

River Basin Management Plans

Programme of measures

Key Sectors — All Sectors

Pressure Type — Invasive Alien Species

Introduction

Alien species or, as they are sometimes known, non-native species are animals and plants that have been introduced, either intentionally or unintentionally, outside their natural range. Many of these alien species live in harmony with our native species causing no adverse impacts. A few alien species become what is known as 'invasive' as they thrive in our habitats and out-compete our native plants and animals. These Invasive alien species are now widely recognised as one of the greatest threats to our native biodiversity, second only to that of habitat destruction. They not only have negative environmental impacts but they can also adversely impact on recreational activities such as walking, boating, fishing, swimming and various other water based leisure pursuits. In some cases they can also have serious associated economic costs.

Alien species were included in the freshwater classification results. However for freshwaters, coastal and transitional water bodies the presence of invasive alien species can only cause a downgrade from high to good ecological status. The presence of four marine invasive species, namely the Slipper Limpet (*Crepidula fornicata*), Smooth cord-grass (*Spartina anglica*), Wire weed (*Sargassum muticum*) and the Chinese mitten crab (*Eriocheir sinensis*) was assessed

There are several species which were identified in the 'Invasive species in Ireland Report' as being problematical in Ireland. For the purposes of the Water Framework Directive (WFD) it is only those species which are known to be present in Ireland and that are known to have a negative impact on our native aquatic ecology that are taken into consideration during the classification process. Table 7.10(a) below lists those species which under the WFD are considered to pose a significant threat in Ireland. The list does not include invasive alien species that have not been recorded in Ireland such as the Signal Crayfish, however the list will be updated as additional invasive alien species arrive.



Japanese Knotweed



Himalayan Balsam

Table 7.10(a) Provisional Invasive Alien List for Ecoregion 17 (Ireland).

| Species Type | Common Name | Species name | Presence in Northern Ireland |
|-------------------------------|---|----------------------------------|---|
| Aquatic Plants | Curly Waterweed | <i>Lagarosiphon major</i> | Present in a few locations in NI |
| | Nuttall's waterweed | <i>Elodea nuttallii</i> | Present |
| | Parrots Feather | <i>Myriophyllum aquaticum</i> | Present |
| | New Zealand Pigmyweed (also know as Australian Swamp Stonecrop) | <i>Crassula helmsii</i> | Present |
| | Water fern | <i>Azolla filiculoides</i> | Present |
| | Least duckweed | <i>Lemna minuta</i> | Present |
| | Fringed waterlily | <i>Nymphoides peltata</i> | Present |
| | Floating pennywort | <i>Hydrocotyle ranunculoides</i> | Present in a few locations in NI |
| Riparian (river bank) species | Giant hogweed | <i>Heracleum mantegazzianum</i> | Present |
| | Himalayan balsam | <i>Impatiens glandulifera</i> | Present |
| | Japanese knotweed | <i>Fallopia japonica</i> | Present |
| Invertebrates | Zebra mussel | <i>Dreissena polymorpha</i> | Present. |
| | Crustacean | <i>Crangonyx pseudogracilis</i> | Present |
| Fish | Chub | <i>Leuciscus cephalus</i> | Not present – only in Republic of Ireland |
| | Dace | <i>Leuciscus leuciscus</i> | Not present – only in Republic of Ireland |
| Fish parasite | Swim Bladder Nematode | <i>Anguillicola crassus</i> | Present |
| Marine Species | Ascidian species | <i>Didemnum spp.</i> | Present |
| | Common cord-grass | <i>Spartina anglica</i> | Present |
| | Wire weed | <i>Sargassum muticum</i> | Present |
| | Chinese mitten crab | <i>Eriocheir sinensis</i> | Not present – only in Republic of Ireland |
| | Pacific Oyster | <i>Crassostrea gigas</i> | Present |
| | Leathery Sea Squirt | <i>Styela clava</i> | Present |
| | Slipper Limpet | <i>Crepidula fornicata</i> | Present |

(The list does not include invasives that have not been recorded in the Ecoregion and the list will need to be updated if additional species arrive – List last updated 24th June 2009)

These species are known to have a direct impact on the ecology of the water environment, if they become fully established in an area. Some of these species are present in Northern Ireland and require some form of management (such as preventing further spread, monitoring to identify extent, eradication or removal from a water body). Some species are very difficult to control once established. Prevention measures followed by early removal or eradication measures are most appropriate. Others on the list are present in the Republic of Ireland but need to be actively prevented from spreading to Northern Ireland as, once established, they would be detrimental to the environment, and difficult and costly to control.

What causes the environmental impact?

Invasive alien species impact on native species through competition for food, space or habitats, through predation, by altering habitat or by introducing pathogens or parasites. Indirect impacts to the wider environment may also occur from invasive alien riparian species for example, excessive growth of these species can result in increased shading. Winter die back of these invasive alien species can also result in river bank instability and erosion which can lead to increased sedimentation in rivers and consequent silting up of fish spawning grounds and smothering of freshwater pearl mussels. Examples of impacts arising from a number of invasive alien species that are currently present in Northern Ireland are provided in Table 7.10(b).

Table 7.10(b) Examples of the impacts of invasive alien species present in Northern Ireland

| Species | Water body type | Impacts |
|---|------------------|--|
| Japanese Knotweed (<i>Fallopia japonica</i>) | Rivers and lakes | <ul style="list-style-type: none"> • Competition with native flora; results in monoculture of Japanese Knotweed along river banks. • Undermining of infrastructure. • In winter Japanese Knotweed dies back, leaving bare banks susceptible to increased erosion and increased sedimentation of the river which can impact on fish spawning grounds, and species designated under Annex II of the Habitats Directive such as the Freshwater Pearl Mussel. |
| Himalayan Balsam (<i>Impatiens glandulifera</i>) | Rivers and lakes | <ul style="list-style-type: none"> • Competes with native flora which results in a monoculture of Himalayan Balsam along riverbanks. • In winter the plant dies back leaving bare banks susceptible to increased erosion and increased sedimentation of the river which can impact on fish spawning grounds, and species designated under Annex II of the Habitats Directive such as the Freshwater Pearl Mussel. |

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|--|----------------------|--|
| Giant Hogweed (<i>Heracleum mantegazzianum</i>) | Rivers and lakes | <ul style="list-style-type: none"> • Poses a health hazard to humans as skin contact with the sap of the plant causes burns • Excludes native herbaceous plants which can result in riverbank instability • In winter Giant Hogweed dies back, leaving bare banks susceptible to increased erosion and increased sedimentation of the river which can impact on fish spawning grounds, and species designated under Annex II of the Habitats Directive such as the Freshwater Pearl Mussel. |
| Zebra Mussel (<i>Dreissena polymorpha</i>) | Lakes | <ul style="list-style-type: none"> • Smothering of native unionid mussel • Increased macrophyte growth due to increased light penetration which impedes fishing and boat navigation • Decrease in phytoplankton and zooplankton abundance • Mask impact of nutrient status which may result in toxic algae blooms • Cause changes in fish populations • Damage boat engines, block water abstraction intakes and foul jetties. |
| Wireweed (<i>Sargassum muticum</i>) | Coasts and estuaries | <ul style="list-style-type: none"> • Competition with native species • Smothers Eel grass beds that are important feeding areas for wading birds in Special Protection Areas. • Reduces light penetration available to under story species. • Prevents oxygen transfer between air and water when present in dense stands. • Dense stands can impede navigation in marinas. • Can cause low oxygen levels when the population declines. |

What action are we already taking?

Northern Ireland has a number of international obligations to address invasive species issues, principally through the Convention on Biological Diversity, International Plant Protection Convention, the Habitats Directive and now the Water Framework Directive.

Key legislation and strategies

The Wildlife Order (NI) 1985 (under review)

The Wildlife Order is the primary mechanism to control the introduction of alien species into Northern Ireland through prohibition of the introduction of specific species into the country. This legislation aims to protect wild animals, birds, plants and their habitats. It is therefore an offence to kill, injure, disturb, take or sell wild animals. The Order contains measures for preventing the establishment of species not native to Northern Ireland which may be detrimental to native wildlife. It is an offence under Article 15 of the Wildlife Order to “release or cause to escape into the wild” any animal (this would include birds and fish) that is not ordinarily resident in or is not a regular visitor to Northern Ireland in a wild state (i.e. species, which according to scientific records, do not naturally occur in Northern Ireland). It is also an offence to release any animal included in Part 1 of Schedule 9 to the Wildlife Order in order to prevent their further spread. Part II of schedule 9 specifically lists plants which it is an offence to intentionally plant or otherwise cause to grow in the wild. This covers non-native plants such as the Giant Hogweed and Japanese Knotweed.

A review of the Wildlife Order has been completed and a consultation document setting out the Department of the Environment’s proposals for updating and amending the Wildlife Order (NI) 1985 went out to public consultation in February 2008. Consultation closed in June 2008. Amendment of this order will make significant changes to Article 15 and the schedule 9 lists. It is expected that the amendment will be enacted in 2010 subject to ministerial approval and progress through the NI Assembly.

Schedule 9 of the Wildlife Order included species that are established in the wild which do not occur naturally in Northern Ireland. It is proposed to include species that may not yet be present in Northern Ireland but, were they to become established, they would cause considerable risk to biodiversity. There is provision within the order to

ensure this schedule is kept up to date by permitting a review of the lists of species every five years.

Amendments to Schedule 9 of the Order will also provide a discretionary general power for the DOE to take action to control, contain or eradicate invasive non-native species and provide associated powers of entry; give the DOE power to produce Codes of Practice about invasive alien species and allow the DOE to approve guidance issued by others for the purpose of providing people with recommendations, advice and information regarding the control and elimination of alien animals and plants.

The Fisheries Act (NI) 1966

Section 13 of this Act is specifically relevant to the control of non-native fish species. Under this section of the Act if it is decided that the introduction of a particular species of fish would be detrimental to a fishery, an order can be made prohibiting the introduction of live fish or eggs of that species. Enforcement of the legislation is carried out by the Department of Culture, Arts and Leisure (DCAL), except in the Foyle and Carlingford catchments where the Loughs Agency of the Foyle, Carlingford and Irish Lights Commission is responsible. The current order implementing this act is the Prohibition of Introduction of Fish Order.

The Prohibition of Introduction of Fish Order (NI) 1979

This Order prohibits the introduction of specified kinds of fish into any inland waters of Northern Ireland (excluding the Foyle and Carlingford catchments). Any fish being introduced into waters in Northern Ireland which are prohibited under the Prohibition of Introduction of Fish Order require a permit issued by the Department of Agriculture and Rural Development (DARD) under Section 13 of the Fisheries Act 1966.



Fringed Water Lily

Molluscan Shellfish (Control of Deposit) Order (Northern Ireland) 1972 Order

This Order prohibits the introduction of any molluscan shellfish into any designated waters which have been taken from shellfish beds outside the designated waters. Any shellfish being introduced into any waters in Northern Ireland which are prohibited by the Molluscan Shellfish Order require a permit issued by the DARD under Section 13 of the Fisheries Act 1966.

The **Control of Pesticides (Amendment) Regulations (Northern Ireland) 1997** and the **Plant Protection Products Regulations 2005** regulates the use of herbicides to control invasive plants in or near water.

The **Plant Health Order (NI) 2006** implements Directive 2005/77/EC on protective measures against the introduction into the Community of organisms harmful to plants and plant products and against their spread within the Community.

Zebra Mussel Management Strategy for Northern Ireland 2004-2010

The Northern Ireland Environment Agency (NIEA) has developed a management strategy for controlling the spread of zebra mussels in Northern Ireland. The overall aim of the management strategy is to minimise the spread of zebra mussels in Northern Ireland through raising awareness, developing policy and legislation, monitoring and research and developing contingency plans for immediate action in the event of further zebra mussel spread. There is currently no effective means of controlling existing populations.

A Zebra Mussel Control Group, dedicated to raising awareness among water users with the aim of preventing the further spread of zebra mussels, was set up in 2000 and has representatives from NIEA, Northern Ireland Water, DCAL, QUB, Waterways Ireland and the National Parks and Wildlife Service. Representatives from NIEA and the Central Fisheries Board in the Republic of Ireland also contribute to the UK Alien Species Group through the UK Technical Advisory Group.

In 2007 a 'Zebra Mussel Awareness Contract' was run. Through this contract various stakeholder workshops took place throughout Northern Ireland increasing knowledge about the zebra mussel and reinforcing messages about preventing its spread to further lakes. In 2008 NIEA developed and produced zebra

mussel and aquatic weed signs for placement around the most vulnerable water bodies identified in the Zebra Mussel Management Strategy. These signs have been distributed to local authorities, marinas and clubs for placement around many water bodies. A guidance leaflet is also available on the NIEA website.

Management protocols

Rivers Agency has developed a number of protocols for dealing with Giant Hogweed, Himalayan Balsam and Japanese Knotweed for their operatives who carry out works in watercourses. These protocols have been included in Rivers Agency's Environmentally Sensitive River Maintenance guidelines for their contractors.

Maritime Ballast Water Convention

Alien species can be transferred in ships ballast water that is released when ships take on cargo in a port. The ballast water can contain larvae of a variety of species that can become invasive when released into a non-native environment. Currently the Maritime and Coastguard Agency can only advise ships to exchange ballast water in open sea, there are currently no binding requirements to enforce on vessels. However the UK is intending to begin the process of ratifying the Maritime Ballast Water Convention as soon as the technology is available to meet the stringent discharge water quality standards set by the Convention. Once this is ratified the Maritime and Coastguard Agency / International Maritime Organisation will have full powers to control ballast water release. The UK expects to ratify this Convention by 2015.



Zebra Mussels

Review of invasive species in Ireland

An 'Invasive species in Ireland' report was prepared for NIEA and the National Parks and Wildlife Service in the Republic of Ireland in 2006. The aim of the report was to review the impact of existing and potential future alien species on native biodiversity in Ireland and to recommend actions to Government in both jurisdictions that will address the requirements of the Convention on Biological Diversity on alien species and improve their capacity to avoid or limit the ecological impact of alien species. The authors recommended ten key actions that will reduce the risks of invasions, help control and manage new and established invasive populations, monitor impacts, raise public awareness, improve legislation and address international obligations. The ten key actions are outlined in the summary and the report can be downloaded from the following web link http://www.invasivespeciesireland.com/downloads/general_information.asp

Invasive species Ireland project

The review of invasive species in Ireland has provided information on the impact of current invasive alien species and provided recommendations for control of species present in Ireland and strategies to prevent the introduction of further species. However the most effective measures to control invasive alien species are through early detection and direct control actions before they become fully established in specific locations. Work has been done to develop codes of practice for particular sectors and improve education and awareness about preventing the introduction of alien species and these are listed below.

NIEA in conjunction with the National Parks and Wildlife Service (NPWS) in the Republic of Ireland jointly funded a 3 year contract in May 2006 to implement the recommendations of the Invasive Species in Ireland report. This was a partnership between EnviroCentre and Quercus and aimed to develop risk assessments, and contingency and management plans for species that are established or are likely to become established. It also considered ways to engage relevant stakeholders, for example the development of sectoral codes of practice, and education and awareness programmes. This work is on-going and a website has been created to support this work and promote greater understanding of the issues involved and can be found at <http://www.invasivespeciesireland.com>. It is expected that a further contract will be set up to continue this work. The project has developed best practice management guidance for Japanese Knotweed,

Giant Hogweed and the Himalayan Balsam. Management plans have also been developed for a wide range of species including the Didemnum species (sea squirt) and the Floating Pennywort.

A number of codes of practice have been developed by the project and can be found at <http://www.invasivespeciesireland.com>.

- Recreational Water Users - Code of Practice
- Marina Operators - Code of Practice
- Horticulture – Code of Practice

A number of educational and awareness leaflets have been prepared and are available to download from <http://www.invasivespeciesireland.com/downloads/>:

- How to manage Giant Hogweed at home
- How to manage Japanese Knotweed at home
- Guidelines for boat owners
- Didemnum report a sighting leaflet
- Field guide to Invasive Species in Ireland

As part of the 'Invasive Species in Ireland Project' stakeholder engagement is seen as an essential aspect to preventing the introduction and further spread of invasive species:

- An Annual All-Ireland Invasive Species Forum is held.
- Four specialist technical working groups have been set up comprising of experts for Freshwater, Marine, Terrestrial and Education and Awareness.

In terms of preventing the introduction of species to Northern Ireland that are not currently present, a number of contingency plans have been developed including a non-native crayfish exclusion strategy.



Monawilkin

Grant aid

The NIEA Natural Heritage Grant Aid Programme provides grant aid, at various times of the year, for local environmental projects. Subject to funds grant aid may be available for local invasive alien species projects. Details are available at <http://www.ni-environment.gov.uk/landscape/grant.htm>.

The DARD Countryside Management Scheme also cites, as part of the Riparian Zone enhanced management requirements for a farm waterway, removal of Invasive Alien Species. This targets species including Giant Hogweed, Japanese Knotweed and Himalyan Balsam and removal is to be carried out as soon as possible after they have been identified.

Agri-environment scheme participants and/or landowners in receipt of Single Farm Payment must comply with Cross-Compliance. Cross-Compliance states that: "you must avoid infestation and not release, plant or allow to escape into the wild any invasive non-native species."

What further actions will deliver environmental improvements?

The following tables summarise the existing/ planned measures and supplementary measures for Invasive Alien species.



Curly Waterweed



Parrot's Feather

Key Sector: All sectors**Pressure Type:** Invasive alien species**Summary of existing and planned measures**

| Improvement Required | Actions | Delivery mechanism | Lead Department / Agency | Support Provider | Deadline for delivery of mechanism (year end) |
|--|--|---|--|---|---|
| Prevent establishment of species not native to NI | Prevent release or escape of non native species | The Wildlife 1985 (NI) Order | NIEA | DOE | In place |
| | Amend Wildlife Order to include species which could present a problem | The Wildlife 1985 (NI) Order | NIEA | DOE | 2010 |
| | Control non- native fish species | The Fisheries Act (NI)1966 Prohibition of Introduction of Fish Order (NI) 1979 | DCAL, Loughs Agency | | In place |
| | Control molluscan shellfish | Molluscan shellfish (Control deposit) Order (NI) 1972 | DARD | | In place |
| | Control release of ballast water | UK Maritime Ballast Water Convention | Maritime and Coastguard Agency / International Maritime Organisation | DOE | 2015 |
| Control of alien species | Control the use of herbicides to control invasive plants in or near water | Control of Pesticides (Amendment) Regulations (Northern Ireland) 1997 Plant Protection Products Regulations 2005 | DARD | | In place |
| | Implement management protocols to control Giant Hogweed, Himalayan Balsam, Japanese Knotweed and Zebra Mussels | Environmentally Sensitive River Maintenance Guidelines / Management Protocols | DARD Rivers Agency | Contractor operatives | In place |
| | Control spread of zebra mussels | Zebra Mussel Management Strategy for Northern Ireland 2004-2010 | NIEA | AFBI, QUB, NIW, DCAL, Waterways Ireland, NPWS | In place |
| | | Raise awareness among water users through Zebra Mussel Control Group | NIEA | | In place |

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| Improvement Required | Actions | Delivery mechanism | Lead Department / Agency | Support Provider | Deadline for delivery of mechanism (year end) |
|--------------------------------|--|---|--------------------------|------------------------|---|
| Education and awareness | Promote the use of best practice and management plans for Giant Hogweed, Himalayan Balsam, Japanese Knotweed, Didemnun and Floating Pennywort | Invasive Species Ireland Project Invasive Species Technical Working Groups | NIEA , NPWS | | In place |
| | Promote educational materials and awareness leaflets including codes of practice for Marina Operators, Recreational Water Users, Horticulture and Marine Aquaculture | Dedicated website at www.invasivespeciesireland.com | NIEA , NPWS | | In place |
| Local Action | Develop risk assessments and management plans for species that are established or likely to become established | Invasive Species Ireland Project | NIEA , NPWS | Enviro Centre, Quercus | 2012 |
| | Provide aid to enable local invasive species eradication measures | Develop Management Plans for high risk species and wide spread species | NIEA | | In place |
| | | Natural Heritage Grant Aid Programme | NIEA | | In place |
| | | Partnership Projects | Various | | In place |

Key Sector: All sectors**Pressure Type:** Invasive alien species**Summary of supplementary measures**

| Improvement Required | Actions | Delivery mechanism | Lead Department / Agency | Support Provider | Deadline for delivery of action (year end) |
|---------------------------------|---|--------------------------------------|--------------------------|------------------|--|
| Control of alien species | Targeted eradication of alien species at a catchment scale for Giant Hogweed, Japanese Knotweed and <i>Spartina Anglica</i> | Catchment Scale Eradication Projects | NIEA | | 2012 |

Our aim is to protect, conserve and promote the natural environment and built heritage for the benefit of present and future generations.

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