

# Invasive Non Native Species (INNS)

## INTRODUCTION

Invasive non-native plants literally invade, spread and settle resulting in a significant loss of native plant and invertebrate biodiversity.

The native plants in these habitats are used to co-existing with each other, evolving over a significant period of time together. When a non-native species is introduced to this established habitat, the native species are out-competed.

IN THE NATIONAL PARK OUR FOCUS IS ON THE FOLLOWING 5 INVASIVE NON-NATIVE SPECIES

### 1. RHODODENDRON PONTICUM

Rhododendron ponticum escaped from beautiful, managed rhododendron gardens taking over whole sections of our native woodlands and forests. It blocks out light to the forest floor so no other plants are able to survive.



### 2. JAPANESE KNOTWEED

Japanese Knotweed as the name suggests is originally from Japan, where it is in fact a rare plant. It was first recorded in the wild in the UK in South Wales, in 1886. It was introduced to large gardens as an ornamental plant. All plants in the UK are a male-sterile clone, so luckily no seeds are produced, however, the plant can spread easily from small fragments of the roots, stems or leaves. Large stands of knotweed often become established in the wild, particularly along waterways where fragments of the plant or soil containing its roots are washed downstream during floods. The small fragments of the plant become established on the banks of rivers and lochs growing into dense stands over time.



These dense stands rapidly expand and take over, replacing the native plants which once grew there, often resulting in an ever increasing lifeless monoculture of knotweed. As well as having a negative impact on biodiversity, large patches of the plant can prevent access to riverbanks and lochsides, and can also cause structural damage to property.

The best method of controlling it is by using chemicals. This is usually done by spraying the leaves directly but can also be done by injecting the chemical directly into the hollow stems of the plants. This is a time consuming process and it can take several years before the plants are showing no signs of regrowth.

### 3. HIMALAYAN BALSAM

These attractive plants with purple flowers are native to the western and central Himalaya. They were introduced to Kew Gardens in London in 1839. Unfortunately it is now a major weed problem throughout the UK, especially on riverbanks, wet woodlands and waste land.



Himalayan Balsam

Himalayan Balsam only spreads by seeds, not from fragments of roots or leaves. The plants flower from July to October, setting seed from mid-July onwards. Each plant can easily produce as many as 800 seeds, scattered widely from explosive pods. The seeds float and can travel long distances before becoming lodged and germinating in soft muddy areas such as riverbanks.

Where plants have become dominant they quickly shade out native species resulting in the loss of native biodiversity.

There are a few ways to control Himalayan Balsam. If the plant has formed very dense stands then spraying with chemical is an option, however, the most common way to control it is by pulling them up by hand before they have a chance to set seed. The plants are very shallow rooted and are easy to pull up. This is usually done in early July as the plants come into flower. The uprooted plants can simply be left to rot down in a pile.

### 4. AMERICAN SKUNK-CABBAGE

Native of western North America, its normal habitat is wet woodland, where it grows in nutrient-rich mud. It produces large yellow flowers in spring which emit a strong odour like that of a skunk.

The plant has large leathery leaves which can grow up to about 1 m in length. In the UK it has been widely planted beside ponds and bog gardens and is still widely available from garden centres and plant catalogues.



American Skunk-cabbage in flower

Unfortunately, under the right conditions, it is very invasive, especially in muddy ditches and wet woodlands. The plant produces green berries which ripen in July.

The berries can be transported downstream where they become lodged on muddy loch-shores and riverbanks. New colonies of the plant establish and replace native plants by competing with them for light, nutrients and water.

These plants can be dug up but this is very muddy hard work and not always successful. A more practical solution is to treat them with chemical. Removing the flowers can also help prevent the plants from setting seed.



Giant Hogweed

### 5. GIANT HOGWEED

Aptly named 'giant', this plant has flowering stems typically 2-3 m high bearing large white flowers which can grow to be over 1 m in diameter with leaves often 1 m or more in size. It is especially abundant by streams and rivers, but also occurs widely on waste ground. Originally from southwest Asia it was planted as an ornamental in gardens beside streams and ponds.

It spreads entirely by seeds which are dispersed by wind, water and in contaminated soils. A single plant can easily produce over 20,000 seeds each year.

The mature plants form dense impenetrable stands, preventing access to riverbanks, reducing species diversity, and posing a serious health risk. The plant produces phytotoxic sap which in contact with human skin and combined with sunlight causes severe burns and blisters.

Chemical treatment is an effective method of control and is best carried out during late spring or early summer when the plants are still small and pose less of a risk.

**Wild Park and key threats**

**Wild Park**

Wild Park is the Biodiversity Action Plan for Loch Lomond and The Trossachs National Park. It details what projects and actions we would like to deliver to benefit nature in the National Park and where we would like to deliver them.

As well as highlighting objectives between 2018-23 the programme also details threats to the environment of the National Park.



**Wild Park is concentrating on the following four environmental threats:**



**POOR CONDITION OF  
LOCHS & RIVERS**

Negative impacts on freshwater and marine water bodies from problems such as pollution from surrounding land uses.



**UNSUSTAINABLE LEVELS  
OF GRAZING**

Unsustainable levels of wild and domesticated grazing and browsing animals in some upland and woodland areas, leading to reduced tree cover and the erosion of soils, which are important carbon stores.



**INVASIVE, NON-NATIVE  
SPECIES (INNS)**

The spread of invasive non-native species, which displace our rich native wildlife.



**CLIMATE CHANGE  
PRESSURES**

The impacts of climate change leading to warmer, wetter weather patterns and a subsequent increase in flood events, major landslides and rapid shifts in natural ecosystems.



**1  
RHODODENDRON  
PONTICUM**



**2  
JAPANESE  
KNOTWEED**



**3  
HIMALAYAN  
BALSAM**



**4  
AMERICAN  
SKUNK-CABBAGE**



**5  
GIANT  
HOGWEED**

We're working in partnership with landowners, fishery trusts, government agencies and volunteers to reduce the extent and damaging impact of these species. Wherever possible, we are seeking to remove invasive non-native plants completely.

These species can take over and out compete natural vegetation like wildflowers, shrubs and trees. When these invasive plants are removed the native plants begin to return.



## Rhododendron

In 2014 the National Park was recorded to have 5,787 ha of native woodland, with an estimated 7% (396 ha) being adversely affected by the presence of rhododendron. This may seem a small percentage, however, the task is a large and difficult one and key to controlling rhododendron is colony scale control which is co-ordinated, if required, over multiple land holdings.

### OBJECTIVES BY 2023

- Active management of Rhododendron in all ten designated sites by 2023.
- Expand control of rhododendron to create a buffer zone to protect all areas under current active management, such as designated sites.
- All sites within the National Forest Estate will remain in active management.
- The National Park Authority and partners will identify priorities and opportunities for control programmes on a landscape scale, through both grant funding and officer time.
- Work with partners, such as Plantlife, to monitor control sites that will produce data on clearance and habitat restoration that can be used by land managers to inform future management.
- Ensure all long-term forest plans detail management of invasive rhododendron in line with the Forestry and Land Scotland publication.

## Riparian INNS

The removal of INNS from beside rivers and lochs will allow native plants to recolonise resulting in an increase in Biodiversity.

### OBJECTIVES BY 2023

- Reduce riparian INNS that negatively affect habitats in the National Park along with active control of any spread, prioritising designated sites.
- Develop control programmes at a catchment level to remove known riparian INNS from the Upper Tay, Upper Forth, Teith, Loch Lomond, Endrick, Loch Eck and Loch Goil catchments, and ensure management of contamination downstream.
- Continue to use agreed monitoring and recording process which will also report on indicators of success.
- Work with land managers, fishery trusts, government agencies, communities and volunteers to reduce the extent and damaging impact of these species and, wherever possible, remove them completely.
- Develop rapid response measures for removal and control to any new outbreaks of riparian INNS.
- Train volunteers and land managers involved in projects to control riparian INNS.
- Raise awareness of how to avoid spreading riparian INNS through both formal and informal education.
- Work with partners to keep up-to-date records of known INNS locations.
- Map the locations of INNS and use treatment and survey data.
- Devise an overarching Riparian INNS strategy with agreed criteria for prioritising treatment of non-native riparian INNS plants within the NP, both the geographic areas to be prioritised first and the species to be prioritised within each catchment or sub catchment.

## Removal of Rhododendron and INNS will help with a number of key threats to wildlife

- Natural riverside habitats will be restored and better connected providing corridors for wildlife.
- Bank erosion will be reduced as the root systems of native trees and shrubs become established.
- The amount of sediment and diffuse pollution entering rivers will be reduced as natural vegetation provides a natural buffer.
- Restored habitats will reduce the impacts of climate change such as storm events and flooding.
- Increased dappled shade, leaf litter and woody debris will improve freshwater habitats for invertebrates and fish.
- Removal of rhododendron will improve the health of woodlands and allow native trees to grow increasing their ability to store carbon.
- Soil health will improve increasing the ability of the soils to store carbon.



*Rhododendron ponticum*

### Upper Tay Invasive Non-Native Species Project

The Upper Tay Invasive Non Native Species Project (UTINNS) was established in 2012. The project is a key part of the Riparian INNS Wild Challenge set out in National Parks Biodiversity Action Plan, Wild Park.

The aim of the project is to improve the quality of habitats by controlling the spread of invasive Knotweed, American Skunk-cabbage, Himalayan Balsam and Giant Hogweed, within the upper catchment of the River Tay within the National Park. Control of these non-native invasive plants will result in the restoration and enhancement of degraded riverside and lochside habitats including woodlands and wetlands.



Volunteer treating invasive knotweed



Before treatment



After treatment

The project is working in partnership with land managers, local communities and volunteers and has assisted 29 landowners within the project area including several large Estates, local businesses, community groups and private households. The co-ordinated, innovative approach to the project has allowed for flexible, proactive treatment of INNS providing multiple benefits including habitat enhancement, improved access and improved water quality.

### UTINNS Project Outputs & Outcomes

#### PROJECT OUTPUTS 2012 - 2019

- 12 volunteers trained in PA1 and PA6Aw safe use of pesticides
- 210 hours of volunteer time spent spraying invasive Knotweed
- 74 hours of volunteer time spent hand pulling Himalayan Balsam
- 3 locations of Giant Hogweed eradicated

#### PROJECT OUTCOMES 2019

- 10 locations of Himalayan Balsam hand pulled
- 102 locations of Japanese Knotweed chemically treated
- 11 locations of American Skunk-cabbage chemically treated
- In 2019 Giant Hogweed remains absent from the entire project area.
- In 2019 the number of locations where no regrowth of Japanese knotweed and American Skunk-cabbage has risen from 33 sites to 47 sites.
- In 2019 69 INNS locations have shown a large decrease in size and density.
- Himalayan Balsam has been significantly reduced from all lochside and woodland locations within St Fillans, improving habitat connectivity, reducing bankside erosion and improving water quality. Five sites in St Fillans are now known to be clear of Himalayan Balsam.
- Improved partnership working with landowners, community groups and local businesses, achieving multiple public benefits.
- Providing opportunities for volunteers to become actively involved in a landscape scale conservation project within the National Park.

### Why do we control invasive non-native plants?

These species can take over and out compete natural vegetation like wildflowers, shrubs and trees. When these invasive plants are removed the native plants begin to return.

#### How does this improve water quality and reduce the pressures of climate change?

- Natural riverside habitats will be restored and better connected providing corridors for wildlife.
- Bank erosion will be reduced as the root systems of native trees and shrubs become established.
- The amount of sediment and diffuse pollution entering rivers will be reduced as natural vegetation provides a natural buffer.
- Increased dappled shade, leaf litter and woody debris will improve freshwater habitats for invertebrates and fish.
- Restored habitats will reduce the impacts of climate change such as storm events and flooding.



Volunteer treating Japanese knotweed

### Questions and pupil enquiry ?

- What are the main causes of the spread of invasive non-native species?
- Explain how invasive non-native species out compete native wildlife.
- List the number of ways to remove invasive non-native species.
- What are the benefits of a removing invasive non-native species?

### FURTHER READING

#### Online

- [Learn more about Wild Park our Biodiversity Action Plan](#)
- [Learn more about our Key Environmental Threats to Nature and Invasive Non-Native Species](#)

#### Videos

[Wild Challenge 2 - Invasive Non-Natives](#)

#### Site visits

- Balmaha on east Loch Lomond is a great location to base a field visit, with the National Park Visitor Centre and Outdoor Classroom available for school groups. If you follow the Millennium path look out for rhododendron ponticum where the path goes through woodland alongside the visitor centre car park. You will also see Himalayan Balsam growing along the foreshore.
- Other sites suitable for field visits include the hills around Luss, west Loch Lomond.