



Botley Bypass, Phase 3 Hampshire

Biosecurity Plan

Project Name	Botley Bypass, Phase 3 Hampshire		
Project Start Date	January/February 2025		
Project Duration	24 months		
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Client Approval By (Hampshire County Council)	Name: TBC	Sign:	Date:

Revision Table

Revision	Summary of Changes Made	Revision By	Revision Date:
01	First Revision	Emily Millis	04/10/2022
02	Updated following review by Milestone Principal Ecologist	Emily Millis	26/10/2022
03	Updated following review by Milestone Sustainability Manager	Emily Millis	27/10/2022
04	Updated following review by Milestone Senior Project Manager	Emily Millis	01/11/2022
05	Updated following review by Milestone Senior Project Manager	Emily Millis	09/11/2022
06	Updated following review by Milestone Environmental Manager & HCC Ecologist	Angiolina Albertini	17/09/2024

List of Appendices

Appendix	Description	Required Y/N
A	Check/Clean/Dry Check sheet	Y
B	Himalayan balsam ID Sheet	Y
C	Three-cornered Garlic ID Sheet	Y
D	Japanese knotweed ID Sheet	Y
E	Giant hogweed ID Sheet	Y

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1.0 Introduction

1.1 Summary of project:

Phase 3 of the Botley Bypass scheme is part of a larger delivery of infrastructure designed to alleviate traffic congestion along the A334 Botley high street and the additional congestion from a new housing development and a local secondary school. The scheme was granted planning approval by Hampshire County Council (HCC) in November 2017.

Phase 3 of the Botley Bypass scheme is located to the north and east of Botley village. The scope of this scheme is to provide a new single carriageway link between the existing junction at B3354 Winchester Street and the A334 Mill Hill/Station Hill. The bypass will be 1.8km long and 7.3m wide and single carriageway with a 40mph design speed. A 3m wide shared use foot/cycleway will be provided along the southern side.

The 68m long bridge over the River Hamble will be a 2-span continuous plate girder steel bridge supported by reinforced concrete abutments with and an intermediate pier on piled foundations. The bridge spans will be positioned such that the River Hamble will flow under the west span and the stream will flow under the east span.

There will also be creation of a new area of habitat to the west of the River Hamble providing ecological and flood compensation for the scheme.

The bridge has been designed to avoid any construction works within the water courses. However, the bridge crosses area designated as a Site of Importance for Nature Conservation (SINC) and a Conservation Area with this designation extending downstream (south) of the bridge. The Upper Hamble Estuary and Moorgreen Meadows Sites of Special Scientific Interest (SSSI), Solent Maritime Special Area of Conservation (SAC), Solent & Southampton Special Protection Area (SPA)/RAMSAR site are all located further downstream. The River Hamble is defined as Main River under the Water Resources Act (1991).

The key environmental constraints on the project are:

- Pollution prevention whilst constructing the bridge over the River Hamble which comprises of both a main river & Floodplain
- Run off and pollution from temporary bridges over the flood plain
- Pollution prevention of ordinary watercourses
- Flood Risk Management
- Surface & Ground Water Management including discharges
- Waste & Materials Management
- Protected Species (inc. migratory fish – Eel & Sea Trout)
- Designated Sites
- Statutory Nuisances (Noise, Air Quality etc.)
- Management of non-native invasive species

1.2 Aim of the Biosecurity Plan

The purpose of this plan is to detail how non-native invasive species (NNIS) are to be managed during phase 3 of the Botley Bypass scheme. Although this plan focusses on the identification and control of Himalayan balsam (*Impatiens glandulifera*) and Three-cornered Garlic (*Allium triquetrum*), the controls are also relevant for other invasive species such as Japanese Knotweed (*Reynoutria japonica*) and Giant Hogweed (*Heracleum mantegazzianum*). This document will also help to raise awareness of the current Avian Influenza risk and the control measures which need to be implemented in line with government regulations, such as notification requirements.

Milestone Infrastructure recognises the importance of environmental management and the provision of information, instruction, and training in achieving and maintaining a high standard of environmental awareness amongst its employees and subcontractors throughout the duration of works. Therefore, this document has been produced and will be implemented in line with Milestone's accredited ISO 14001: 2015 environmental management system. Please note that this is a live document and will be updated as required to ensure appropriate management of any other invasive species constraints encountered on site.

2.0 Invasive/Non-Native Species on Site

A risk assessment of the four NNIS likely to be found on site has been produced. The aim of the risk assessment is to show the likelihood and risk of spreading NNIS and then again following the implementation of controls outlined in this plan.

Further walkovers of the site would be required to assess the likelihood of Japanese knotweed and Giant hogweed being prevalent on site. They have been included in the risk matrix due to the likelihood of them being present along the River Hamble.

A RAG (red, amber, green) status has also been produced for each section of works to assess the likelihood of encountering NNIS in each phase.

Further information of the site will be required to accurately measure the RAG status of each section of works. For example, Himalayan balsam is most likely to be found around the River Hamble and therefore it has been assumed that each section of works around the river has a high likelihood of encountering Himalayan balsam and therefore has been given a 'red' status.

NNIS Risk Assessment & Control Measures							
Hazards	Severity (1-5)	Likelihood (1-5)	Risk rating	Control Measures (What have you done to minimise the risk?)	Remaining severity (1-5)	Remaining likelihood (1-5)	Residual likelihood
Himalayan balsam	5	5	25 (HIGH)	Confirmed as prevalent across site. Most likely to be found along watercourse. Ensure that control measures in Biosecurity plan are followed closely to minimise risk of spreading NNIS	5	2	10 (MEDIUM)
Three-cornered Garlic	5	5	25 (HIGH)	Confirmed as prevalent across site. Likely to be found in damp, shaded areas. Ensure that control measures in Biosecurity plan are followed closely to minimise risk of spreading NNIS	5	1	5 (LOW)
Japanese knotweed	5	2	10 (MEDIUM)	Not confirmed as on site but still potentially on site. Most likely to be found along watercourse. Ensure that control measures in Biosecurity plan are followed closely to minimise risk of spreading NNIS	5	1	5 (LOW)
Giant Hogweed	5	2	10 (MEDIUM)	Not confirmed as on site but still likely to be on site. Most likely to be	5	1	5 (LOW)

				found along watercourse.			
				Ensure that control measures in Biosecurity plan are followed closely to minimise risk of spreading NNIS			

2.1 Proposed Works

Construction works are due to commence in may 2025 and are scheduled to be completed in 2027.

Description of works	Works to be completed:	NNIS likely to be encountered:	RAG Status:
	Advanced Works: - CPT testing works. - Access requirements for pre-construction works i.e. vegetation clearance Main Bypass Construction: - A new 1.5km section of single carriageway 7.3m in width, including lighting, drainage, road side barriers and landscaping; - A new 3m wide shared use footway on the northern side of the bypass from the horse corral crossing near Winchester Street and road access to the Newhouse Farm access track junction - A new 3m wide shared use footway from the Winchester Street junction to a new roundabout on the A334/A3051 at Pinkmead farm; - An access road on the northern side of the bypass to provide access to Newhouse Farm; - A formal pedestrian crossing with central refuge island where the bypass crosses the existing Right of Way to the east of the River Hamble - Planting and earthworks for landscaping and noise mitigation; - Pedestrian crossing across Botley Road to the east of the roundabout Hamble Bridge Crossing:	NNIS likely to be encountered: - Unlikely to encounter NNIS; - Unlikely to encounter NNIS; - Unlikely to encounter NNIS; - Unlikely to encounter NNIS; - Unlikely to encounter NNIS; - Potential to encounter NNIS; - Potential to encounter NNIS - Unlikely to encounter NNIS;	- Green – Low Risk - Green – Low Risk - Green – Low Risk - Green – Low Risk - Green – Low Risk - Amber – Medium Risk - Amber – Medium Risk - Green – Low Risk

	- Construction of a new bridge to carry the bypass over the River Hamble valley to link up with the A334/A3051 junction to the east. The proposed structure will have two spans, each being 34m in length, over the River Hamble and adjacent tributary stream, supported by embankments and abutments at either end, and a central pier. Other features will include: - A 3.0 m wide shared use footway along the southern side of the bridge; - Standard safety parapets on either side of the carriageway and safety fencing on the embankments - Creation of a new area of fenland habitat to the west of the River Hamble providing ecological and flood compensation for the scheme - Improvements to the junction of the A334/A3051 including construction of a four arm roundabout at the location of the existing priority junction - An extension of the existing culvert on the A3051. - Provisions to connect the proposed 3m wide shared use footway with the existing Rights of Way to the east of the River Hamble and also north of Pinkmead Farm. - Vegetation clearance and fencing works prior to commencement of construction.	- Likely to encounter NNIS - Likely to encounter NNIS; - Likely to encounter NNIS; - Potential to encounter NNIS - Unlikely to encounter NNIS; - Unlikely to encounter NNIS; - Potential to encounter NNIS; - Likely to encounter NNIS;	- Red – High Risk - Red – High Risk - Red – High Risk - Amber – Medium Risk - Green – Low Risk - Green – Low Risk - Amber – Medium Risk - Red – High Risk
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3.0 Key Project Contacts

Milestone	Project Manager	Nathan Kimber	07876 575135
	Site Supervisor	tbc	
	Environmental Manager	Angiolina Albertini	07745644470
	Sustainability Manager	Nicole Turley	

	Health, Safety and Wellbeing Manager & Advisor	John Bowers	07974 429706
Client	Client Manager	Michael Spoor	
	County Ecologist	Simon Mason	
Supply Chain	Ecological Clerk of Works	Bluejay Ecology	
Regulators	Environment Agency	24-hour hotline	0800 807 060
		Non-emergency enquiries	08708 506 506
	Natural England		0300 060 3900
	Defra Helpline		03459 33 55 77

4.0 Background on Himalayan Balsam

Surveys of the site were undertaken by Hampshire County Council in 2021 who confirmed the presence of Himalayan balsam (*Impatiens glandulifera*). During hand pulling of Himalayan balsam in 2021, a further non-native invasive species (NNIS) was found to be present; Three-cornered Garlic (*Allium triquetrum*). Both species appear on Schedule 9 of the Wildlife and Countryside Act and therefore is an offence to cause the spread of either plant, however, Himalayan balsam is the primary concern due to the increased risk of spread relating to the explosive nature of the seed heads. Further surveys were undertaken in 2024 which affirmed the presence of the above NNIS.

Himalayan balsam is found in most parts of the UK and particularly along the banks of watercourses, where it often forms continuous strands.

Himalayan balsam stems are pinkish-red, hollow, and often jointed with dark green, lance shaped leaves. They have characteristic purple-pink hooded flowers which appear from June to October.

The seeds germinate early in the growth season (usually March to June) and then grow vigorously for the rest of the season, reaching their full height (one-two metres tall) by July/August.

Mature Himalayan balsam seed pods explode when touched, scattering roughly 2,500 seeds up to seven metres away. The seeds can be transported by water and lie dormant for up to two years before germination and can remain viable for between 18 and 36 months. Watercourses are a prime route for dispersal of the species.

Himalayan balsam colonises rapidly and can form dense monocultures which smother native plants and prevent growth. The colonies stand predominantly on riverbanks and other areas of damp ground, reducing biodiversity and attracting pollinators away from native species. The invasive nature of this plant is accelerated as it has no natural forms of control as it would in its native habitat.

Under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) it is an offence to plant or allow this species to spread in the wild. Failure to manage and dispose of this species in accordance with current guidelines and legislation can lead to prosecution.

The below table sets out the proposed control measures for accessing the site, whilst working on site, and when leaving site:

5.0 Himalayan Balsam Spread Controls

Control Methods	Accessing Works Areas:	Working on Site:	Leaving Work Areas:
	- The works site will be inspected by the Ecological Clerk of Works (ECoW) prior to accessing areas of the site for the first time and before vegetation clearance is undertaken. This is to check the areas are free from Himalayan balsam and any other non-native invasive species (NNIS). - Only persons and plant required to carry out the works will access the areas where Himalayan balsam has been confirmed as present. - Plant and machinery will be delivered to site free of mud that could potentially bring rhizomes and seeds from other locations. This includes the machine and any attachments such as buckets. - All persons shall ensure their PPE and equipment are clean and dry before starting works on site. - The principle of Check/Clean/Dry will be used for PPE and equipment before working on other parts of the site or off site. - Where soils are to be excavated during the works, or from areas around the works site, these areas will again be inspected by the ECOW for dead canes and new growth before excavations begin to ensure they are free from	- Cleaning of PPE, wheels, and tracks will be carried out within the works area to prevent potential spread of seeds and rhizomes. - Track matting will be used where ground conditions allow to ensure plant wheels/tracks remain clean. Matting will be cleaned in situ before removal. - A boot wash facility will be provided for on or adjacent to the works area, consisting of a bath of water with integral brushes. The mud and water will be left at the works site to avoid the potential spread of NNIS. - Signage should be installed on the fence to ensure that all those accessing the site are aware of the presence of Himalayan balsam and the reason for the exclusion zone. - The use of vehicles using caterpillar tracks within contaminated areas should be restricted and any machinery or equipment used within contaminated areas should be cleaned to remove any contamination. - Buffers must be kept in situ until full eradication has been achieved.	- Plant and machinery working on or near the works site will be cleaned/washed down before leaving the area so that soils potentially containing seeds or rhizome are not transported to other areas of the site or off site. - Where cleaning alone does not remove all mud, jet washing of plant wheels and tracks will be carried out without causing water pollution. - Persons working within the works area and nearby will ensure their boots are cleaned down (visibly clean of mud and soil) before leaving the works area to avoid the potential spread of seeds or rhizomes in the soil. - All persons shall ensure their PPE and equipment are clean and dry before leaving site. - Contractors should ensure that any PPE or equipment is cleaned, dried, and free from any Himalayan balsam seeds before entering or exiting site. - Cleaning equipment will be available at the entrance/exit of the work area.

	NNIS. If Himalayan balsam is found, works in the area will not commence until control measures have been agreed with the ECoW. • Access to the Himalayan balsam should be restricted by installing a fence approximately 3-4 metres from the nearest plant to create an exclusion zone. • All soils brought on to site must also be free from any seeds/stems of any invasive plant species listed under the Wildlife and Countryside Act 1981, as amended.		
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5.1 Water Pumping

Before any pumping takes place to water courses, erosion control will be put in place to ensure the bank of the watercourse is not eroded. This will minimise the risk of seeds being spread to downstream areas of the watercourse. Polythene sheeting secured in place on the riverbank could be as erosion protection in accordance with approved discharge permit from the Environment Agency. Seeds getting into the watercourse presents a risk of Himalayan balsam being spread outside of the works area. The seeds float and can germinate in the water so all care and attention must be paid in preventing seeds from getting into the watercourse.

Water pumping in ditches will be undertaken at a rate to avoid flooding. This will minimise the risk of seeds being spread to areas outside of the watercourse.

6.0 Management of Himalayan Balsam if Found

The management of any Himalayan balsam found on site will be agreed between the ECoW, Site Agent, Project Manager, and Hampshire County Council. The management will be specific to the site conditions, however, the management options will be as follows:

In order to control in situ Himalayan balsam, existing plants should be killed or removed to prevent any further seed production using one of the following methods (in order of preference):

- Hand pulling (before seed pods are ripe)
- Cutting (below the first node) before seed set
- On site burial in accordance with RPS178 and the Materials Management Plan

6.1 Hand Pulling

Himalayan balsam can be easily hand pulled as the species has very shallow roots. This method is particularly useful for smaller areas of infestations and in high ecological value areas where the use of herbicides or indiscriminate cutting should be avoided. Hand pulling should be undertaken under ECoW supervision.

6.2 Cutting/Strimming

For cutting/strimming, the species should be cut back prior to seeds setting. To prevent regrowth, plant stems should be cut below the first node. Caution will need to be applied to avoid damage to potentially desirable plant species.

7.0 Control of Himalayan balsam during Advanced Vegetation Clearance Works

Himalayan balsam is an annual plant so during the planned vegetation clearance works in early 2025, it will have died back and will not have any seed heads. It will therefore be very difficult to spot Himalayan balsam during the winter, so an ECoW should be present during works in high risk areas.

Though the Himalayan balsam will have died by the time the vegetation clearance begins on site in 2025, the same control measures that are required in the spring/summer will need to be followed. Seeds are likely to be in the top layers of soil and therefore there is a risk that seeds could be picked up on boots and plant tyres or tracks, especially in wet and muddy conditions. The use of vehicles using caterpillar tracks within contaminated areas should be restricted as tracked machines will be harder to clean off. All contractors must be made aware of the presence of Himalayan Balsam and the biosecurity requirements e.g. through toolbox talks and posters with affected areas clearly marked out on site.

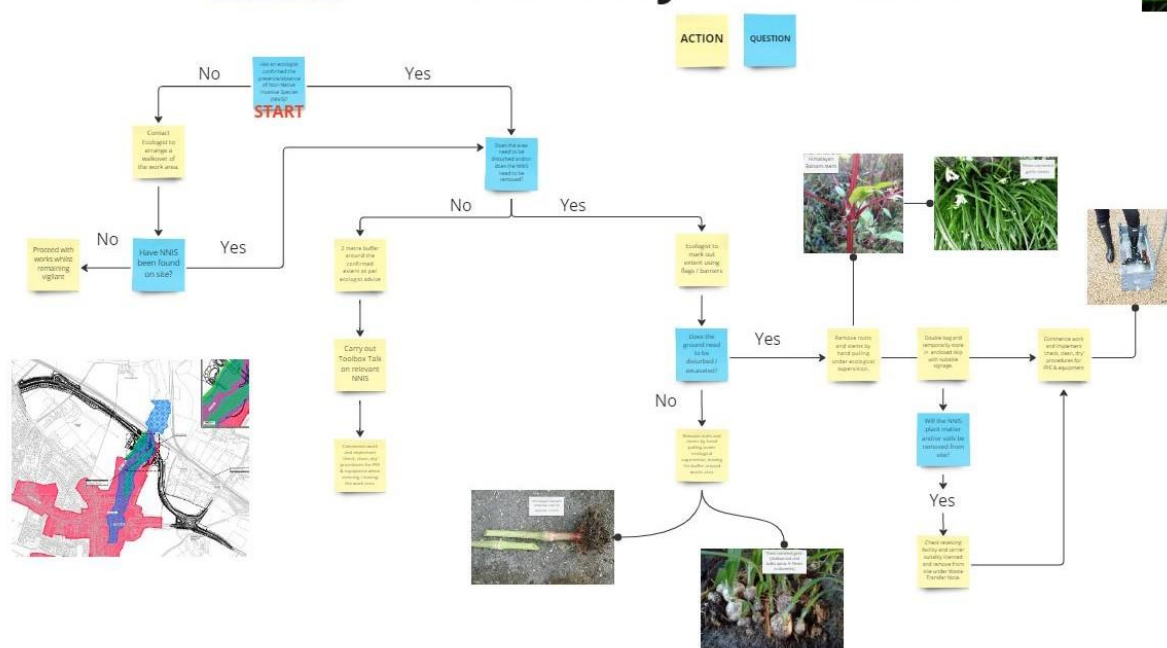
Ideally, plant will be stored on an area of hard standing overnight to avoid tracking seeds up and down the site. Wheel washing facilities must be available for any vehicles that arrive on and leave site and boot wash facilities must be available for anyone that accesses the site.

8.0 Control of Himalayan Balsam prior to Main Works Commencing

8.1 Storage and removal of soils

- 2 x embankment areas
- Fluvial pond 2

All remaining uncontaminated soil will be stored close to the Hamble Valley and reused as part of the landscape plan to restore and create fen habitats.



Three-cornered Garlic has a tuft of soft basal leaves, usually two-three in number, arising annually in late winter from a small, pale bulb. The three-angled, strap like green leaves grow to an average height of 30-50cm and have a characteristic 'garlic' or 'onion' smell when crushed. The flowering stem, also distinctly three-angled, is unbranched and topped with a cluster of white, drooping, bell like flowers. The roots have pale or white egg shaped bulbs five-15mm in diameter with a transparent membrane. The feeder roots are short, shallow, and fibrous.

Three-cornered Garlic is often found on road verges and in damp, shaded habitats such as: woodland, scrubland, stream banks, and hedgerows.

The seeds of Three-cornered Garlic are spread by ants. It is increasingly widespread in the UK, particularly in the south and west.

Three-cornered Garlic can be a threat to native plant species as it forms monocultures and smothers other species. It is listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) and it is therefore an offence to plant or spread Three-cornered Garlic in the wild.

9.0 Three-cornered Garlic Spread Controls

As with Himalayan balsam, biosecurity controls will include check/clean/dry to prevent the spread of any seeds or bulbs present. Please refer to the table to section 6 as the control methods for Three-cornered Garlic will be the same as for Himalayan balsam.

Three-cornered Garlic Bulbs may be removed by hand during hand pulling of Himalayan balsam. Care must be taken to ensure that all parts of the bulb are removed to prevent reshoots. Soils will need to be managed as according to section 6. The bulbs can be crushed to help reduce risk of germination and should then be left to desiccate on site but should not be laid on damp ground.

10.0 Management of Three-cornered Garlic if Found

Three-cornered Garlic was found on site during checks for Himalayan balsam in 2021.

The management of Three-cornered Garlic will be agreed between the ECoW, the Environment Manager, and Hampshire County Council should it be discovered on site again. The management will be specific to the site conditions, however, the management options will be as stated above in section 6.

In order to control in situ Three-cornered Garlic, existing plants should be killed or removed to prevent any further seed production using one of the following methods:

10.1 Hand digging

This work should include weekly inspections by the ECoW over the growing season (April – June) when leaves are visible above ground, to ensure any regrowth is caught and then continue over two growing seasons to prevent the seeds setting and being spread into the soil.

Three-cornered Garlic can be easily hand dug and this method is particularly useful for smaller areas of infestations or high ecological value areas where the use of herbicides or indiscriminate cutting should be avoided.

Hand digging should ideally be begin in April and continue into June when plants can be easily found and will not seed.

Dug plants should be crushed on site to destroy the bulb and then be left to desiccate. Crushed bulbs should not be placed on damp soil or in damp areas as they can re-root. Anything left on site should be managed in accordance with RPS178, as per the controls for Himalayan balsam.

11.0 Training on NNIS

All relevant persons on site will be given information on Himalayan Balsam and Three-cornered Garlic, including that it is known to be present within the works area. This will mean they are aware of what it looks like and where it is most likely to be found. These briefings will be given by either the ECoW or the Environmental Advisor.

The following resources will be used;

- Stop The Spread/Clean, Check, Dry information sheet
- Non-Native Species Secretariat information sheets on Three-cornered Garlic
- The finds procedure from this plan (section 12)

12.0 Invasive Species Finds Procedure

Where there is a find (confirmed or suspected) of NNIS, this procedure will be followed;

1. Works in the area will be stopped in a safe condition and all those working onsite made aware.
2. Personnel shall not move any plant or machinery unless it is required in the interest of safety.
3. Persons leaving the area will clean down their boots.
4. Photographs will be taken to aid in identification.
5. The area will be protected with barriers to prevent further disturbance.
6. The find is to be reported to the ECoW, Site Agent, and Project Manager who shall inform the Environmental Manager and the client's representative.
7. The ECoW or other qualified Ecologist will inspect the find. If it is not an invasive species, work can recommence.
8. If invasive species are confirmed, machinery will be washed down before being removed from the area.
9. Remedial works will be agreed between the ECoW, Site Agent, and Project Manager.
10. Works shall not recommence until sanctioned by the ECoW and Hampshire County Council.

13.0 Disposal of NNIS

No material shall be disturbed or removed from within a Himalayan balsam or Three-cornered Garlic exclusion zones without suitable ecological supervision. Plant arisings and soils should be retained on site wherever possible. If immediate eradication is required to allow development and the most appropriate solution is to excavate infested areas, if possible, all contaminated arising should be retained on site, e.g. stockpiled on polythene sheeting to prevent cross-contamination with underlying soil, covered to prevent wind-blown spread of seed, and any regrowth treated accordingly. Any stockpile areas should be cordoned off from the rest of the site with appropriate signage put in place.

Any soils containing Himalayan balsam seeds can also be buried on site in accordance with RPS178 and the MMP with appropriate records maintained to keep an auditable trail of locations, tonnages, and depths. Any burial of soils should be done under ECoW supervision with agreement from the Environment Agency on proposed locations/tonnages/depths. To comply with RPS178, any buried soils must be placed at a depth of at least two metres to prevent regrowth or germination of the seeds.

Where offsite disposal is unavoidable, the amount of material should be minimised wherever possible and disposal carried out in line with Environmental Protection Act (Duty of Care) Regulations 1991. Both Himalayan balsam plant material and soils contaminated with seeds are controlled waste and requires all producers, carriers, and disposers of such waste to follow the Waste Duty of Care Code of Practice and maintain appropriate records. Both waste streams should be disposed of at a suitably permitted facility which is authorised to accept such controlled waste and transported by a suitably licenced upper tier waste carrier. Each load must be accompanied by a compliant Waste Transfer Note. These arrangements will be confirmed within the Site Waste Management Plan for the project.

14.0 Revegetation Following Removal

Following Himalayan balsam and Three-cornered Garlic control, the revegetation of any bare areas of soil should be considered to prevent erosion, reinvasion by Himalayan balsam, Three-cornered Garlic, or invasion by other undesirable plant species and the re-establishment of biodiverse habitat. The species selected will depend on the ecological objectives for the area. This will only be possible if the area is not going to be tracked over with plant and machinery.

Further advice will be sought from Hampshire County Council's Ecology Team and Landscaping Team on the appropriate revegetation strategy for each location.

15.0 Monitoring Following Removal

Monitoring should be undertaken following removal of Himalayan balsam and Three-cornered Garlic for at least one year after no growth has been observed to ensure clearance is maintained. Any new plants identified by site operatives should also be fenced off to create further exclusion zones. Further information on identifying the species can be found

at Appendix B and C. For avoidance of doubt, a suitably qualified person should be consulted and, if required, attend site to identify suspected plants.

In areas where the risk of re-infestation is likely due to the presence of Himalayan balsam upstream or on adjacent land, an annual monitoring/control programme should also be considered. This will depend on the risk to the area of potential reintroduction. Consideration shall also be given to working in partnership with adjacent landowners to make them aware of issues and measures they can take jointly to prevent reintroduction

16.0 Avian Influenza (H5N1)

Following a change in the risk levels and an increase in the number of detections of Avian Influenza in kept and wild birds, the Chief Veterinary Officers from England, Scotland, Wales, and Northern Ireland have declared a UK wide Avian Influenza Prevention Zone (AIPZ) from 17th October 2022 to mitigate the risk of the disease spreading amongst poultry and captive birds. The risk of incursion of Avian Influenza in wild birds in Great Britain is considered to be high.

The UK Health Security Agency (UKHSA) has said that Avian Influenza is primarily a disease of birds and the risk to the general public's health is very low. The regional UKHSA Health Protection Teams are working closely with Defra to monitor the situation.

All areas of the UK remain at risk of Avian Influenza. However, there are several areas defined as High-Risk Areas. These are generally areas near where wild birds (particularly gulls and wild waterfowl) gather such as lakes, marshes, or estuaries. As there are watercourses on site that may well have wild waterfowl on them, the below government advice on reporting finding dead wild birds should be followed.

Call the Defra helpline if you find:

- One or more dead birds of prey
- Three or more dead gulls or wild waterfowl (swans, geese, ducks)
- Five or more dead birds of any species
- **DO NOT** touch or pick up any dead or visibly sick birds

Any dead birds found on site should also be reported to the ECoW and Environment Manager.

As the Avian Influenza situation is live, this document will be revised following any changes to the government advice or risk levels.

17.0 Appendices

Appendix A – Check/Clean/Dry Sheet



STOP THE SPREAD

STOP THE SPREAD
INVASIVE AQUATIC SPECIES
CHECK-CLEAN-DRY

Are you unknowingly spreading invasive species on your water sports equipment and clothing?

Invasive species can affect fish and other wildlife, restrict navigation, clog up propellers and be costly to manage. You can help protect the water sports you love by following three simple steps when you leave the water.

CHECK **Check** your equipment and clothing for live organisms - particularly in areas that are damp or hard to inspect.

CLEAN **Clean** and wash all equipment, footwear and clothing thoroughly.
If you do come across any organisms, leave them at the water body where you found them.

DRY **Dry** all equipment and clothing - some species can live for many days in moist conditions.
Make sure you don't transfer water elsewhere.

For more information go to www.direct.gov.uk and search for **Check Clean Dry**



Appendix B – Himalayan balsam Identifier



For more information visit www.nonnativespecies.org

Produced by Olaf Booy, Max Wade and Vicky White of RPS

Himalayan Balsam

Species Description

Scientific name: *Impatiens glandulifera*

AKA: Policeman's Helmet, Indian Balsam, Jac y Neidiwr (Welsh)

Native to: West and central Himalayas

Habitat: Found mostly on river banks and in damp woodland, can grow in other damp habitat

A tall, attractive, annual herb with explosive seed heads. Although easy to identify as a mature plant with its pink-purple flowers, fleshy stem and characteristic leaves, the seedlings and last year's dead stems of this annual are more difficult to spot.

Introduced as a garden plant in the early 19th century and first recorded in the wild in 1855. Often favoured by the general public for its aesthetic appeal and is still deliberately planted on occasion. Now widespread in the UK, especially along urban rivers. Spreads solely by seeds, which are small and easily carried by wind or water.

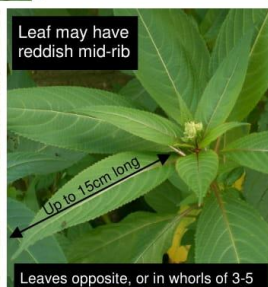
Out-competes native species in ecologically sensitive areas, particularly river banks. Where it grows in dense stands along river banks it can impede flow at times of high rainfall, increasing the likelihood of flooding. Die back of extensive stands over winter can leave river banks bare and exposed to erosion.

Himalayan balsam is listed under Schedule 9 to the Wildlife and Countryside Act 1981 with respect to England and Wales. As such, it is an offence to plant or otherwise allow this species to grow in the wild.

For details of legislation go to www.nonnativespecies.org/legislation.



Key ID Features



Identification throughout the year

Can be identified at most times of the year: March-June by its seedlings, stem and leaf shape, from July to September by its stem, leaf shape and flowers. More difficult to identify over winter (October to February), look for hay like remains and distinctive root structure.

Hay like remains in winter

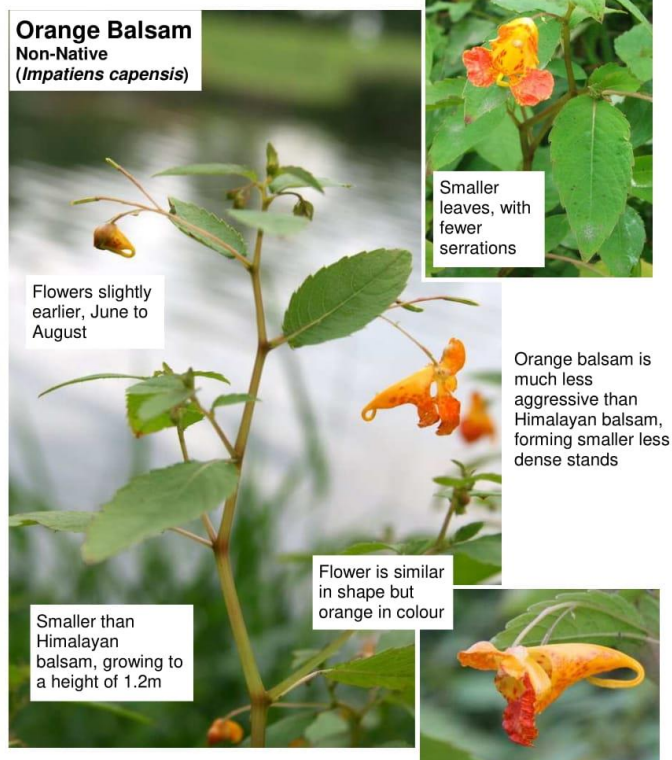


Root structure in winter



Similar Species

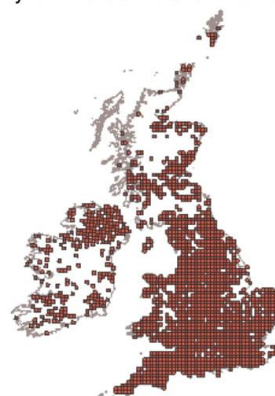
Orange Balsam
Non-Native
(*Impatiens capensis*)



Distribution

Widespread and common across the whole of the UK. Primarily on riverbanks and in other damp areas.

Source: NBN Gateway. Check website for current distribution



References and further reading:

- Blamey, M, Fitter, R and Fitter, A (2003) "The Wild Flowers of Britain and Ireland. The Complete Guide to the British and Irish Flora". A & C Black
- Preston, C D, Pearman, D A and Dines, T A (editors) (2002) "New Atlas of the British and Irish Flora". Oxford University Press
- Stace, C (1999) "Field Flora of the British Isles". Cambridge University Press

Photos from: Olaf Booy, Mike Harris, Max Wade

Appendix C – Three-cornered Garlic Identifier



www.nonnativespecies.org

Produced by Alison Jukes, Max Wade, Vicky Ames and Kelly McKee of RPS

Non-Native Garlics

Species Description

Scientific names: *Allium* species

AKA: Gerllyg (Welsh)

Native to: Mediterranean, Caucasus and Iran

Habitat: Roadsides, hedge banks, riverbanks, field margins, rough and waste ground and in woodland

Garlics are perennial herbs with bulbs and grass-like leaves, usually smelling of garlic when fresh and crushed. The most widespread invasive garlics in the UK are Three-cornered Garlic *Allium triquetrum* and Few-flowered Garlic *Allium paradoxum*. Other invasive species include Rosy Garlic *Allium roseum* and Keeled Garlic *Allium carinatum*.

The seeds of Three-cornered Garlic are spread naturally by ants. It was established initially in Guernsey in 1849 and is now naturalised and increasingly abundant and widespread in milder areas of the UK, especially in the south and west, with scattered, sometimes short-lived, populations elsewhere.

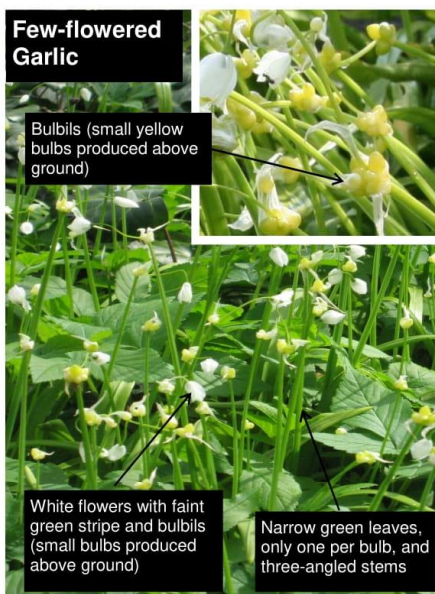
Few-flowered Garlic spreads by means of bulbils (small bulbs produced above ground). It was first recorded in the wild near Edinburgh in 1863 and can be very invasive in disturbed habitats. It is increasingly abundant throughout its range, especially in southern Scotland and is most common in the east of Britain.

Rosy Garlic was first recorded in the wild in 1837 and is spreading, especially in south-west England. Keeled Garlic has been naturalised since at least 1806, but there is little evidence of a significant increase in range over the last 50 years.



Key ID Features

Few-flowered Garlic



Three-cornered and few-flowered garlic



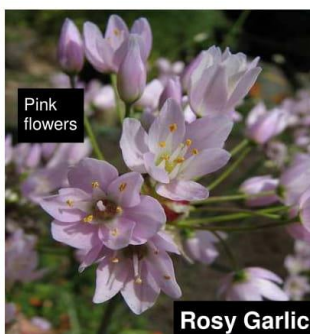
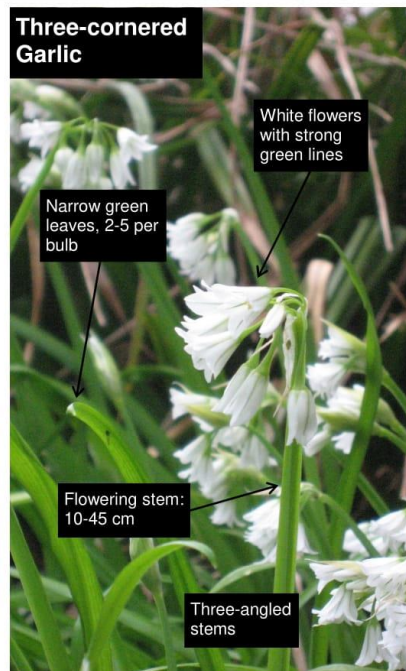
Stem cross section is strongly angled

Rosy garlic



Stem cross section is round

Three-cornered Garlic



Rosy Garlic

Identification throughout the year

Three-cornered garlic flowers April to June.

Few-flowered garlic flowers April to May.

Rosy garlic flowers May to June.

Keeled garlic flowers in August.

Leaves are not present over winter as these species die back in cold winters and come up from bulbs in the spring.

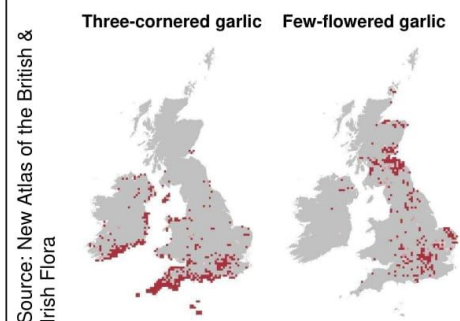
Distribution

Three-cornered garlic is widespread in milder areas, especially the south-west, and has increased in numbers and range.

Few-flowered garlic has a mainly eastern distribution and is increasing throughout its range.

Rosy garlic is scattered in the south and west and is spreading.

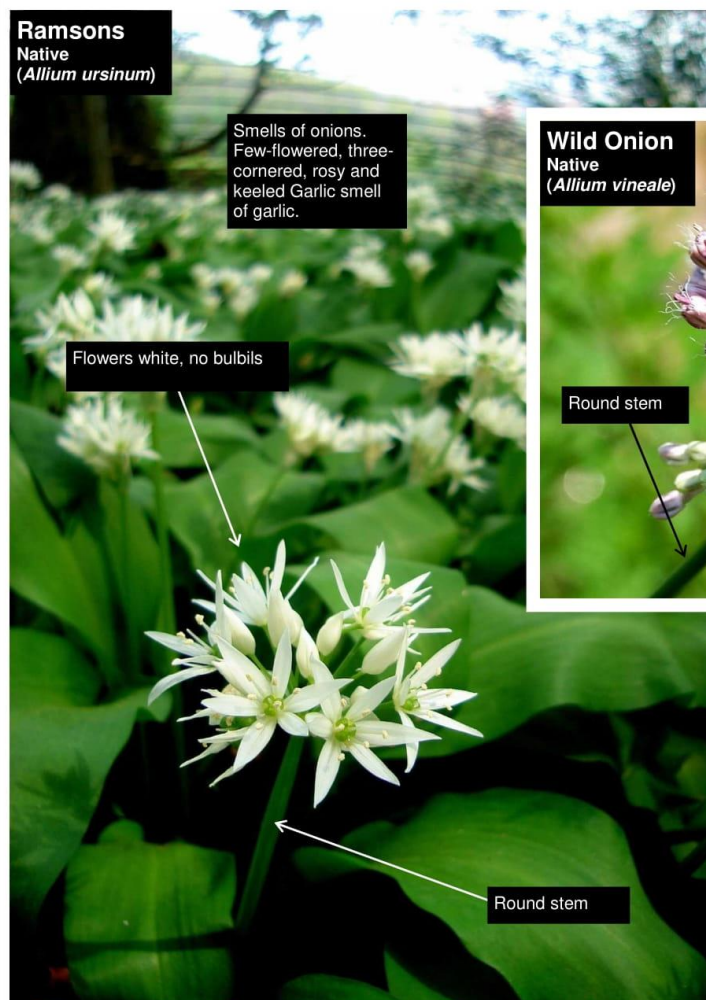
Keeled garlic is scattered throughout the lowlands but does not seem to be increasing.



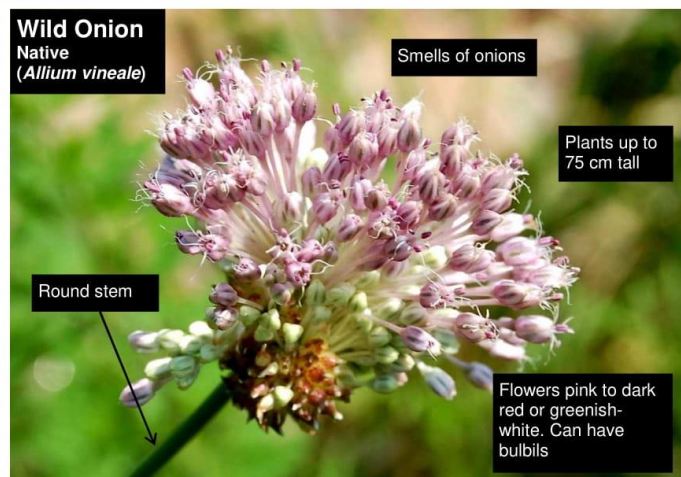
Similar Species

There are a number of native onion and garlic species in the UK with ramsons and wild onion being the most common. There are many species with leaves which are similar to the non-native garlics but the onion/garlic smell is distinctive.

Ramsons
Native
(*Allium ursinum*)



Wild Onion
Native
(*Allium vineale*)



References and further reading:

Preston *et al.* (2002) "New Atlas of the British & Irish Flora". Oxford University Press

Sell, P & Murrell, G (1996) "Flora of Great Britain and Ireland. Volume 5: Butomaceae-Orchidaceae". Cambridge University Press

Stace, C (1997) "New Flora of the British Isles". Cambridge University Press

Photos from: Becky Dewdney-York, Nhu Nguyen, William Vann, Max Wade

Appendix D – Japanese knotweed Identifier



www.nonnativespecies.org

Produced by Olaf Booy, Max Wade and Vicky White of RPS

Japanese Knotweed

Species Description

Scientific name: *Fallopia japonica*

AKA: Japanese Bamboo, Pysen saethwr (Welsh), *Polygonum cuspidatum*, *Reynoutria japonica*

Native to: Japan, Taiwan, northern China

Habitat: Common in urban areas, particularly on waste land, railways, road sides and river banks

Tall herbaceous perennial with bamboo like stems. Often grows into dense thickets. Characteristic leaves and stems, persistence of last year's dead canes and distinctive rhizome (underground root-like stems) enables year round identification.

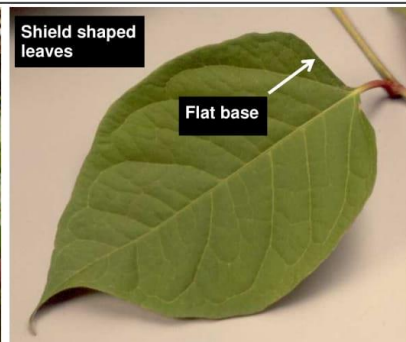
Introduced in the early 19th century as an ornamental plant. Now common and wide-spread across the UK. Spreads rapidly in the wild by natural means and as a result of spread by humans. Spread is solely by vegetative means, either fragments of rhizome or stem. Does not produce seed in the UK. Negative impacts include outcompeting native flora, contributing to river bank erosion and increasing the likelihood of flooding. Can also cause significant delays and cost to development as well as structural damage (it can grow through asphalt and some other surfaces).

Japanese Knotweed is listed under Schedule 9 to the Wildlife and Countryside Act 1981 with respect to England, Wales and Scotland. As such it is an offence to plant of otherwise cause Japanese knotweed to grow in the wild. Under the Environmental Protection Act 1990, Japanese Knotweed is classified as controlled waste.

For details of legislation go to www.nonnativespecies.org/legislation.



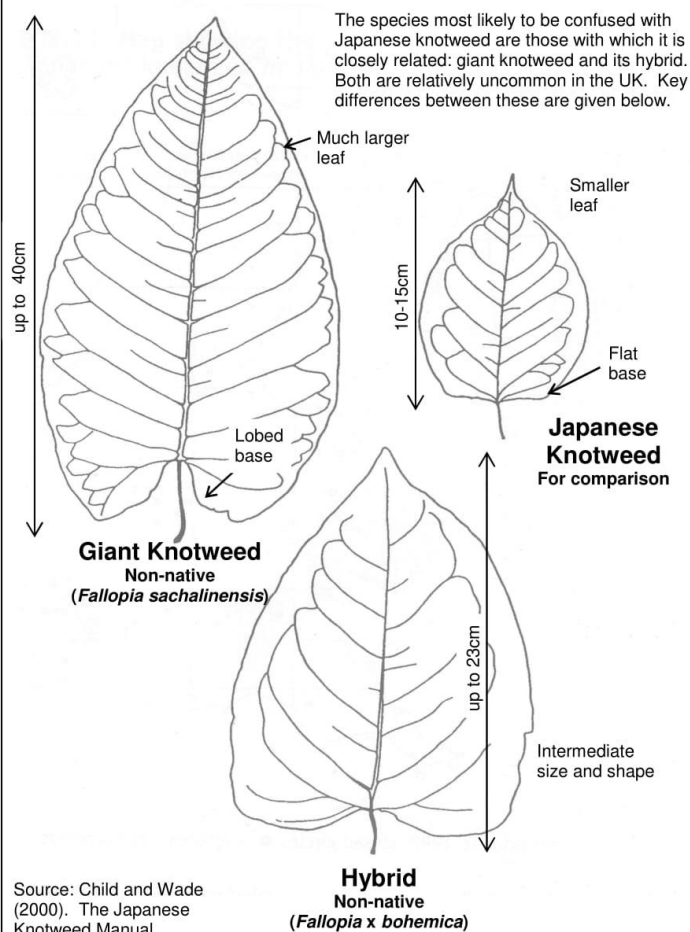
Key ID Features



Identification throughout the year



Similar Species



Distribution

Widespread and common across the UK. Notably extensive infestations are found in the south-west of England, south Wales and Greater London, however similarly extensive populations can also be found elsewhere.

Source: NBN Gateway. Check website for current distribution



References and further reading:

- Blamey, M, Fitter, R and Fitter, A (2003) "The Wild Flowers of Britain and Ireland. The Complete Guide to the British and Irish Flora." A & C Black
- Child, L E and Wade, P M (2000) "The Japanese Knotweed Manual". Packard
- Environment Agency (2006) "The Japanese Knotweed Code of Practice". Environment Agency
- Preston, C D, Pearman, D A and Dines, T A (editors) (2002) "New Atlas of the British and Irish Flora". Oxford University Press
- Stace, C (1999) "Field Flora of the British Isles". Cambridge University Press

Photos from: Olaf Booy, Helen Parish, Max Wade, Vicky White

Appendix E – Giant hogweed Identifier



www.nonnativespecies.org

Produced by Olaf Booy, Max Wade and Vicky White of RPS

Giant Hogweed

Species Description

Scientific name: *Heracleum mantegazzianum*

AKA: Efwr enfawr (Welsh)

Native to: Caucasus mountains in south west Russia and Georgia

Habitat: Widespread, most common on river banks

Easy to identify when fully grown by height, size of leaves and size of flowers. Can be confused with native hogweed when not fully grown or when growth is stunted (e.g. regrowth after cutting).

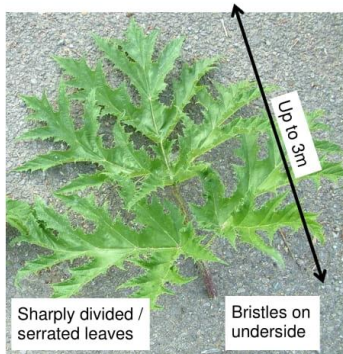
Introduced as an ornamental. First recorded wild in the UK in the late 19th century. Spreads solely by seeds, mainly through deliberate planting, wind dispersal and in water courses. Now common across much of the UK. Contact with any part of this plant must be avoided as even minute amounts of sap can cause blistering of the skin following exposure to sunlight. Other negative impacts include out-competing native flora, river bank erosion and increase in flood risk. Can cause delays/ additional costs on development sites where the plant must be removed as controlled waste in order to comply with legislation.

Giant hogweed is listed under Schedule 9 to the Wildlife and Countryside Act 1981 with respect to England, Wales and Scotland. As such it is an offence to plant or otherwise cause this species to grow in the wild. Under the Environmental Protection Act 1990, giant hogweed is also classified as controlled waste.

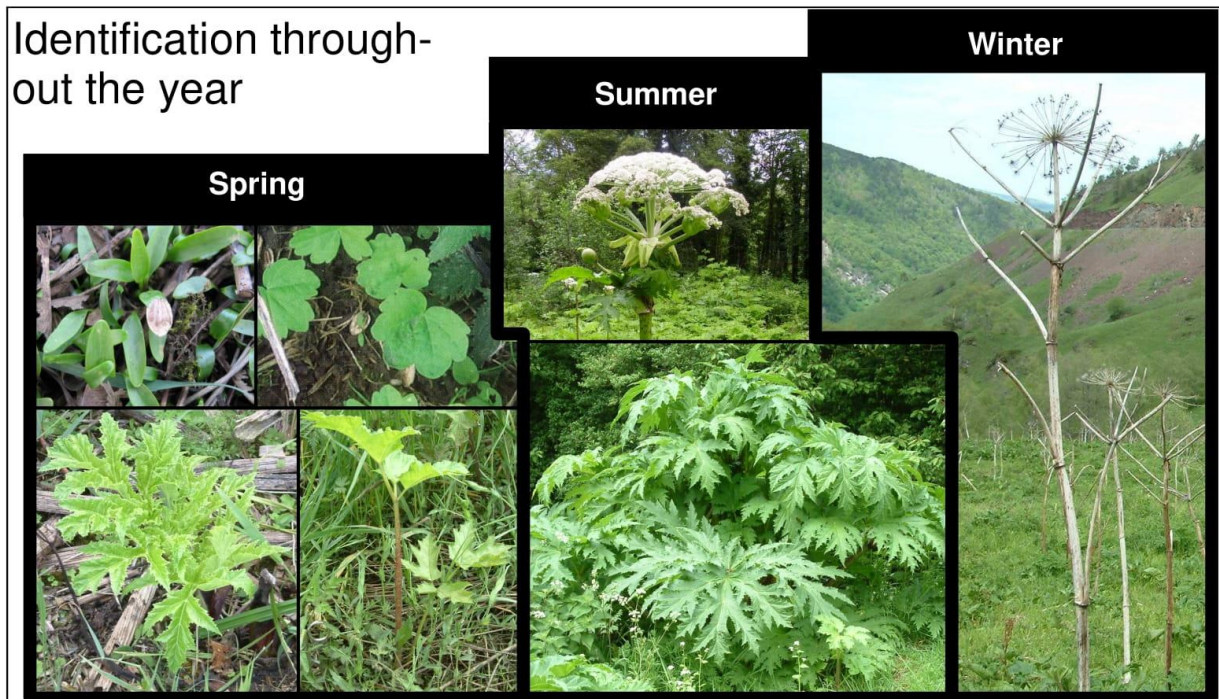
For details of legislation go to www.nonnativespecies.org/legislation.



Key ID Features



Identification throughout the year



Similar Species



Hogweed flowers heads are much smaller, up to 15cm

Hogweed
Native
(*Heracleum sphondylium*)

Comparison of seeds



Giant Hogweed

Hogweed

When in full height it is difficult to confuse giant hogweed with any other plant. While still growing or stunted, possibly as a result of disturbance, it can be confused with some other native plants. The most likely species with which it might be confused is hogweed.

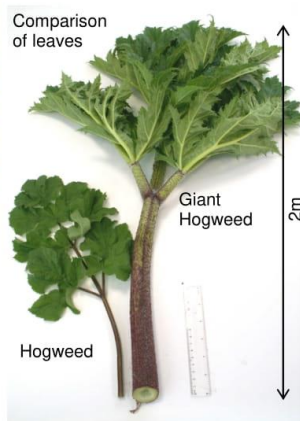
Key differences between hogweed and giant hogweed include the height, width of stem, size of leaf, size of flower head and size of seed.



Comparison of stems

Hogweed

Giant Hogweed



Comparison of leaves

Giant Hogweed

Hogweed

Distribution

Widespread and common across much of the UK. Extensive infestations are found particularly in Scotland and the north of England. Less abundant in Cornwall. Often associated with large rivers.

Source: NBN Gateway. Check website for current distribution



References and further reading:

- Blamey, M, Fitter, R and Fitter, A (2003) "The Wild Flowers of Britain and Ireland. The Complete Guide to the British and Irish Flora." A & C Black
- Booy, O and Wade, P M (2007) "Giant Hogweed Management in the United Kingdom". RPS Group plc
- Pyšek P, Cock, M J W, Nentwig, W & Ravn, H P (2007) "Ecology and Management of Giant Hogweed (*Heracleum mantegazzianum*)". CAB International
- Stace, C (1999) "Field Flora of the British Isles". Cambridge University Press

Photos from: Olaf Booy, Steve Smith, Vicky White