

Accompanying Notes for Species of Union Concern for Rapid Eradication at Early Stage of Invasion

Himalayan knotweed (*Koenigia polystachya*)

N.B. Please consider the treatment measures you put in place on a site – specific basis. Following some best practice publications, (Including some out of date Invasive Species Ireland & DEFRA publications) will not always achieve the desired results on your site. For example, those that recommend months and dates often have not been adjusted to take climate change and local weather patterns into consideration.

N.B the numbers in this document correspond to the same question numbers in the questionnaire

3. Please supply an estimated area of the Himalayan knotweed infestation. If it can be detailed in number of plants, then it is acceptable to just state for example – there are < or > 13 **Himalayan knotweed** plants at this location. If however there is a large area of plants at your location please try to estimate total in metres squared (m²).

If the infestation extends beyond your land ownership and you think that adjacent infestations are preventing you from eradicating at your location, please report other locations @ www2.habitas.org.uk/records/ISI – any details of reports you enter are not shared outside the Department, so your report would be anonymous.

5. The best method for demarcation of the infested area is to erect fencing, but sometimes just defining the area with coloured tape or sporadic signage can be adequate in areas of low footfall. To avoid further accidental spread of the plant you can use warning signage to mark your treatment area:



7. Treatment methods

The Department will always encourage landowners to attempt to treat invasive plants without the use of herbicides wherever possible - Chemical treatment must only be considered as a last resort

Points to consider before choosing your method:

- Is the site in a designated area ([web viewer is handy for checking](#)), this will limit available options
- The use of herbicide will almost certainly be a notifiable operation and therefore need '[consent/assent](#)' from [Conservation Designation & Protection \(CDP\) team in NIEA](#).
- If the location is not a protected/designated site adjacent to a water body, there is no requirement to notify NIEA of the use of herbicide (some out dated documents/websites state that there is a requirement). However, they should verify and provide details of the operative's suitability for application i.e. if your location is adjacent to water herbicide they must hold a PA6Aw certificate. They must at least hold a PA6 certificate for any herbicide application
- Please detail which method/s are being used on your site – you may have more than one – e.g. stem injection and weed wiping at either end of growing season
- You must provide annual records of the amount of herbicide used on the site and at what dilution levels they were applied at. This will be especially important if your location is in or adjacent to a designated site or water body - it is a legal requirement (under COSHH (NI)) to keep records of all herbicide applications

Mechanical/Manual treatment

Mechanical/manual control usually refers to the mowing, digging out or mechanical cutting of an invasive plant infestation. Mechanical/manual control alone is not effective for treating Himalayan knotweed but can be used as part of an integrated strategy with other treatment methods, such as herbicide application.

Disposal of plant material

It is important to note that Himalayan knotweed can reproduce vegetatively from a small piece of rhizome (as small as 1cm) or pieces of aerial stem containing nodes. If mechanical or manual treatment is the chosen method, then it is imperative that **all fragments** of cut plant material are removed from the site. Failure to remove all fragments will likely only exacerbate the problem and could aid in spreading the plant into new areas – for this reason some do not recommend mechanical or manual treatment methods.

Plant material, including soil that contains plant and rhizome fragments, must be disposed of appropriately and handled with great care **(see notes for point 12)**.

Removing the above-ground foliage:

To be most effective, this treatment should begin as soon as new growth is observed. When the plant begins to regrow in spring, the stems should be cut down to the ground surface. They can be cut manually using a scythe, loppers or pruning shears; or mechanically using a strimmer or mower, set to cut as low as possible. This should be carried out as often as possible, at least every 2-3 weeks from then, until the end of the growing season. It is suggested that plants should not be allowed to exceed a height of 15cm. Again, great care must be taken to ensure **all fragments** are successfully removed- see above section on 'Disposal of plant material'.

Excavation:

It has been suggested that a combination of cutting the above-ground foliage alongside excavating the soil containing the below-ground rhizomes, can be an effective method of control. The depth and area of excavation will need to be determined by an expert and will be site specific. Following excavation, monitoring must be ongoing, to ensure any regrowth from any remaining rhizome fragments, is removed. Following excavation, the contaminated soil, which is now classified as controlled waste, must be handled carefully to ensure no further spread. Some options for dealing with controlled waste are as follows:

- Transfer to a licenced facility (see notes for point 12 for further guidance)
- On site burial. This is usually carried out on larger sites. It is suggested that contaminated soil and plant material are buried at depths of > 5 metres. Shallower burials will require encapsulation in a root resistant barrier membrane

Digging/tracing roots:

Some advise against digging or pulling out the traced roots, as it can encourage the plant to spread, and increase the size of the infestation. However, some report that in soft soil the plant can be pulled out by the root crown, removing as much of the root system as possible. This method, again, will require a great

deal of care to ensure all rhizome fragments are removed but if expertly carried out can reduce the volume of controlled waste and its cost to remove.

Physical root barrier:

For similar species, root barrier membranes have been utilised to prevent further spread of the plant. This will not help in the eradication of the species but could be used as an interim measure to contain the infestation. The aim of the root barrier is to separate the land impacted by the invasive plant from that which is free of the rhizomes. For further information on the root barrier method, see the [Property Care Association website \(https://www.property-care.org/write/MediaUploads/Professionals/Documents/Guidance-Note_Root-Barrier-and-Japanese-Knotweed-2019.pdf\)](https://www.property-care.org/write/MediaUploads/Professionals/Documents/Guidance-Note_Root-Barrier-and-Japanese-Knotweed-2019.pdf).

Benefits of mechanical/manual control:

- Works well for areas that have favourable terrain that is accessible, and the plant can be completely excavated and removed to licensed landfill
- Can be used as a method in some environmentally sensitive areas

Limitations of mechanical/manual control:

- Cutting of this plant without proper site management and good biosecurity could cause the plant to spread further
- Great care must be taken to remove all fragments, to prevent further spread
- Using mechanical/manual control alone, is very time consuming and labour intensive
- One method alone is unlikely to be effective in eradicating the plant, a combination of treatment methods is needed
- May not be suitable in some environmentally sensitive areas – excavation could cause sediment release
- Not suitable for steep slopes or rocky, unstable terrain
- Plants need to be cut as close to the ground as possible
- Non-target vegetation may be impacted
- Root barrier membranes are only a temporary measure and will not help to eradicate the plant

Chemical treatment

The Department will always encourage landowners to attempt to treat invasive plants without the use of herbicides wherever possible - Chemical treatment must only be considered as a last resort

If a particular brand of herbicide is mentioned in the management measures, the land manager must have checked that it is approved for their planned use. This can be done by accessing the HSE approved pesticides register -

<https://secure.pesticides.gov.uk/pestreg/ProdSearch.asp>

As a government agency, we cannot recommend a specific branded product, we can only recommend the generic type such as Glyphosate systemic based herbicides, which are the most successful for dealing with knotweed species and many are also approved for use near water by a qualified operative.

- Herbicides can be applied by a variety of means including boom sprayers (tractor or quad mounted), weed wipers, back pack sprayers, hand lance, spot spraying and stem injection
- Selection of herbicide should depend on the extent of your target weed species, other crops or plants on site, environmental considerations, and meeting your management measures objectives
- Large infestations, infestations near water, or infestations on steep slopes may be too costly or too environmentally sensitive to control by chemical means. In these situations, it is important to look at other management measure options

First, consider if the location is suitable for application of herbicides:

1. Is it on a designated site and have you got 'consent/assent' from NIEA CDP team
2. Are there any protected species on site that could be damaged by applying herbicides in a non-target manner
3. Is it an adequate distance away from watercourses and ditches
4. Is it away from existing amenity areas, lawns and gardens with large amount of footfall
5. Is it free from disturbance by people or livestock
6. Is it a suitable distance away from neighbouring properties

Also, if chemical control leaves a site bare, it is important to detail, **before you apply an herbicide regime**, how you plan to re-vegetate the site so that control is achieved over the long-term **(see notes for point 15.)**

Factors that can affect the effectiveness of herbicides include:

- Himalayan knotweed is susceptible to systemic herbicides, such as those that contain glyphosate, during its active growth stage, so timing of treatment is critical
- Soils with high organic matter or clay content may require higher rates of chemical than sandy soils
- Soil moisture and pH can also affect persistence and effectiveness of some herbicides
- DAERA – Code of Practice for Using Plant Protection Pesticides
- The 'DAERA – [Code of Practice for Using Plant Protection Pesticides](#)' is commonly referenced, although published in 2011, much of the document is still relevant and of use. However just note that, with regards spraying pesticides 'grandfather rights' no longer exist & the document also states that *"Before you use any product approved for use in or near water (this is usually a herbicide used to remove plants in or around water) first contact the NI Environment Agency (NIEA) on 028 9263 3445."* As mentioned previously this is not the case anymore, there is no requirement to contact NIEA, unless it is in a designated site/ASSI/SAC etc. when you must get 'consent/assent' from the [Conservation Designation & Protection \(CDP\) team](#)

The best time to spray knotweed species is in the Autumn just prior to a killing frost and complete leaf drop and die back. Apply herbicides to as much of the mature growth as possible, including all leaves and canes. Leaves should be mostly green at the time of application but may have some yellowing. Many herbicides are not registered for use near water, so take care to use an appropriate product at each application site.

It is important to be patient after the first season of treatment. Allow any regrowth of canes to reach maturity before re-treating in following seasons. Specifically, re-treat plants during or after flowering and before leaf drop.

Benefits of chemical control:

- Effective tool for new and small infestations of Himalayan knotweed
- Cost effective method for smaller infestations
- Will kill target plants via spot treatment, cut and paint or stem injection methods
- Effective when used in combination with other treatment methods
- Less labour intensive than alternative mechanical and manual methods
- Exacerbating the infestation and causing further spread is less of a concern with this method, as long as good on-site biosecurity is followed

Limitations of chemical control:

- Precautions need to be taken to limit the effects on surrounding non-target plants
- Precautions must always be taken to avoid spraying or applying herbicides where pollinators are actively feeding, i.e. when plants are in flower
- Limited use in environmentally sensitive areas or steep slopes
- May have limitations on certain soil conditions or presence of water
- Some concern from public/community groups and local councils about the use of glyphosate based products
- Not always successful and repeated applications will likely be needed

Grazing control

- This type of control involves the use of livestock which consume invasive plant species as a control method
- One study has shown goats to be effective in control of Himalayan knotweed (Soll, 2004). This method will likely not eradicate the plant but can reduce its spread. In the case of Himalayan knotweed, the effectiveness of goat grazing has been likened to that of intensive mowing
- This method should be used in combination with other treatment methods such as excavation or herbicide treatment

Benefits of grazing control:

- Minimal time commitment required from land owner
- Avoids adding unnecessary chemicals to the environment
- Cheaper method of control

Limitations of grazing control:

- Too many goats or leaving goats too long on a patch of land can lead to over grazing. This will leave bare ground and potentially prime the land for further spread of the plant
- Grazing will not completely eradicate the plant, it will only remove the above-ground foliage, and so should be used in tandem with other treatment methods which target the below-ground plant material
- Annual inspections and periodic monitoring still required
- Important to research which breed of livestock is best suited to the site – some may need fencing to encourage animals to graze on the desired target species
- Goats will likely also eat desirable vegetation and not just target species

- Goats' droppings are unlikely to carry rhizomes but in rare cases could contain stem fragments, which could lead to further spread of the plant

10. On – site biosecurity

- Strict biosecurity measures must be put in place on treatment sites to ensure land owners/ contractors/ members of the public do not act as vectors in spreading invasive plant species
- To reduce the spread of the invasive species, it may be necessary to set up cordoned off areas/ exclusion zones to stop people entering these areas whilst treatment is ongoing
- Create an exclusion zone (should include a buffer zone if possible), put up signs to make people aware
- Ensuring recreational (boats, boots, angling) and mechanical equipment is drained if operating in infested riparian locations and cleaned before leaving any infested water body ([CHECK CLEAN DRY](#))
- Restrict access and cordon off stands or infestations until treatment is complete
- Thorough inspection and removal of contaminants by brushing is recommended for all tools and equipment used on site - this should include clothing and boots - if carrying-out management, check clean any equipment, E.g., clean soil off spade
- Ensure that soils from within infested areas are not spread to other areas, treat contaminated soils carefully



15. Site restoration

This will depend on the site in question and what its main characteristics are – location, soil types, designation status etc.

- Many plant invasions can be reversed, halted or slowed, and in certain situations, even badly infested areas can be restored to healthy systems dominated by native species
- An invasive plant control regime is best viewed as part of an overall restoration program - focus on what should be in place of the invasive plant species after removal, rather than simply eliminating the weed then thinking about what is to go in its place afterwards
- This is especially important along riverbanks (riparian habitats) due to the potential erosion and bank instability that could be caused by removing the invasive plant species
- Establishing a good sward of grass soon after treatment will help reduce the risk of re-colonisation of the same or other INNS – this can also help suppress

regrowth of seedlings from the seedbank

- When selecting control methods, keep in mind that the ultimate purpose of the work is to preserve native species, communities, and/or functioning ecosystems
- Restoration management aims at restoring habitat functions and processes on sites disturbed by human activities - it requires that you replace the invasive non-native plants that have been removed with native plants which are able to provide the desired habitat structure and functions
- It is recommended you consult a professional ecologist to assist selection and sourcing on native species to plant
- Make sure all necessary precautions are taken to ensure that any topsoil brought onsite for restoration purposes is certified free from invasive plant species

Riverbank restoration



Photo credit: Mountain Visions/NOAA

N.B. If you are unable to complete the questionnaire form electronically, the notes below correspond to the help text on the same numbered points on the form.

1. This number can be found on your original letter
2. Name of species this incident refers to. This will be detailed on the letter you received.
3. Please see accompanying notes 3
4. Designated sites are those which have been deemed of special value to biodiversity (ASSIs, SACs, RAMSARs etc). Carrying out works on or adjacent to them comes with restrictions and requires 'consent/assent' from NIEA Conservation Designation & Protection [Team - CDP@daera-ni.gov.uk](mailto:CDP@daera-ni.gov.uk)

- 6.** Detail which method you have used to warn the public and exclude footfall from the site of infestation to avoid further spread. You can provide photographs if easier.
- 7.** Please see accompanying notes 7.
- 9.** If it is on a designated site you may already have 'consent/assent' to carry out works.
- 10.** Strict biosecurity measures must be put in place to ensure landowners/ contractors/ members of the public do not act as vectors in spreading these invasive non-native species.
For further info – please see accompanying note 10.
- 12.** WTN is the Waste Transfer Note. If wastes are being transported off site, ensure that they are appropriately transported by a licensed waste carrier who is informed that the waste material contains an invasive species as part of the waste transfer documentation. It is advisable to contact the licensed landfill site in advance to ensure they will accept the waste material. Failure to inform the landfill site that the material contains an invasive species would be an offence under both wildlife and waste legislation.
- 13.** How often each year will you be checking the site for signs of re-growth and for how many years will your monitoring continue? Detail/record who is carrying out the monitoring and how they are qualified to do so.
- 14.** This will be dependent on size, maturity & growing conditions of the plants. You may need expert advice to answer this question.
- 15.** Restoring the site with native species will prevent re-infestation and soil erosion. Please see accompanying note 15.