</i>)	Low	Through intentional/unintentional introduction from two existing populations in the south of Scotland
Fanwort (<i>Cabomba caroliniana</i>)	Low	Only found in one location in southern Scotland possible introduction from ponds
Asian topmouth gudgeon (<i>Pseudorasbora parva</i>)	Low	Currently only recorded from 5 locations in England. Could be introduced as live bait, in ballast water or as releases from aquaria

From **Tables 1 & 2**, the main pathways or means of introduction of both High and Medium Threat level species into the Dee and Don districts are:

-  Intentional introduction, release or planting
-  Fouling and ballast water of marine vessels
-  Fouling and ballast water of freshwater vessels
-  Escapes from fish farms, ponds, gardens
-  Contaminated water sports equipment (e.g. from anglers, canoeists)
-  Movement of contaminated soils or vehicles
-  Improper control and disposal measures e.g. cutting and dumping without treatment.

3.4 EXISTING INNS PREVENTION AND CONTROL ACTIVITIES

Several phases of INNS control programmes have been delivered across the Dee and Don catchments since the development of the first biosecurity plan period (2010-2015).

INNS monitoring, control and awareness raising has been delivered by the four key partners; Dee DSFB, Don DSFB, River Dee Trust and River Don Trust. All four organisations have worked in a combination of independent and collaborative projects to manage INNS across the catchments. Typically, the work is overseen by the fishery trusts with additional delivery and support from the DSFB's, landowners, communities, and volunteers.

Funding for these control programmes have come from several government and charitable organisations, including SEPA (Water Environment Fund), NatureScot (formerly Scottish Natural Heritage), The Esme Fairburn Trust, Heritage Lottery Fund, EU LEADER+ Fund and the Aberdeen Western Peripheral Route (AWPR) Mitigation Fund.

INNS control is presently undertaken across both catchments for the key species; giant hogweed, Japanese knotweed, Himalayan balsam, American skunk cabbage, Himalayan knotweed and American Mink through the Scottish Invasive Species Initiative (SISI). This collaborative project coordinates monitoring and control with ten

partner fishery trusts and DSFBs throughout 2017-2021 across a 30,000km² area in the North of Scotland and is funded by Heritage Lottery Funding with management and staff hosted by NatureScot.

On the Dee and Don catchments, the SISI project is delivered by the River Dee Trust across the Dee from Ballater to Peterculter, the Don from Strathdon to Alford and the Cowie and Carron catchments by Stonehaven. Volunteer support is essential to the delivery of INNS monitoring and control in the two catchments. Volunteers are often members of the public or a local community with a vested interest in the catchment. Through the project volunteers are trained depending upon the volunteering task, from here they are then able to assist with the monitoring and control effort. Volunteering takes many forms, from simple manual tasks like hand pulling Himalayan balsam to more highly skilled task such as humanely dispatching American Mink. Other key partners who contribute to control include the Dee and Don DSFBs and individual landowners, community groups and local businesses.

Control programmes which have now been completed include;

- A programme supporting control by communities across the NE of Scotland called the North East Non-Native Invasive Species project (NENNIS) funded by the EU Leader funding through Aberdeenshire Council has also just finished 2017-2020;
- Phase 1 and 2 of the (AWPR) Mitigation Fund invasive plant project. Training control and awareness raising took place on the Dee from Peterculter to the City, Phase 1 (2015-2017) River Urie and the middle Don from Alford to Inverurie Phase 2 (2017/2019);
- SEPA Water Environment Fund project 2011-2015. INNS control and monitoring of key plant species took place in the Dee, Cowie/Carron and Don Catchments by the River Dee and River Don Trusts respectively.

Biosecurity is focused on anglers and other river users across the Dee and Don catchments by the DSFBs. Users are encouraged to ensure that equipment, tackle and clothing is properly cleaned and disinfected prior to and following use within the district(s), to prevent the spread of disease, parasites and INNS plants and animals.












SECTION 4 BIOSECURITY MANAGEMENT STRATEGY

The plan's objectives will be achieved through a partnership approach to implement the following strategic elements:

- 🌿 Prevention,
- 🌿 Early detection, surveillance, monitoring and rapid response,
- 🌿 Mitigation, control and eradication

The engagement of key stakeholders is imperative for the success of this plan. Regulatory agencies and bodies associated with other relevant management plans include the:

- | | |
|--|--|
| 🌿 Aberdeen and North East Scotland SEPA office | 🌿 NatureScot Aberdeenshire Area Offices |
| 🌿 Aberdeen City Council | 🌿 North East Scotland Biodiversity Partnership |
| 🌿 Aberdeenshire Council | 🌿 Marine Scotland Science |

-  Aberdeen Harbour Board
-  Cairngorms National Park Authority
-  Dee District Salmon Fisheries Board
-  Don District Salmon Fisheries Board
-  Fisheries Management Scotland
-  Scottish Wildlife Trust (SWT)
-  River Dee Trust
-  River Don Trust
-  Forests and Land Scotland
-  Scottish Canoe Association
-  Scottish Government

Other groups that are also important for the prevention of introduction and spread of INNS were identified from an analysis of the pathways presented in **Table 3**.

Table 3 Pathways and stakeholders in the Dee and Don districts

Pathway	Stakeholders
Intentional introduction, release or planting	ACC; AC; CNPA and Planning department; NatureScot; SWT; DDSFB/ RDT; Grampian Police
Fouling and ballast water of marine vessels	AHB; SEPA
Fouling and ballast water of freshwater vessels	AHB; SEPA; UK Government; local canoe and water sports organisations
Sale from garden or pond centres	Horticultural Trade Association; Ornamental Fish Producers
Contaminated water (sports equipment e.g. from anglers, canoeists) and as a medium for live fish transport	DDSFBS; FMS; MS; SCA
Escapes from fish farms, ponds, gardens, desmesnes	MS; SEPA; Planning Authorities; NatureScot; Plantlife; landowners; members of the public; angling clubs
Movement of contaminated soils or vehicles	ACC; AC; CNPA; SEPA; quarries; building contractors
Improper control and disposal measures e.g. cutting and dumping without treatment	ACC; AC; CNPA; SEPA; environmental health; Plantlife; landowners; members of the public

Local priorities for awareness will focus on disrupting pathways for introduction and spread of INNS in the district. Key stakeholders, identified areas of priority and proposed mechanisms for delivery are presented in **Table 4** below. The roles and actions of key government agencies and non-government bodies in promoting awareness of INNS issues are highlighted in **bold** font in **Table 4**.

Table 4 Priority areas for awareness and delivery mechanisms according to stakeholder group

Stakeholder Group	Priority Area	Mechanism of Delivery
Aberdeen Harbour Board	<ul style="list-style-type: none"> - Avoid pumping out non-sterilised ballast water in harbour - Role of hull fouling in the introduction and spread of INNS 	<ul style="list-style-type: none"> - Formulate and implement an interim code of practice requiring non-sterilised ballast water to be discharged on the ebb tide and away from harbour area. - RDT to assist with the supply of posters and other awareness material for display and signage.
Local Garden Centres	<ul style="list-style-type: none"> - Distribution of codes of practice covering the security and disposal of INNS to all garden centres - Target gardeners to dispose plant material and/or soils in a responsible manner. 	<ul style="list-style-type: none"> - NatureScot to work with garden centres to encourage distribution of codes and posters (available from Plantlife) and to advise the general public of INNS issues
Local Aquarium and Pond stockists	<ul style="list-style-type: none"> - Promote code of practice to all pet shops and suppliers of ornamental fish - Target aquarists and pond keepers to dispose of unwanted animals or plants in a responsible manner 	<ul style="list-style-type: none"> - RDT to work with retailers to encourage distribution of codes and posters (available from Plantlife)
Water User associations (canoeists, sailing clubs)	<ul style="list-style-type: none"> - Promote awareness to clubs and participants of the dangers arising from INNS and Gs? - Identification of suitable persons to act as “alien spotters” 	<ul style="list-style-type: none"> - RDT and DSFB to work with associations to promote disinfection of equipment - FACT campaign and web site - Scottish Canoe association code of practice on INNS
Landowners	<ul style="list-style-type: none"> - Promote knowledge of biosecurity issues amongst all tenants and resource users - Identification of suitable persons to act as “alien spotters” for the RDT 	<ul style="list-style-type: none"> - Work with RDT to ensure dissemination of best practices and appropriate signage to reduce INNS threats - RDT to offer training for “eyes” where possible
Angling clubs	<ul style="list-style-type: none"> - Promote knowledge of biosecurity issues amongst all members and visiting anglers - Ensure the distribution of information and erection of signage in fishing huts and recognised car parks - Recommend suitable members to act as “eyes” 	<ul style="list-style-type: none"> - Work with RDT and DSFBs to ensure dissemination of best practices and appropriate signage to reduce threats from INNS - Continue to promote the use of Check, Clean, Dry to members - RDT to offer training for “eyes”.
General Public	<ul style="list-style-type: none"> - General awareness of impacts and measures to prevent/control INNS 	<ul style="list-style-type: none"> - Local Media Campaigns - Use of websites (RDT, SISI, NNSS)
Schools	<ul style="list-style-type: none"> - General awareness of impacts and measures to prevent/control INNS 	<ul style="list-style-type: none"> - INNS included in classroom talks - School visits focusing on impact of INNS on natural ecology and economy

FMS	<ul style="list-style-type: none"> - Update Scottish Government and Agencies on scale of INNS problems and support SG to develop solutions. - Share national advice and guidance on emerging INNS threats. - Provide representation at a national scale on INNS 	<ul style="list-style-type: none"> - Work with RDT/DSFBs to ensure dissemination of best practices and appropriate guidance to stakeholders to reduce INNS threats and fish disease. - Support development and delivery of rapid response plans for INNS - Engage with national and international bodies on behalf of or in support of INNS control.
Dee and Don DSFBs and River Dee and River Don Trust's	<ul style="list-style-type: none"> - Continue to promote awareness to proprietors, anglers, angling clubs and communities of the dangers and threats arising from INNS. - Promote awareness of INNS to developers in planning responses using catchment-based knowledge, seek planning gain to support INNS control. 	<ul style="list-style-type: none"> - Promote and launch of Biosecurity Plan - Continue to promote the use of Check, Clean, Dry by all stakeholders - Promote the Biosecurity plan and ongoing INNS control through targeted media campaigns using social media sites - Share information on INNS control through existing websites (RDT, SISI, NENNIS, NNSS) - Assist with monitoring and prioritisation of INNS removal. - Share information with local recording centre NESBReC. - Support delivery of NE INNS Forum to raise awareness and to promote biosecurity issues. - Engage with local authorities to raise profile of criteria which would trigger a response in relation to INNS.
Aberdeen City and Aberdeenshire Council	<ul style="list-style-type: none"> - Promote use of codes of best practice for construction, haulage, horticulture and aquaculture amongst local business and relevant departments particularly construction, garden and pet trade - Require best practice for any development applications. Promote awareness of planning, waste disposal and transport regulations amongst local business - Promote awareness of INNS to the general public 	<ul style="list-style-type: none"> - Councils to promote codes of best practice at every opportunity e.g. including them with planning applications and building warrants - Production (by Council's legal department) and distribution of information leaflets on all relevant legislation relevant to INNS - Holding of awareness event/open days to promote biosecurity issues - Distribute leaflets
SEPA	<ul style="list-style-type: none"> - SEPA has Habitat Responsibilities for Freshwater (still and flowing waters) as referenced in The River Basin Management Plans (RBMP), including species found within the water body itself including emergent plants. More information can be found HERE - SEPA has moved to a sector approach to improve how businesses are regulated. HERE 	<ul style="list-style-type: none"> - Information and relevant links can be found HERE - Work in collaborative partnership with other agencies to tackle INNS across Scotland's Environment - Digital documents available for download on SEPA Website. - INNS issues to be incorporated into all relevant guidance documents, sector plans and placemaking projects as appropriate.

	-INNS work is an area of work that cuts across all sectors.	
NatureScot	<ul style="list-style-type: none"> - National: Promotion of good practice in the prevention, control and eradication of INNS - Local: Implementation of good practice measures for local contractors and promotion of the Biosecurity Plan. 	<ul style="list-style-type: none"> - Holding of NatureScot Sharing Good Practice events. - NatureScot will continue to support and advise the lead organisations - Provision of grant funding at local and national levels
Marine Scotland	- Fish Health Inspectorate part of Marine Scotland is lead body with respect to fish diseases and escapes	<ul style="list-style-type: none"> - Undertake site visits to discuss and advise on issues involving INNS - Promote disinfection of equipment and provide appropriate facilities to eliminate the risk of accidental transfer of INNS - Undertake analysis of diseased fish and disseminate advice to Dee and Don DSFBs

Prevention of INNS introduction and spread requires vigilance from all stakeholders and their clients. This will require the various stakeholders to implement biosecurity protocols and promote their use. **Table 4** lists many of the activities that can be undertaken by the different stakeholders within the area, although should not be considered exclusive.

All verified sightings will be entered onto the RDT geographic information system to monitor INNS distributions within the districts. Furthermore, this information will be shared and reported to the project partner SISI and the local recording centre North East Biological Recording Centre (NESBReC).

A rapid response will be initiated when reports of any of the key species within the catchments are received. The type of rapid response will depend on the species detected (**Table 5**) and the threat posed. There are three levels of response:




-  a GB level response that will be lead by national governmental institutions as part of the GB INNS strategy
-  a high priority local rapid response
-  a priority local rapid response

Table 5 Response level for the 39 invasive non-native species

GB Response	High Priority Local Response	Priority Local Response
<i>Gyrodactylus salaris</i>	Water fern	American mink
Asian topmouth gudgeon	Ruffe	Japanese knotweed
Ruddy duck	Bullhead	Himalayan balsam
<i>Didemnum</i> spp	Parrot's feather	Giant hogweed

Water primrose	Curly waterweed	American Skunk Cabbage
Pink Salmon	Australian swamp stonecrop	Himalayan knotweed
Killer Shrimp	Orfe	Rhododendron
	American signal crayfish	White Butterburr
	Mitten crab	Monkey Flower
	Slipper limpet	Pirri Pirri Bur
	Zebra mussel	<i>Ranunculus sp.</i>
	Common cord grass	Canadian pond weed
	Wireweed	Nuttal's pond weed
	Fanwort	Rainbow trout
	Large flowered waterweed	Minnow
	Floating pennywort	<i>Anisakis sp</i>

A confirmed sighting of a GB priority species will trigger the GB contingency plan for that species, for example *Gyrodactylus salaris*. However, there is still a need for local level protocols to link with and assist the GB response, as well as local level contingency plans for local priority species. The elements to be included in the response to detection of a GB priority species or the contingency plans for local priority species are outlined in **Table 6**.

Table 6 Elements of contingency plans or protocols for response to GB priority, local high priority, and priority species

GB Response	Local High Priority Response	Local Priority Response
<ul style="list-style-type: none"> - Report to local and GB institutions - Determine the extent of infestation - Isolate area where practicable 	<ul style="list-style-type: none"> - Report to local and GB institutions - Determine the extent of infestation - Isolate area where practicable - Establish source and check related sites - Closure of all pathways - Decide on appropriate action for eradication/containment. - Approve eradication methodology - Monitor 	<ul style="list-style-type: none"> - Report to local and GB institutions - Determine the extent of infestation - Survey to establish and map distribution - Include new areas in existing eradication/control programmes - Identify and close all pathways - Monitor as part of planned catchment monitoring programme

SECTION 5 MONITORING

Biosecurity measures have been initiated within the Dee and Don districts by the four key fisheries organisations and are now coordinated by the RDT through the preparation of this plan.

To ensure effective plan implementation, it is vital that outcomes and impacts of actions are monitored and reviewed to ensure objectives are met. SISI has developed a coordinated monitoring programme with the ten partner organisations, to ensure efficacy and sustainable treatment initiatives are delivered and recorded appropriately. This programme includes:

- 🌱 Assessment of efficacy of surveillance and rapid response systems.
- 🌱 Occurrence and distribution of INNS within the Dee and Don districts.
- 🌱 Effectiveness of control/eradication programme including:
 - Application/delivery of effective concentrations of biocides.
 - Checking treatments have been effective.
 - Re-treating immediately where treatment has been ineffective.
 - Monitoring and investigation of any apparent resistance to treatments.
 - Surveillance for signs of dormant plants becoming activated.
- 🌱 Assessment of ability to close established transmission pathways.
- 🌱 Monitoring effectiveness of legislation and codes of practice, especially those aimed at restricting or closing pathways.
- 🌱 Monitoring general activities within the districts and assessing them in terms of risk for introducing INNS.

Monitoring activities will be undertaken by the RDT in conjunction with stakeholder representatives who will be aware of local initiatives and priorities for action.

APPENDIX.

Excerpt from the Non-Native Species Secretariat on INNS legislation in Scotland.

EU Regulation (1141/2014) on invasive alien (non-native) species

This imposes restrictions on a list of species known as 'species of Union concern', published in [Commission Implementing Regulation 2016/1141 \(external link\)](#). These are species whose potential adverse effects across the European Union are such that concerted action across Europe is required. The list is drawn up by the European Commission and managed with Member States using risk assessments and scientific evidence. For more information and FAQs visit the [Commission website \(external link\)](#) or [the Europe pages of the NNSS website](#).

The Wildlife and Countryside Act (1981) (external link)

As amended by the [Nature Conservation \(Scotland\) Act \(2004\) \(external link\)](#) and the [Wildlife and Natural Environment \(Scotland\) Act 2011 \(external link\)](#)

The Wildlife and Countryside Act (1981) (Sections 14 to 14P) is the principal legislation dealing with non-native species in Scotland. Section 14(1) of the Act makes it illegal to release, allow to escape, or cause an animal to be at a place outwith its native range. Section 14(2) makes it illegal to plant or otherwise cause a plant to grow in the wild at a place outwith its native range. Offences under section 14 carry a maximum penalty of a £40,000 fine and/or 12 months imprisonment on summary conviction and an unlimited fine (i.e. whatever the court feels to be commensurate with the offence) and/or 2 years imprisonment on indictment. A [Code of Practice on Non-Native Species \(external link\)](#) was approved by Parliament in 2011. It aims to help anyone who might need information on non-native species, such as land managers or those who keep non-native species, to understand their legal responsibilities. It includes guidance on terms like 'native range', 'the wild' and 'release'.

The 1981 Act also allows for exceptions to be made to the release and planting offences. These exceptions are created in secondary legislation, except for the release of common pheasant and red-legged partridge which are exempt in Section 14(2A). Read more on the [secondary legislation that lists these exceptions](#). In some circumstances licences may be issued for releases or planting of species outwith their native range, for example during reintroduction projects. [Scottish Natural Heritage \(external link\)](#) are the licensing authority.

The 1981 Act also provides powers for further restrictions to be set out in secondary legislation. Restrictions on the keeping/possession or the sale/advertising for sale of invasive species can be created and further information on existing restrictions can be found on the [Scottish Government website \(external link\)](#). Requirements to report certain invasive species are also set out in secondary legislation and further information can be found on the [Scottish Government website \(external link\)](#).

[Plant Health Act \(1967\) \(external link\)](#) ; [Plant Health \(England\) Order \(2005\) \(external link\)](#) ; [Plant Health \(Wales\) Order \(2006\) \(external link\)](#) ; [Plant Health \(Scotland\) Order \(2005\) \(external link\)](#) ; [Plant Health \(Forestry\) Order \(2005\) \(external link\)](#)

These pieces of legislation provide protective measures against the introduction of organisms harmful to plants and plant products. The Orders implement EC Directive 77/93/EEC, now consolidated into Directive

2000/29/EC, and are implemented by Defra in England, the Natural Resources Body for Wales in Wales and Scottish Government in Scotland. The Plant Health (Forestry) Order 2005 is implemented by the Forestry Commission.

Dangerous Wild Animals Act (1976) (external link)

This Act was introduced in response to public concern about the keeping of dangerous animals as pets by private individuals, and the possibility that they might escape into the wild. Licences are required for any animal which appears on a schedule to the Act. These are issued by the relevant local authority and can only be granted if the authority is satisfied that it would not be contrary to public interest on the grounds of safety or nuisance; that the applicant is a suitable person; and that the animal is kept in adequate and secure accommodation. The local authority is entitled to specify where and how an animal is kept.

Environmental Protection Act (1990) (external link)

This Act has very limited provisions for non-native species, but is included here due to the potential classification of soil and other waste containing viable propagules of invasive non-native plant species as controlled waste. This has been applied to Japanese knotweed *Fallopia japonica*, with the result that waste containing this species must be disposed of in accordance with official Environment Agency guidance designed to prevent the further spread of the plant.

Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003 (external link)

In Scotland, Section 33A of the Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003 prohibits the introduction of live fish and live fish spawn into inland waters without consent. District Salmon Fishery Boards (where they exist) are the consenting authority for salmon and salmon spawn. For all other species, and salmon and salmon spawn in areas without Boards, the consenting authority is Marine Scotland Science.

Bees Act (1980) (external link)

This Act gives Ministers the power to make Orders to prevent the introduction into Great Britain (or their spread within the country) of pests and diseases affecting bees. Measures include prohibiting or licensing the importation of bees and combs, bee products, hives, containers and other appliances used in connection with the keeping or transporting of bees that have or may have been exposed to infection with any pest or disease to which an Order applies.

Zoo Licensing Act (1981) (external link)

This Act requires the inspection and licensing of all zoos, and requires suitable precautions to be taken against the escape of any captive species.

Pet Animals Act (1951) (external link)

This Act provides for the licensing of pet shops, and other premises from which a similar trade is carried out, by local authorities. To obtain a licence, they must comply with reasonable standards of animal husbandry, and the local authority may empower their officers to check the condition of premises.

Animal Welfare Act 2006 (external link)

The Animal Welfare Act makes owners and keepers responsible for ensuring that the welfare needs of their animals are met. These include the need:

- for a suitable environment (place to live)
- for a suitable diet
- to exhibit normal behaviour patterns
- to be housed with, or apart from, other animals (if applicable)
- to be protected from pain, injury, suffering and disease

Anyone who is cruel to an animal, or does not provide for its welfare needs, may be banned from owning animals, fined up to £20,000 and/or sent to prison.

Animals (Scientific Procedures) Act (1986) (external link)

This Act requires the inspection or licensing of premises where experiments falling within the scope of the Act are being carried out. Premises must conform to high standards, and are inspected regularly by Home Office inspectors.