

Dee Invasive Non-Native Species Project

# **Dee Catchment Biosecurity Action Plan**

# 2014-2020

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# GLOSSARY

#### **DEFINITIONS OF KEY TERMS USED IN THIS DOCUMENT**

#### **Invasive Non-Native Species**

Invasive non-native species are species which are present in localities outside of their natural range and are having a negative effect on these non-native environments and economies due to their invasive nature i.e. the ability to disperse and colonise quickly.

#### Biosecurity

Biosecurity is the action taken in order to minimise/ prevent the spread of species outside of their natural range and the transmission of diseases.

#### **ABBREVIATIONS OF TERMS USED WITHIN THIS DOCUMENT**

INNS	Invasive Non-Native Species
РО	Project Officer
PSG	Project Steering Group
NERC Act	Natural Environment and Rural Communities Act (2006)
SAC	Special Area of Conservation
SAP	Strategic Action Plan
SPA	Special Protection Areas
SSSI	Special Area of Scientific Interest
WBP	Welsh Biodiversity Partnership

#### **ABBREVIATIONS OF ORGANISATIONS WITHIN THIS DOCUMENT**

CWT	Cheshire Wildlife Trust
DEFRA	Department of Environment Food and Rural Affairs
EA	Environment Agency (England)
GBNNSS	GB Non-Native Species Secretariat
KWT	Keep Wales Tidy
NWWT	North Wales Wildlife Trust
NE	Natural England
NRW	Natural Resources Wales
WDT	Welsh Dee Trust

# **CRYNODEB GWEITHREDOL**

Diben yr adroddiad hwn yw amlinellu amcanion Cynllun Gweithredu Bioddiogelwch Dalgylch y Dyfrdwy. Mae'r cynllun yn gosod allan yr hyn sydd i angen er mwyn gweithredu'r strategaeth mewn modd trefnus a strategol. Mae'r gweithredu a ddangosir yn y cynllun wedi'i gytuno gan Grŵp Llywio'r Prosiect a phartneriaid allweddol.

Gweledigaeth Cynllun Gweithredu Bioddiogelwch Dalgylch Dyfrdwy yw:

# "Sefydlu strategaeth gynaladwy, gydlynol a chynhwysol sy'n diogelu Dalgylch y Dyfrdwy yng Nghymru a Lloegr rhag bygythiad rhywogaethau estron ymledol trwy arolygu, gweithredu ac addysg."

Er mwyn gwireddu'r weledigaeth hon, bydd rhaid cyflawni'r amcanion canlynol:

- <u>Amcan 1</u>: Lleihau'r peryg o gcyflwyno rhywogaethau estron ymledol newydd i Dalgylch y Dyfrdwy
- <u>Amcan 2</u>: Lleihau'r peryg o symud rhywogaethau estron ymledol sefydledig o fewn Dalgylch y Dyfrdwy ac allan ohono
- Amcan 3: Sefydlu trefn cadw golwg, canfod buan ac arolygu ar gyfer Dalgylch y Dyfrdwy
- <u>Amcan 4</u>: sefydlu trefn ymateb buan ar gyfer y rhywogaethau perygl mawr hynny sy'n fygythiad sylweddol i Ddalgylch y Dyfrdwy

Mae'r cynllun gweithredu hwn ar gyfer ei ddefnyddio gan bob rhanddeiliad ledled Dalgylch y Dyfrdwy sydd, neu a hoffai fod, â rhan yn ei weithredu. Mae modd i'r cynllun ddwyn budd i'r amgylchedd naturiol ac i'r economïau lleol a chenedlaethol. Trwy gydweithio er mwyn atal ymlediad rhywogaethau estron ymledol, bydd Cynllun Gweithredu Bioddiogelwch Dalgylch y Dyfrdwy o gymorth i ddiogelu a gwella ansawdd safleoedd o bwys cenedlaethol a rhyngwladol, ar gyfer cadwraeth natur, ac yn gwella mynediad a mwynhad ar gyfer hamdden o fewn Dalgylch y Dyfrdwy.

# **EXECUTIVE SUMMARY**

The purpose of this report is to outline the aims and objectives of the Dee Catchment Biosecurity Action Plan. The plan sets out the actions required to implement the strategy in a co-ordinated and strategic manner. The actions laid out within the plan have been agreed by the Project Steering Group and key partners.

The vision of Dee Catchment Biosecurity Action Plan is:

"To establish a sustainable, coherent and inclusive strategy that safeguards the River Dee Catchment in England and Wales against the threat of invasive non-native species through monitoring, action and education."

In order to achieve this vision the following four objectives will have to be met:

- <u>Objective 1</u>: Reduce the risk of introductions of new invasive non-native species into the Dee catchment
- <u>Objective 2</u>: Reduce the risk of movement of established invasive non-native species within and out of the Dee catchment
- <u>Objective 3</u>: Establish a surveillance, early detection and monitoring mechanism for the Dee catchment.
- <u>Objective 4</u>: Establish a rapid response mechanism for the identified high risk species which pose a significant threat to the Dee Catchment

This action plan is for use by all stakeholders throughout the Dee catchment who are, or would like to become, actively involved in its implementation. The plan has the potential to lead to benefits for both the natural environment and the local and national economies. By working together to prevent the spread of invasive non-native species the Dee Catchment Biosecurity Action Plan will help to safeguard and improve the quality of nationally and internationally important sites for nature conservation and improve access and enjoyment for recreation within the Dee catchment.

# **INTRODUCTION**

#### BACKGROUND

The Dee Invasive Non-Native Species (DINNS) Project was started in 2013 following the production of the Project Strategic Action Plan. The action plan set out the priorities for the catchment and the actions required for the projects aims and objectives to be met.

One of the plans objectives is to '*Promote and prioritise biosecurity good practice within the Dee catchment*' with the aim to produce a biosecurity strategy that all stakeholders can adopt in order to reduce the threat of introductions or spread of invasive non-native species (INNS).

In order to begin the process of biosecurity action planning for the Dee catchment a risk assessment was carried out to look at the pathways of spread for INNS both inside and outside the catchment. This risk assessment enabled the DINNS Project Officer to understand which pathways posed the highest risk to the catchment in the absence of any biosecurity measures.

#### **BIOSECURITY ACTION PLANNING**

Biosecurity Action Planning is the process by which the biosecurity issues for a given area, be that a river catchment, designated site or land mass (such as an island or peninsula) are identified and actions are identified to address these issues.

Although a Biosecurity Action Plan is not a legal instrument in itself it utilises existing legal and regulatory instruments to support implementation of actions and in pursuance of its objectives. As such the successful implementation of a plan relies heavily on the formation of strong local partnerships founded on solid legal and policy principles by a range of interested parties.

Currently in Wales and England there are few Biosecurity Action Plans / Strategies for INNS. The most prominent of these being the Cumbria Freshwater Invasive Non-Native Species Initiative Biosecurity Action Plan; the first of its kind to be produced in England. In Scotland the Rivers And Fisheries Trust Scotland (RAFTS) Biosecurity and Invasive Non Native Species Programme is the biggest programme of its type in Europe and has worked with 25 fisheries trusts to develop Biosecurity plans for the prevention, detection, control and eradication of selected aquatic, riparian and coastal marine INNS, fish diseases and parasites.

## THE RIVER DEE AFON DYFRDWY

The River Dee / Afon Dyfrdwy catchment covers an area of 2,251 square kilometres within North East Wales and North West England (Figure 1). Within the catchment there are 21 lakes / reservoirs and 753 km of river; with the River Dee spanning only 110 km in length and the remaining 643 km being made up of the rivers' many tributaries. The River Dee rises in the slopes of Dduallt above LLanuwchllyn in the mountains of Snowdonia, Wales and flows eastwards towards Cheshire, England. Once it meets Cheshire it forms the border between England and Wales as it flows north towards the City of Chester, England. The river discharges into the sea at the Dee Estuary, with the estuary forming the north-easternmost section of the North Wales coast and the western coast of the Wirral, England.

The landscape along the River Dee, its tributaries and estuary is mainly rural in character and includes the mountains and lakes of the Snowdonia National Park in the upper section of the river, the Vale of Llangollen in the middle reaches and opens up to the plains of Cheshire and the mudflats of the Dee Estuary through the lower section. Within this setting agriculture and forestry are the dominant land uses, with typically the uplands supporting mixed sheep and cattle farming, as well as forestry and the lower lying and flatter land of the Cheshire Plain supporting intensive dairy farming and the land around the Dee estuary supporting mixed and arable farming.

The main urban centres are primarily situated in the lower reaches of the Dee and cover only 6% of the catchment; these include Chester and the Wirral with the only major urban centre along its upper reaches being Wrexham. There are also a number of heavy industry sites along the lower reaches of the Dee and its estuary, including chemical and petrochemical works.

#### Regulation

The River Dee is heavily regulated by way of the River Dee Regulation System (RDRS) which ensures a continuous flow of water during periods of low rainfall. The RDRS is managed by the main abstraction companies on the river: United Utilities, Dwr Cymru, Dee Valley Water and the Canal & Rivers Trust in partnership with the Natural Resources Wales (NRW). Agricultural abstractions for summer irrigation are commonplace within the upper and mid reaches of the river although the more significant abstraction for drinking water and industry take place in the lower reaches of the river. To avoid over abstraction during the summer months, when water levels would be naturally low, the whole river system is managed through the use of a series of reservoirs. These include Lake Bala / Llyn Tegid, the largest natural lake in Wales, and two man-made reservoirs, Llyn Celyn constructed in 1967 and Llyn Brenig constructed in 1979. These water bodies are all located within the upper reaches of the river. The reservoirs are typically used to store water during the winter months, with this water then being released during the summer months to ensure a continuous flow of water.

In addition to the RDRS the lower section of the river is designated as a Water Protection Zone which allows for greater controls on polluting activities through real-time water quality monitoring.

#### Recreation

The main recreational activity on the River Dee is angling. Salmon and trout are found throughout the catchment, including the lakes and reservoirs in the upper reaches. Coarse fish are present in the middle and lower reaches. The many angling clubs on the Dee have large local and national annual memberships as well as providing day fishing tickets for tourists, and are large contributors to the local economy.

The second most popular recreational activity on the river is canoeing / kayaking. There are many different companies offering a range of activities such as one or half day guided canoe tours in the mid to lower reaches of river or white water canoeing on the Afon Tryweryn and the Vale of Llangollen in the upper to mid reaches. These companies contribute to the local economy and encourage tourism in the more rural areas.

In addition to angling and canoeing / kayaking; activities such as walking, cycling, climbing and wildlife watching are also very popular and the Snowdonia National Park is a huge draw for tourists and locals alike.

#### Wildlife and Conservation

The River Dee Catchment is rich in biodiversity with approximately 16 per cent of the catchment being designated for its nature conservation value (Figure 2). The main stem of the River Dee, Bala Lake and four tributaries of the Dee (the Afon Tryweryn, Afon Mynach, Afon Meloch and the Afon Ceiriog) are designated as a European protected site, The River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid Special Area of Conservation (SAC). All of that site is underpinned by the nationally designated Afon Dyfrdwy (River Dee) Site of Special Interest (SSSI) in Wales and the River Dee (England) SSSI where it flows through England.

Designated features of the SAC are Atlantic Salmon *Salmo salar*, Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitrocho-Batrachion* vegetation, bullhead *Cottus gobio*, river lamprey *Lampetra fluviatilis*, brook lamprey Lampetra planeri, sea lamprey *Petromyzon marinus*, floating water-plantain *Luronium natans* and otter *Lutra lutra*.

The Dee Estuary is designated as a Special Protected Area (SPA), SAC, SSSI and a Ramsar site owing to the internationally and nationally important breeding and migratory bird populations that it supports. In addition to these designations the River Alyn, a major tributary of the Dee, runs through the Clwydian Range and Dee Valley Area of Outstanding Natural Beauty (AONB).

#### **INVASIVE NON-NATIVE SPECIES**

Invasive non-native species (INNS) are species which are present in localities outside of their natural range and are having a negative effect on these non-native environments and economies due to their invasive nature i.e. their ability to disperse and colonise quickly. Globally INNS are considered the second biggest threat to worldwide biodiversity, after habitat loss and destruction. The capacity for these species to rapidly colonise a wide range of habitats and exclude native flora and fauna threatens already endangered native species and reduces natural productivity and amenity value of riverbanks, shorelines and water bodies.

INNS are present throughout the Dee Catchment, with many tributaries containing one or more of the most common invasive non-native riparian plant species, Himalayan balsam *Impatiens glandulifera* and Japanese knotweed *Fallopia japonica*. Within the lower reaches of the river populations of giant hogweed *Heracleum mantegazzianum* are also present. The freshwater plants New Zealand pygmyweed *Crassula helmsii* and parrots feather *Myriophyllum aquaticum* are present in small ponds within the catchment and Floating pennywort *Hydrocotyle ranunculoides* is present in the Shropshire Union Canal. The Invasive non-native invertebrate species American signal crayfish *Pacifastacus leniusculus* and Chinese mitten crab *Eriocheir sinensis* are spreading throughout the mid and lower catchment. The main issues surrounding these species within the Dee Catchment are habitat loss, reduction in biodiversity, erosion, impact on recreation and therefore impact on the local economy.

#### Pathways of spread

In almost all instances INNS are introduced to new areas through human intervention by both direct (intentional release) and indirect (hitchhikers / stowaways) pathways. Increased global trade has led to an increase in the occurrences of INNS globally and they can now be found in all parts of the globe and in every type of habitat.

Once an INNS has established in a new area it can rapidly take advantage of natural pathways of spread such as watercourses, tidal movement and climatic conditions. It should be noted that within these 'natural' pathways there is almost always an element of human influence and adjustment, be that through irrigation schemes, terrestrial development or access. This influence and adjustment can alter the behaviour of natural pathways and the mechanisms and / or speed of an invasion.

#### **CURRENT BIOSECURITY THREATS WITHIN THE DEE CATCHMENT**

INNS have been shown to have devastating impacts of biodiversity globally, with some INNS invasions within fragile ecosystems leading to local extinctions of endemic species. In addition to this INNS have major negative impacts on the global economy by impacting agriculture, forestry, tourism and recreation (CABI 2010).

A study of the economic impacts of INNS in Britain carried out on behalf of DEFRA in 2010 demonstrated that INNS are estimated to cost upwards of £1.7billion per year to the British economy; with the greatest costs being to the agriculture and horticulture industries which account for £1billion of the estimated £1.7billion overall cost (Moore 2010).

#### Himalayan Balsam

Himalayan balsam is a large annual plant which thrives in damp habitats and spreads solely by seed. The plants invade new habitats rapidly due to the high volume of seed produced by each plant, the novel method by which the seeds are dispersed and by the resilience of the seeds to environmental factors such as extreme cold and flooding. Himalayan balsam is known to create mono-cultures over large areas of invaded habitat leading to the reduction of native biodiversity and contribute directly to soil erosion.

Himalayan balsam is the most dominant INNS within the River Dee catchment, being present in large amounts from the upper reaches of the river above Llyn Tegid and remaining a dominant feature along the course of the river as it flows to the Dee estuary. Along the River Dee Himalayan balsam's main effects are impacting on the quality of the nationally important bankside vegetation which contributes to the SSSI designation and preventing access to the river for recreation (e.g. angling).

#### Japanese Knotweed

Japanese knotweed is a large perennial plant which originates from the upland volcanic areas of Japan. The plant spreads solely by vegetative means within the UK as there are only female plants present. Due to its adaptations to the extreme environment where this plant originates it is able to colonise almost all terrestrial habitat types within its invaded range. The plant spreads rapidly often forming large dense stands which exclude native flora and prevent access to riverbanks. In addition to this, due to the plants extensive underground root system, Japanese knotweed also impacts on built structures such as bridges, embankments and flood defences.

Japanese Knotweed is also present along almost the entire length of the River Dee although it is less abundant than Himalayan balsam. This plant also impacts on ease of access to the river and the quality of important bank vegetation but, in addition, it also compromises built structures such as bridges, embankments and flood defences. Within the mid catchment in the town of Llangollen Japanese knotweed can be found growing within the foundations of the local railway embankments as they run alongside the river.

#### **Giant Hogweed**

Giant hogweed is a very large short-lived perennial (lasting an average of four years) which can grow to heights of over 5 metres. It spreads rapidly due to the large number of seeds (c.20, 000) produced by each plant. The plant prefers moist fertile soils in which to grow and, due to its large size and high abundance in invaded areas it is able to shade out native vegetation creating monocultures and preventing access. The plant poses a threat to humans due to the phototoxic sap that is contained with its tissue. This sap can sensitise human skin to ultra-violet light, leading to severe blisters which can reoccur for several years.

Giant hogweed is located in the lower reaches of the River Dee and its environs as it flows through the City of Chester. As this plant poses a risk to human health it causes a much more serious threat to river users and the general public within this largely urban area.

#### New Zealand Pygmyweed

New Zealand pygmyweed is a semi-terrestrial aquatic weed. It has 3 main growth forms; submerged, emergent and terrestrial. The plant is present all year although its active growing period is between April and November when it can spread very rapidly; there is no winter die back so the effects of the plant can be seen all year. The plant spreads vegetatively with only very small fragments needed to colonise new areas.

Due to New Zealand Pygmyweeds rapid growth rate and ability to colonise all areas of slow flowing, stagnant water up to 3 metres in depth and the marginal habitat it can have a significant impact on both large and small waterbodies, their wildlife and economic value. The dense mats of vegetation created by this plant make areas impossible to navigate with water craft and also very unfavourable for all types of angling.

New Zealand Pygmyweed is located throughout the Dee catchment mostly of isolated ponds that do not have direct connections to the main river or its tributaries, however, recently (Spring 2014) a very large infestation has been found in Llyn Brenig which feeds the Afon Brenig and Afon Alwen. The impacts of this infestation and possible mitigation are currently being investigated by all parties.

#### **Parrots Feather**

Parrots feather is semi-terrestrial aquatic plant and has both submerged and emergent growth forms. The plant spreads from fragments that can regenerate rapidly and colonise large areas. Parrots feather competes with native aquatic vegetation, chokes water bodies and leave the habitat in unfavourable condition for native wildlife; it also hinders angling and navigation of water ways.

Parrots feather is present in the Dee catchment in isolated ponds which do not feed into the main river or its tributaries, however, the plant is known to survive in slow flowing streams and marshy habitats so its presence poses a direct threat to sensitive habitats in the catchment.

## **Floating Pennywort**

Floating pennywort is an aquatic weed that has been introduced to the UK through the aquatic plant trade. This plant is a very damaging plant to UK waterways and water bodies due to its ability to spread very rapidly and completely cover the water's surface. The plant spreads via fragments of vegetation and can dramatically change the physio-chemical structure of a water body by reducing temperature, dissolved oxygen content and light. Economically this plant can make waterways completely impassable to all types of water craft and make all types of angling impossible, it also causes a threat to livestock and to human health due to waterways taking on the appearance or solid ground.

Within the Dee catchment the plant is located in a handful of isolate ponds but it is also found in the Chester branch of the Shropshire Union canal as it flows from Chester to Ellesmere Port.

# American Signal Crayfish

American Signal Crayfish is a North American species of crayfish. They have been introduced to Europe for use in the food industry and have rapidly spread throughout Europe and the UK. The crayfish are much more aggressive than our native White Clawed Crayfish *Austropotamobius pallipes* and are shown to out-compete them for food and other resources in addition to predating their young. Signal Crayfish also carry crayfish plague *Aphanomyces astaci* which devastates populations of White Clawed Crayfish in the UK and has led to local extinctions of this species.

American Signal Crayfish are known in two locations within the Dee catchment; Ty Mawr, downstream of Llangollen and in water bodies in around the market towns of Buckley and Mold in Flintshire.

# Chinese Mitten Crab

Chinese Mitten Crab is a freshwater crab native to eastern Asia where they inhabit costal estuaries. They spend the majority of their adult life in freshwater and migrate to brackish water to reproduce. They are a burrowing species and are known to cause damage to riverbanks due to destabilisation. They can damage embankments, flood defences and increase erosion, in addition they are known to predate freshwater invertebrates, fish eggs and fry.

Chinese Mitten Crabs are known to be present in the main stem of the Dee Downstream of Farndon. There have been unconfirmed reports of this species higher up the Dee catchment.

## American Mink

American mink are a small to medium sized mustelid species which thrives in the aquatic environment. Mink were introduced to the UK via the fur trade and either escaped or were released into the wild. Mink are veracious predators and will also kill for 'fun'. They are known to be one of

the main causes for the almost extinction of water vole *Arvicola amphibious* in the UK and are renowned amongst the angling community as a predator of game fish.

American mink are present throughout the Dee catchment in reasonably high numbers.

#### POTENTIAL FUTURE BIOSECURITY THREATS

The following INNS are not currently known to be present in the Dee catchment but are seen as a direct threat to the catchment due to either their proximity to the catchment locally, the ease of which they can be spread into the catchment or the seriousness of the impacts that they would have on the catchment.

## Gyrodactylus salaris

Gyrodactylus salaries is an external parasite of salmon and trout. It is present in some areas of Europe and is spread via contaminated fish, fishing equipment, water or other equipment used in the aquatic environment. In Europe drastic action is often taken to eradicate this species from infected water bodies by poisoning the entire watercourse, this is due to the seriousness of the impacts of this species on the local economies and environments.

Gyrodactylus would have a devastating impact on the Dee catchment already declining salmon population and remove the possibility for the species to recover. The economic value of the Dee as an important salmon and trout fishery would be massively reduced and the potential for any treatment to affect the ecologically important status of the River Dee would be very high.

## Zebra mussel

Zebra mussel *Dreissena polymorpha* is a freshwater mollusc that has been present in the UK for many decades. It spreads rapidly and feeds on foods of a different size range to our native fresh water mollusc species meaning that there is very little competition for resources. The zebra mussel colonise hard surfaces readily and, in the case of our native molluscs (for example swan mussel *Anodonta cygnea*) can colonise their shells and prevent them from being able to open and feed under the weight of the zebra mussels.

This species has recently been recorded on the Llangollen branch of the Shropshire Union Canal in Cheshire so it is expected that, if they are not their already, this species will not take long to move through the canal network to within the Dee catchment.

## Curly waterweed

Curly waterweed *Lagarosiphon major* is an aquatic weed that was first recorded in the UK in 1944. It grows very rapidly and smothers waterbodies. It can grow in still or slow flowing water bodies up to a depth of 3 metres and is spread vegetatively as only female plants are thought to occur in the UK. This plant is able to survive in very alkaline waters and therefore can out-compete native plants and dominate even the most unfavourable waterbodies.

Curly waterweed has the potential to negatively impact all of the Dee catchments large and small waterbodies such as Llyn Tegid, Brenig, Celyn and the Alwen Reservoir. Due to the large size of this plant it is less likely to 'hitch hike' on fishing tackle and outdoor equipment and will most likely be spread deliberately. This plant is also widely available in garden centres where it is sold as a 'oxygenator' and often called *Elodea crispa*.

#### Water primrose

Water primrose *Ludwigia grandiflora* is an aquatic weed which has 2 growth forms; the first has smaller round leaves spreading laterally across the water or marginal habitat and the later form growing vertically and producing elongated leaves and tall flowers. This plant is very invasive and can have very serious impacts of our native wildlife, hydrology and economy due to its rapid growth and ability to form dense impenetrable mats of vegetation in still or slow flowing waterways.

There are very few reports of this plant in the UK although it is often used as an ornamental plant in horticulture. It is thought that this plant may be too big to be 'hitch hiked' and therefore it would have to be knowingly moved or released into the wider environment. There are many areas of the Dee catchment that could be affected by this plant and therefore it is important that we mitigate the need for control.

#### Slipper limpet

Slipper limpet *Crepidula fornicate* is a marine gastropod that was accidentally introduced to Europe at the end of the 19<sup>th</sup> Century via the oyster farming industry. It forms colonies / chains of individuals who settle on top of one another, as they age the individuals change from male to hermaphrodite and lastly to female, enabling them to successfully mate in these colonies.

In dense population this species can have severe impacts on the local environment by removing suspended solids and plankton from the food chain. They also have a large economic cost for the oyster farming industry who often have to dredge areas to 'clean' them before setting new seed.

In the Dee estuary there is no oyster farming but there is favourable habitat. Possible records of this species have been submitted for the North Wales coast although no positive sightings of live individuals have been received.

#### Didemnum vexillum

*Didemnum vexillum* is a tunicate / sea squirt that has rapidly spread throughout the world since it was identified in 1988. This species can spread either sexually via free swimming larvae or through fragmentation. It rapidly colonises and smothers hard substrates including both manmade objects and marine wildlife.

In North Wales an eradication programme has been underway since 2011 to remove this species from Holywell harbour; although this programme is proving to be successful it has been very expensive to carry out. As this species is located within a reasonable proximity to Liverpool bay and the Dee estuary it is prudent that we are alert for this species.

#### Wireweed

Wireweed *Sargassum muticum* is a non-native seaweed from Japan. It is thought to have first come to Europe in the middle of the last century in consignments of Japanese oysters for the oyster farming industry and has spread rapidly since. The plant is very rapid growing and forms large mats of vegetation in the inter tidal zones it inhabits. It can also break off and form large free floating mats of vegetation. It is known to foul hulls and clog up outboard motors as well as compete with native algal species.

It is possible that this plant may spread to the Dee estuary to the detriment of our native sea weed species. It can be spread on the hulls of vessels that have been docked in contaminated areas and therefore good Biosecurity it key to preventing this species from colonising the Dee Estuary.

#### Asian topmouth gudgeon

Asian topmouth gudgeon *Pseudorasbora parva* is a small fresh water fish which is native to East Asia. It has become invasive in every country in Europe and adjoining West Asia. It is spread primarily through the contamination of fish stocks as it can conceal itself in the gills of other larger fish such as carp. In the invaded range this fish predominantly inhabits still or slow flowing waters such as lakes or canals. They are known to carry fish diseases and also to aggressively compete with native fish such as minnow *Phoxinus phoxinus* and bullhead for spawning ground.

In the Dee catchment there is a real threat of these species becoming established in areas where fish stocks may be introduced for coarse fishing, private ponds and lakes with the catchment are susceptible as well are larger lakes such as the Alwen reservoir. Topmouth gudgeon are present in the Shropshire Union Canal in Cheshire.

# **BIOSECURITY - DEMONSTRATING THE NEED**

Within the UK and locally there is a great emphasis on biosecurity to prevent the spread of INNS. Biosecurity risk assessments are becoming increasingly used in the construction and consultancy industry, with some agencies insisting on their inclusion in tenders and project planning. Within the nature conservation industry many organisations are introducing biosecurity best practice into their every day practices and educating their staff and volunteers.

In order to demonstrate the need for this strategy we need to understand what drivers there are both locally and nationally that will enable the plan to be realised.

#### EUROPE

WITHIN THE WHOLE OF EUROPE INNS ARE A SIGNIFICANT ENVIRONMENTAL AND ECONOMIC PROBLEM COSTING AT LEAST 12.5 BILLION EURO/YEAR. AT THE TIME OF WRITING THIS STRATEGY THE EUROPEAN UNION ARE WORKING TOWARDS THE DEVELOPMENT OF A DIRECTIVE ON INVASIVE ALIEN (NON-NATIVE) SPECIES WHICH IS CURRENTLY BEING VOTED ON BY EU ENVIRONMENT COMMITTEE.

#### European Strategy on Invasive Alien Species

The European Strategy on Invasive Alien Species provides a framework for action, including encouraging the development of national strategies. The strategy aims to

*"Facilitate the implementation of international commitment and best practice and to support development of realistic policies, measures and targets."* (Genovesi & Shine 2003)

Chapter 5 of the strategy focusing on prevention and provides guidance on actions that can be taken to prevent the spread of INNS. It states that;

"For aquatic ecosystems, the emphasis on prevention is critical. Alien species can be particularly hard to detect in aquatic systems and can disperse rapidly, making eradication or control extremely difficult. For European states with long coastlines and/or with islands, marine IAS issues are of great importance."

## UK

## National Strategy - The Invasive Non-Native Species Framework Strategy for Great Britain

Published by DEFRA, the Scottish Government and Welsh Assembly Government in 2008 'The Invasive Non-Native Species Framework Strategy for Great Britain' (GB Strategy) sets out a high-level framework and details the key actions required to address the problems caused by invasive non-native species. The GB Strategy has given prevention the highest priority in terms of dealing with INNS.

One of the objectives of the strategy is;

To minimise the risk of invasive non-native species entering and becoming established in GB, and reduce the risks associated with the movement of species outside their natural range within GB.

#### WALES

#### Wales Biodiversity partnership INNS Group INNS Risk Assessment

The Wales Biodiversity Partnership (WBP) contributes to the delivery of global, European and national target or biodiversity and ecosystems. The WBP INNS group is comprised of representatives from statutory and non-statutory bodies and chaired by a representative from the Welsh Assembly Government (WAG). The group supports the work of the WBP and takes forward work areas on their behalf.

In 2013 the Group began drafting an INNS risk assessment for Wales. This risk assessment gives each species listed in the risk assessment a score of A-C depending on their threat to Wales (A being the highest threat level). The risk assessment also notes if the species is present in Wales, information that has the potential to allow the WAG to prioritise species where biosecurity is essential.

#### **L**EGISLATION

Within the UK there are many pieces of legislation that are relevant to Invasive Non-Native Species. Below is a summary1 of the legislation which is relevant to the INNS and prevention / biosecurity.

#### The Wildlife and Countryside Act (1981)

Section 14 of The Wildlife and Countryside Act (1981) is the principal legislation dealing with the release of non-native species. This has been amended by the Natural Environment and Rural Communities Act (2006) in England and Wales. Section 14 of the Act makes it illegal plant or otherwise cause to grow in the wild any plant listed on Schedule 9 of the Act or, alternatively, release releases or allows to escape into the wild any animal listed on Schedule 9 or the Act. Offences under section 14 carry a maximum penalty of a £5,000 fine and/or 6 months imprisonment on summary conviction (i.e. at Magistrates' Court) and an unlimited fine (i.e. whatever the court feels to be commensurate with the offence) and/or 2 years imprisonment on indictment (i.e. at Crown Court).

#### The Wildlife and Countryside Act 1981 (Variation of Schedule 9) (England and Wales) Order 2010

This amendment which applies to England and Wales came into force on 6th April 2010 and details the addition and removal of several animal and plant species to Schedule 9.

#### Natural Environment and Rural Communities Act (2006)

Section 50 of the Natural Environment and Rural Communities (NERC) Act (2006) allows the Secretary of State to ban the sale of invasive non-native species known to cause damage, in England

<sup>1</sup> Taken directly from the GBNNSS website January 2013.

https://secure.fera.defra.gov.uk/nonnativespecies/index.cfm?pageid=67

and Wales. Section 51 of the NERC Act allows the Secretary of State to issue codes of practice (e.g. Horticultural Code of Practice), which alone cannot be used to prosecute but can be used in a court of law to demonstrate that the defendant did not take the necessary precautions (or due diligence) to prevent damage caused by release of non-native species.

## **Environmental Protection Act (1990)**

This Act has very limited provisions for INNS, 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, 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.

## **CURRENT ACTION**

Within the Dee catchment there has long been an emphasis on biosecurity with 3 biosecurity workshops being held within the catchment by Cheshire Wildlife Trust in conjunction with Chester Zoo in 2011, 2012 and 2013. All of these events were oversubscribed and attracted a wide range of both local and national delegates.

The DINNS Project has financed (through funding from the Welsh Government Local Environment Quality Tidy Towns Community Led funding) and assisted with the delivery of 2 community biosecurity workshops organised by the Alyn Himalayan Balsam Project. This funding also allowed the project to support the Welsh Dee Trust (WDT) in the delivery of biosecurity awareness talks to angling clubs and obtained and distributed national awareness materials throughout the catchment.

Funding from the Welsh Assembly governments Resilient Ecosystem Fund (REF) 2013-15 has also enabled the DINNS project to produce personal biosecurity packs to be given to water users to encourage them to carry out biosecurity. These packs contain brushes to help with cleaning of shoes and equipment, a waterproof ID guide, Check Clean Dry information and a user guide. The REF has also enabled the DINNS project to hold a biosecurity workshop for the outdoor pursuits sector within the Dee catchment to raise awareness about INNS and biosecurity in their sector.

# PATHWAY RISK ASSESSMENT

A pathway risk assessment was carried out in order to ensure the potentially high risk pathways were identified and prioritised. This process assessed each pathway in the absence of biosecurity. It should therefore be noted that although the results of the pathway risk assessment give a potential risk level, this is prior to any biosecurity measure being put in place which, in reality, may actually give the pathway a lower risk level.

#### Pathways

In order to begin this process as many man-made pathways that could spread INNS were identified for both movement of INNS within the catchment and the movement of INNS into and out of the catchment. Table 1 below shows the list of pathways that were identified, whether they can transport INNS from within or outside the catchment.

Table 1: Identified	pathways showing	potential for spreadin	g INNS in and o	ut the Dee catchment
Table 1. Identified	patitways showing	potential for spicauli	s mana s m ana o	at the Dec catemicit

		WITHIN	
POTENTIAL PATHWAYS	CATCHMENT	CATCHMENT	
Nature Conservation	Y	Y	
Zoos and animal parks	Y		
Game fishing	Y	Y	
Coarse fishing	Y	Y	
Transport (Road, rail)	Y	Y	
Sports events	Y	Y	
Transport maintenance	Y	Y	
Forestry	Y	Y	
Canoeing / Kayaking	Y	Y	
Aquaculture	Y	Y	
Sailing	Y	Y	
Horticulture	Y	Y	
Pet Industry	Y	Y	
Diving	Y		
Fishing Industry	Y		
Marine Sports	Y		
Shipping (Ballast Water)	Y		
Live Food (marine)	Y		
Sea Fishing	Y		
Agriculture (Stock movement / crop movement etc)	Y	Y	
Fisheries	Y	Y	
Canal /canal boating	Y	Y	
Construction	Y	Y	
Open water swimming	Y	Y	
Remote controlled boat racing	Y	Y	
Shooting	Y	Y	

Waste management	Y	Y
Off-road racing	Y	Y
Hiking	Y	Y
Companion Animals	Y	Y
Equestrian	Y	Y
Paintballing	Y	Υ
Pot Holing / caving	Y	Y
Golfing	Y	Υ
Running	Y	Υ
Country shows / Events	Y	Y
Aviation	Y	

#### Species

The following 3 documents were used to draw up the list of species that were of importance to be included in the risk assessment:

- The WBP INNS Group INNS Risk Assessment
- Cheshire Region Invasive Non-native Species Initiative Non-native Species Prioritisation List
- Marine Biological Association 10 most unwanted marine invasives list

These documents gave the species listed on them a 'score' or priority level that could be used to understand the perceived threat level of the species to the UK, and thus, the Dee catchment area.

Where species were not included in these documents but thought important to this risk assessment process they were included and information from sources such as the GBNNSS, CABI Invasive Species Compendium and the International Invasive Species Specialist Group website (www.issg.org) was used to understand the potential level of threat to the UK and the Dee catchment.

#### Score

For each species a score of 1, 2 or 3 was given to them which was referred to as the 'Dee Score'; 3 being the highest risk level and 1 being the lowest. This score was either determined using the 'score' / priority level given in the available documents or by information from online sources.

#### **Risk Assessment Process**

In order to identify the potential risk level for each pathway, where they were known or likely to be a pathway for a species the Dee Score was inputted into the corresponding cell. The number of high risk species for each pathway was totalled which in turn enabled each pathway to be categorised as high, medium or low using the following criteria:

- Low = <10 high risk species
- Medium = 11-20 high risk species
- High >20 high risk species

#### RESULTS

The table below lists the pathways and their potential risk level following the completion of the pathway risk assessment process.

POTENTIAL PATHWAYS	HIGH RISK SPECIES COUNT	POTENTIAL RISK LEVEL (H=>20, M=11-20, L=0-10)
Nature Conservation	54	HIGH
Coarse fishing	51	HIGH
Horticulture	49	HIGH
Canoeing / Kayaking	49	HIGH
Game fishing	49	HIGH
Sports events	47	HIGH
Sailing	41	HIGH
Aquaculture	41	HIGH
Fishing Industry	38	HIGH
Landscaping	37	HIGH
Cargo / Freight	35	HIGH
Canal /canal boating	26	HIGH
Diving	24	HIGH
Shipping (Ballast Water / Hull Fouling)	24	HIGH
Marine Sports	23	HIGH
Live Food (marine)	23	HIGH
Sea Fishing	23	HIGH
Forestry	22	HIGH
Agriculture (Stock movement / crop movement etc)	21	HIGH
Transport (Road, rail, air)	19	MEDIUM
Transport maintenance	18	MEDIUM
Open water swimming	15	MEDIUM
Zoos and animal parks	14	MEDIUM
Global Food	11	MEDIUM
Remote controlled boat racing	10	LOW
Construction	9	LOW
Waste management	6	LOW
Shooting	6	LOW
Pet Industry	6	LOW
Off-road racing	5	LOW
Companion Animals	4	LOW
Hiking / walking	3	LOW
Running	3	LOW
Pot Holing / caving	3	LOW

Table 2: Potential pathway risk level following completion of the risk assessment process.

Equestrian	2	LOW
Paintballing	2	LOW
Golfing	2	LOW

#### HIGH RISK PATHWAYS

Looking at the results of the risk assessment process we can see that there are 19 potentially high risk pathways. Of these 19 nature conservation is ranked as the most high risk pathway, closely followed by horticulture, coarse and game fishing and canoeing / kayaking. All of these pathways are ones that nationally have been thought of high risk and awareness raising and engagement campaigns such as Check, Clean, Dry and Be Plant Wise have been developed at a national level to target these activities / users. In the following paragraphs the outcomes of the risk assessment process are discussed for the five most high risk pathways.

#### Nature Conservation

The rationale behind the high score for nature conservation probably lies with the fact that people working or active within this sector are often moving between sites and sensitive habitats that are both vulnerable to invasion but also are potential sources of INNS. The range of different habitat types that are covered by this sector also exposes those working or active in it to a higher number of high risk species.

In the UK the nature conservation sector have been the driving force behind the development and implementation of biosecurity measure and risk assessments for INNS. The sector has worked closely with government organisations to assist with the development of policy, public campaigns and training relating to biosecurity for INNS. They are also the main sector involved in the management of INNS and therefore it is within their interest to implement biosecurity and encourage others to do so.

## Angling (Coarse and Game)

The rationale behind the high scores for both coarse and game angling is most likely attributed to the high risk habitats that these activities are carried out in. Many high risk INNS are aquatic species and can be spread easily through contamination of larger native species (such as game and coarse fish) or through contaminated equipment. Also, the transient nature of the angling community globally opens these pathways to a greater risk of introducing species which are currently not present in our native fishing waters.

In the UK many the Angling Trust were very active in the development of biosecurity awareness campaigns such as Check, Clean, Dry and understand that they have a responsibility to prevent the spread of INNS within the UK and further afield. Many anglers are active in the control of INNS and are more than aware how species, such as *Gyrodactylus salaries* could impact on their recreational interests and assets.

#### Horticulture

Horticulture has long been identified as a high risk pathway nationally due to the part that it has had to play historically in the spread of INNS. In the UK the first 'ban from sale' for aquatic invasive nonnative plant species came into force in April 2014 in England and highlights the risk of this industry to the spread of harmful aquatic weeds. There are many flaws with the global horticultural industry in terms of the naming of plants (with many species being labelled incorrectly), the vigorousness of quarantine measures in some source countries and the lack of information about correct disposal of unwanted plant material.

To this end however, in the UK the horticultural industry recognises its responsibility in this area and works closely with the UK government bodies to educate its members through campaigns such as Be Plant Wise and the production of a code of practice for the industry.

## Canoeing / kayaking

Canoeing / kayaking, and other water based sports such as sailing, have long been identified as a high risk pathways nationally due to nature of the environments that these activities take place in (aquatic and marine) and the transient nature of these activities.

As an industry the outdoor activity providers recognise the role canoeing and kayaking can play in the spread of INNS. Industry bodies such as Canoe England and Canoe Wales have been involved in raising awareness of the Check, Clean, Dry campaign and have developed awareness raising materials to help spread the message.

#### **OUTCOMES OF THE PATHWAYS RISK ASSESSMENT**

The pathways risk assessment has gone someway to helping us to identify which activities pose the highest biosecurity risk to the Dee catchment. This will enable us to tailor our biosecurity action plan to ensure these pathways are addressed in a strategic way focusing on the highest risk pathways first.

This process has also enabled a greater understanding of the possible pathways for species that directly affect the Dee catchment and also the amount of pathways that some species can be spread by.

# **BIOSECURITY ACTION PLAN**

#### SCOPE AND PURPOSE

The purpose of this report is to outline the aims and objectives of the Dee Catchment Biosecurity Action Plan. The plan sets out the actions needed to implement the strategy in a co-ordinated and strategic manner. The actions laid out within the plan have been agreed by the Project Steering Group and key partners.

The vision of the Dee Biosecurity strategy is:

# "To establish a sustainable, coherent and inclusive strategy that safeguards the River Dee Catchment in England and Wales against the threat of invasive non-native species through monitoring, action and education."

In order to achieve this vision the following four objectives will have to be met:

- **Objective 1:** Reduce the risk of introductions of new INNS into the Dee catchment
- <u>Objective 2</u>: Reduce the risk of movement of established INNS within and out of the Dee catchment
- <u>Objective 3</u>: Establish a surveillance, early detection and monitoring mechanism for the Dee catchment
- **<u>Objective 4</u>**: Establish a rapid response mechanism for the identified high risk species which pose a significant threat to the Dee catchment

It is recognised that these objectives can only be achieved by taking a partnership approach which builds on local awareness, capacity building and maintaining strong partnerships in order to implement the agreed actions and to ensure success and long-term sustainability.

The plan has the potential to lead to benefits for both the natural environment and the local and national economies. By working together to prevent the spread INNS the Dee Catchment Biosecurity Action Plan will help to safeguard and improve the quality of nationally and internationally important sites for nature conservation and improve access and enjoyment for recreation within the Dee catchment.

#### Geographical

The action plan covers the geographical range of the entire Dee catchment. This coverage encompasses;

- Two countries;
- Seven local authorities;
- One national park authority; and
- One AONB.

This broad coverage of both administrative and statutory boundaries can both benefit and complicate the running of a large scale project which relies on permissions and unanimous cooperation to succeed. To ensure that the project can progress smoothly all of the relevant local authorities and statutory bodies have been brought on board as key stakeholders during the development phase of the DINNS Strategic Action Plan.

#### WHO IS THE PLAN FOR AND HOW WILL IT BE USED?

The biosecurity action plan is for use by all stakeholders throughout the Dee catchment who are or would like to become actively involved in the management, survey and awareness raising of INNS.

# **OBJECTIVES AND OUTPUTS**

This section details the expected outputs from the implementation of the four objectives and the actions required for their realisation.

#### **OBJECTIVE 1:** REDUCE THE RISK OF INTRODUCTIONS OF NEW INNS INTO THE DEE CATCHMENT

One of the highest priorities for the Dee catchment is to prevent the introduction of new species of INNS and preventing them from becoming established.

# Output 1.1: All stakeholders will be made aware of the mechanisms of spread for INNS and how to minimise the risk of spreading INNS into the Dee catchment.

Awareness of how invasive species are spread between river catchments and how the pathways of spread can be disrupted by using effective biosecurity should be raised amongst all stakeholders. Emphasis should be given to raising awareness to those stakeholders who contribute to the high risk pathways as identified in the Pathway Risk Assessment for the Dee catchment.

# Output 1.2: All stakeholders will be engaged with to develop biosecurity best practice guidelines for the Dee Catchment.

As with all practices and protocol that are not enforceable by law, they can only become accepted by, and integrated into the day to day lives of, stakeholder groups if they are practically applicable. By liaising with all stakeholders in the initial stages of best practice planning we can ensure that biosecurity measures do not negatively impact or hinder the enjoyment and economic value of the Dee catchment.

# *Output 1.3: A list of 'most unwanted' species will be drawn up and promoted through the DINNS Project*

A list of the 'most unwanted' INNS species for the Dee catchment should be drawn up using information from the DINNS Pathways Risk Assessment and distribution information of high risk species from local record centres. This list should be promoted throughout the Dee catchment using mechanisms established by the DINNS Project.

#### **OBJECTIVE 2:** REDUCE THE RISK OF MOVEMENT OF ESTABLISHED INNS WITHIN AND OUT OF THE DEE CATCHMENT

Of high priority for those involved in DINNS Project current action and our neighbouring river catchments is the prevention of movement of INNS already established in the Dee catchment. It is important that the Dee catchment is not a source of INNS for surrounding river catchments.

# Output 2.1: All stakeholders will be made aware of the mechanisms of spread for INNS and how to minimise the risk of spreading INNS within the Dee catchment.

Awareness of how invasive species are spread within and out of river catchments and how the pathways of spread can be disrupted by using effective biosecurity should be raised amongst all stakeholders. Emphasis should be given to raising awareness to those stakeholders who contribute to the high risk pathways as identified in the Pathway Risk Assessment for the Dee catchment.

**OBJECTIVE 3:** ESTABLISH A SURVEILLANCE, EARLY DETECTION AND MONITORING MECHANISM FOR THE DEE CATCHMENT.

The GB Strategy identifies the need for surveillance, early detection and monitoring of INNS to ensure they do not become established in previously uninvaded areas. It is vital that these mechanisms are established with the input and agreement of stakeholders to ensure that they are achievable and sustainable.

# *Output 3.1: Work with the DINNS Project Partners to continue to establish and expand the Volunteer river guardian on the River Dee Catchment*

The DINNS Volunteer River Guardian network is being established within the Dee catchment to act as the DINNS Projects eyes and ears on the ground. Volunteers are encouraged to take 'ownership' of their 'patch' of river bank and, in exchange, are offered free training and support by the DINNS Project. This network of volunteers is central to a surveillance, early detection and monitoring mechanism for the Dee catchment and its further development should be prioritised.

# *Output 3.2: Raise awareness of INNS recording in the Dee catchment and the DINNS Project recording website*

The awareness raising event, The Big Dee Day - The Invasion, is an ideal mechanism for raising awareness about INNS recording and should be utilised to engage with the wider Dee catchment community.

Partners should be encouraged to identify other opportunities to promote INNS recording, such as Bioblitz events.

The DINNS Project recording website, which is due to be launched in August 2014, should be promoted throughout the catchment and established as the 'go to' online resource for INNS records and recording.

National recording apps such as Plant Tracker and That's Invasive should be promoted to encourage the use of already established recording mechanisms that have links to the National Biodiversity Network and Local Record Centres.

#### Output 3.3: Promote the list of 'most unwanted' species for the Dee catchment

The list of the 'most unwanted' INNS for the Dee catchment should be promoted to ensure that knowledge of these high priority species is widespread throughout the catchment community allowing for effective early detection.

# **OBJECTIVE 4:** ESTABLISH A RAPID RESPONSE MECHANISM FOR THE IDENTIFIED HIGH RISK SPECIES WHICH POSE A SIGNIFICANT THREAT TO THE DEE CATCHMENT

Rapid response is key to preventing the establishment of INNS within the Dee catchment. Mechanisms should be drawn up for different suites of INNS, for example, freshwater plants, riparian plants and terrestrial plants, all of which have different mechanisms for control and containment.

# *Output 4.1: Rapid Response Mechanisms agreed with key stakeholders and established within the Dee catchment*

Rapid response mechanisms for the Dee catchment should be drawn up and agreed with key stakeholders who will be involved in the delivery or implementation of these mechanisms. This will ensure that all stakeholders are 'on board' with the rapid response processes and will be fully aware of what is expected of them to ensure that the mechanisms are used effectively.

# **ACTIONS AND TIMEFRAMES**

Table 3 below presents the catchment-wide actions required to realise the objectives and outputs described in section 5 of this report. It also details the timeframes required for the implementation of these actions.

## Table 3: Dee Catchment actions, lead agency, key partners and timeframes.

Short term action

On-going action

Action	Lead	Кеу	Timeframe						
Action	Agency	Partners	2014	2015	2016	2017	2018	2019	2020
Objective 1: Reduce the ri	sk of introduct	tions of new IN	NS into t	the Dee (	Catchme	nt			
Output 1.1 – All stakeholders will be made aware of the mechanisms of spread for INNS and how to minimise the									
risk of spreading INNS into	the Dee catch	ment	I		I		1	1	
Collate and distribute	DINNS	All							
national biosecurity	Project								
awareness literature									
Biosecurity awareness talks	Project	NRW CWT							
and workshops held with	(NWWT)	AHBP, FA							
	(								
Output 1.2: All stakehold	ers will be eng	gaged with to c	levelop	biosecuri	ty best	oractice	guidelin	ies for t	he Dee
Catchment.	DINING		ſ		T		1	1	[
Identify Biosecurity best	DINNS	NRW, NE, EA,							
practice wish list		W/DT AHRD	••						
	(100001)	DV&CRAONB							
Engage with stakeholders	DINNS	All							
to identify which	Project								
biosecurity best practice	(NWWT)		•	•					
mechanisms are most									
practicable and effective									
for the Dee catchment									
Develop Best practice	DINNS	NRW, NE, EA,							
guidelines for the Dee				•		•			
Catchinent		DV&CRAONB							
Promote Biosecurity best		DIGCHAOND							
practice guidelines					•				
throughout the catchment									
Output 1.3 – A list of 'most	unwanted' spe	cies will be dra	wn up ai	nd promo	oted thro	ugh the	DINNS F	Project	
Use information from	DINNS	NRW, NE, EA,							
Pathway Risk Assessment	Project	CWT, SNPA,							
and LRC data to identify	(NWWT)	WDT, AHBP,	• •						
'most unwanted' species		DV&CRAONB							
list	DINING								
Promote 'most unwanted'	Project	ALL	•						
list throughout catchment	(NWWT)								-

	Lead	Kev	Timeframe						
Action	Agency	Partners	2014	2015	2016	2017	2018	2019	2020
Revise 'most unwanted list' annually	DINNS Project (NWWT)	NRW, GBNNSS, NE, EA, CWT, SNPA		•					
Objective 2: Reduce the risk of movement of established INNS within and out of the Dee catchment									
Output 2.1 – All stakeholde	rs will be made	e aware of the n	nechanis	ms of sp	read for	INNS an	d how to	o minimi	se the
risk of spreading INNS within the Dee catchment									
Collate and distribute	DINNS	All							
national biosecurity	Project		•						
awareness literature	(NWWT)								
Biosecurity awareness talks	DINNS	WDT, SNPA,							
and workshops held with	Project	NRW, CWT,	•						
stakeholders	(NWWT)	AHBP							
Promote current control	DINNS	All							
works and the DINNS	Project		•						
Recording website	(NWWT)								
Promote the Biosecurity	DINNS	All							
Best practice guidelines	Project			•					
throughout the catchment	(NWWT)								
Objective 3: Establish a su	rveillance, ear	ly detection an	d monit	oring me	chanism	for the	Dee cate	chment	
Output 3.1 – Work with the DINNS Project Partners to continue to establish and expand the Volunteer River									
Partners to identify and	DINNSP	All							
recruit Volunteer River	(NWWT) /	,	•						
Guardians	WDT								
		ΔΙΙ							
All partners to identify	Project								
training needs of Guardians	(NWWT) /		•						
and input to DINNS PO	WDT								
Output 3.2 – Raise awarene	ss of INNS reco	ording in the De	e catchr	nent and	the DINI	NS Proie	ct recor	ding weł	osite
Launch Dee INNS recording									
website and promote	Project								
throughout the Dee	(NWWT)		•						$\rightarrow$
catchment	()								
Use the Big Dee Day The	DINNS	Cofnod /							
Invasion event to promote	Project	Record							
INNS recording	(NŴWT)		-						
	DINNS	All							
Work with project partners	Project								
to identify to identify other	(NWWT)								
opportunities to promote			•						
INNS recording									
	DINNS	WDT, Cofnod							
Promote the use of INNS	Project	/ Record,	•						
Recording Apps	(NŴWT)	CWT, SNP							
Output 3.3 – Promote the list of 'most unwanted' species for the Dee catchment									
Promote 'most unwanted'	Project		-						
list throughout catchment	(N\\/\/T)		-						F
	(1400001)								

Action	Lead	Кеу	Timeframe						
ACTION	Agency	Partners	2014	2015	2016	2017	2018	2019	2020
Provide training on identification of 'most unwanted species'	DINNS Project (NWWT)	All	•						
<b><u>Objective 4</u></b> : Establish a rapid response mechanism for the identified high risk species which pose a significant threat to the Dee Catchment									
Output 4.1 – Rapid Response Mechanisms agreed with key stakeholders and established within the Dee									
catchment									
Meet with Key Partners to	DINNS	NRW, WDT,							
draw up rapid response	Project	SNPA, NE,	• •						
mechanisms	(NWWT)	CWT							
Meet with key	DINNS	ALL							
stakeholders to agree rapid	Project								
response mechanisms	(NWWT)								
Agree Banid Besponse	DINNS	NRW, WDT,							
mechanisms and review	Project	SNPA, NE,		•					
annually	(NWWT)	CWT							

# **IMPLEMENTATION**

In order to ensure the biosecurity strategy is implemented successfully it is important to know what the roles and responsibilities of different stakeholders are and how resources can be secured to ensure implementation can be undertaken.

#### **ROLES AND RESPONSIBILITIES**

In order to implement the strategic action plan it is very important that everyone is aware of their role within the process of delivering the projects objectives. Table 4 below outlines the roles and responsibilities of key stakeholder groups in implementing the Strategic Action Plan.

	Roles and responsibilities								
Stakeholder Group	Awareness Raising	Delivery	Planning	Resources	Training				
Government organisations	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$				
Local authorities	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$				
Landowners		$\checkmark$	$\checkmark$	$\checkmark$					
Charities, wildlife and community organisations	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$				
Voluntary groups	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$					
Clubs, Associations and Societies	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$					
Local businesses	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$					
Schools, Colleges and Universities	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$					

#### **SECURING RESOURCES**

In order to implement the plan all resources required to deliver the objectives should be identified and secured. Resources can be wide ranging, from securing funds through to recruiting volunteers and promotional materials. Resources needed to deliver objectives successfully should be identified and secured; this will enable the strategy implementation process to run efficiently and smoothly.

# **MONITORING AND REVIEW**

In order to ensure that this strategy is implemented effectively it is vital that the outcomes and outputs of the suggested actions are monitored to ensure the strategies objectives are being met and the aim is being realised.

Monitoring of the delivery of the strategies objectives and the overall progress of the strategy should take place on an annual basis and should ultimately fall within the remit of the PSG and the DINNS Project PO.

Monitoring will enable key decisions about the strategies ongoing implementation to be decided in a clear and concise manner.

A fully co-ordinated monitoring programme must be developed that includes the following;

- Regular assessment of achievements of implementing the strategy
- Monitoring of activities and the effectiveness of all activities

In addition to monitoring a review of the Strategy should take place every six years to ensure that firstly the objectives, outputs and actions are still relevant and secondly that the objectives, outputs and actions are achievable.

# **FIGURES**





# REFERENCES

Genovesi & Shine 2003. European Strategy on Invasive Alien Species. Final Version. http://jncc.defra.gov.uk/pdf/BRAG\_NNS\_Genovesi&Shine-EuropeanStrategyonInvasiveAlienSpecies.pdf

Moore 2010. The Economic Cost of Invasive Non-Native Species on Great Britain. Headline figures. https://secure.fera.defra.gov.uk/nonnativespecies/index.cfm?sectionid=14. Accessed 22/01/2013.