

Accompanying Notes for Widely Spread Species Management Measures Questionnaire (aquatic weeds – Parrots feather, Curly waterweed, Nuttalls waterweed & Floating pennywort).

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 Following some best practice publications (Including the out of date Invasive species Ireland publications) will not always achieve the desired results on your site.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

Numbers below correspond to numbers on questionnaire form.

3. Please supply an estimated area of the infestation of the invasive aquatic plant detailed on the letter you received. Please try to estimate total in metres squared (m^2). If the infestation extends beyond your land ownership/management and you think that adjacent infestations are preventing you from eradicating/reducing at your location, please report other locations anonymously @ www2.habitas.org.uk/records/ISI
5. If you are carrying out mechanical or manual weed cutting/removal, it is important to place mesh traps over any outlets or inlets to the waterbody (see left image below).



Most of the aquatic invasive non – native weeds species have very successful methods of reproducing and spreading. This includes if cutting or pulling operations are attempted, fragments of weed will break off and disperse to recolonise elsewhere.

For that reason any such operations must be backed up by using mesh, netting or buoyed floating barrages to trap any released weed fragments!

7. Treatment methods

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

This becomes even more relevant when treating invasive aquatic weeds on or in a water body in Northern Ireland (NI). Mainly because there are currently no HSENI approved herbicides for use in water in NI. You may use glyphosate based herbicides around water bodies or on river banks but they shouldn't be used within the water body.

13. Revegetation

- Most ponds should be left to natural colonisation by plants and animals
- Research shows water plants usually return quickly following restoration from dormant seed banks
- It is important to avoid unnecessary stocking of plants from garden centres and nurseries which can lead to major problems with invasive species
- However, barren water bodies remaining after control action should be revegetated if it does not occur naturally
- Species that perform well within high soil moisture or riparian/wetland sites, such as stream bottoms or wet meadows that are sub-irrigated for at least a portion of each growing season, include numerous native species
- Native sedges & rushes/bulrushes are grass-like species used extensively in riparian and wetland revegetation projects because of aggressive root systems and wildlife habitat value

Accompanying notes continued:

A. 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
- Aquatic weed removal operations, by whatever method you use, will almost certainly be notifiable operations on a designated site and therefore need ['consent' from Conservation Designation & Protection \(CDP\) team in NIEA](#)
- Work is best undertaken over September-January, especially late summer when the ground is dry and pond levels are low - this period also avoids breeding seasons for amphibians and birds i.e. time your work - problem plants can be pulled out at any time, but big clear outs should be saved for autumn when they will cause the least disturbance to your pond and any associated wildlife

- If the location is not a protected/designated site, there is no requirement to notify NIEA of the use of herbicide adjacent to water bodies (some out dated documents/websites state that there is a requirement when working in or around water bodies)
- Please detail which method/s are being used on your site – you may have more than one – e.g. cutting/harvesting, smothering or shading
- It is worth noting that unlike terrestrial invasive plants some aquatic invasive plants are perennial in our climate and winter conditions do not necessarily kill them – very low temperatures would have to be reached to kill most of them
- Verify and provide details of the operative's' suitability for application i.e. they must hold a PA6Aw certificate for any herbicide application in or around water bodies

You are expected to 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.

B. Mechanical treatment/Weed harvesting/cutting - There are some key points to remember when carrying out efficient mechanical cutting and harvesting:

- Mechanical control is really only effective for removing large infestations of these plants in areas where access is available for weed cutting buckets or boats
- Always mark the intended harvesting area with buoys and erect a containment net around the area to be treated
- The operator should manoeuvre the mechanical cutting boat using trailing V-blades over buoyed-out sections of the infested area - the trailing V-blades rip through the sediment allowing the cut vegetation to float to the surface
- The cut weed is then removed by a harvesting boat, which submerges the front-loading forks just below the water surface to collect it
- The weed can then be taken to a support boat if necessary (some of the larger boats can accommodate the weed on board – below left) and brought for subsequent composting on dry land
- Protect pond life - before disposing of plants, leave them for a few hours beside the pond, so that invertebrates and animals can return to the pond (some of the larger boats screen the wildlife on board – see below left)
- In very dense weed stands, the canopy may be first thinned out by the front-loading forks before V-blade cutting commences. The containment net should be serviced regularly to remove any floating weed fragments

Benefits of mechanical control:

- In large infested sites where there is good access for machinery it can be a speedy way to remove large amounts of weed growth in one operation

- Investment in weed cutting machinery – can be readily transported around multiple sites (see below) and can still achieve success with smaller craft (see below right)



- Larger machines as above left have conveyor mechanisms which can sift out any bycatch invertebrates and animals and return immediately to the water body

Limitations of mechanical control:

- Access for weed cutting boat can be problematic
- Very difficult to remove all fragments with high potential for regrowth
- Nets and weed traps over out/in/falls will be required to trap and remove fragments released during mechanical operations
- Sometimes marker buoys are required to cordon off weed patches
- Plants must be in reach of excavator
- Repeat visits will be required
- Although a cost consideration, to avoid any damage to other protected species such as newts, it would be advisable to have an ecologist present during any mechanical clearance operations

C. Manual control:

- Hand pulling invasive aquatic weeds may be effective for smaller infestations in shallow water (or where the water level can be controlled). More effective when plants are not 'collapsed'
- Physical removal with hand tools/rakes - can be effective with multiple visits (usually 3 to 5)
- A chain scythe, aquatic weed rake or long handled rake can be used from the shoreline to cut and/or pull vegetation
- Effectiveness is enhanced by cutting plants as close to the base as possible.



Limitations of manual/physical control:

- Labour intensive and time consuming
 - Requires good access and appropriate methods for waste management
 - Best in areas with an even substrate free from obstructions
 - Fragments readily escape, very difficult to remove all fragments and high potential for regrowth
 - Nets will be required to trap and remove fragments
 - Repeat visits will be required
 - Physical removal only effective when plants are not 'collapsed'
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D. Installation of light inhibiting materials:

- Install light inhibiting material e.g. jute matting of a recommended maximum weave density 4 mm²; weight 187 g/m²
- The matting should be stretched out and laid -flush to the bottom over the infested area/areas
- Attach some small weights around the edge of the matting which will help fast submersion and accurate placement - Jute matting tends to saturate rapidly on contact with water and sinks within minutes of laying it on the lake surface; this makes it easy to place accurately, particularly in windy conditions. As the material is permeable it permits gases to escape and prevents the development beneath the matting of anoxic conditions
- After a period of at least four months, the underlying invasive weeds should be eradicated and native species should start to grow through the weave of the jute matting within seven months of it being placed over the invasive weeds

- To avoid any damage to other species it would be advisable to have an ecologist present during installation of jute matting
- It is recommended that an annual survey is carried out until three full growth seasons have passed without regrowth of IASs.

Benefits of installing light inhibiting materials:

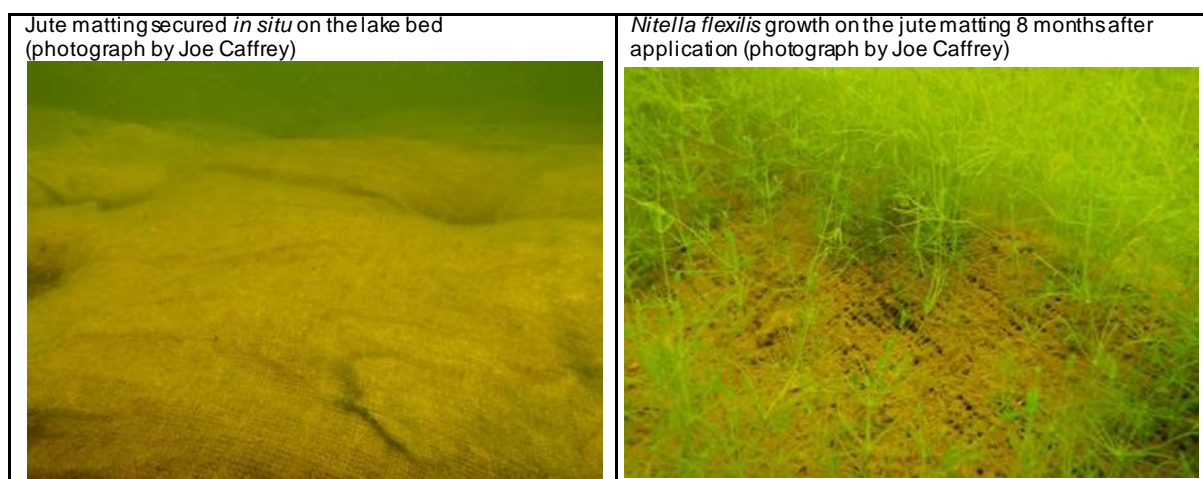
- Particularly good method at sites in which the plant has replaced native charophytes, which are able to grow through the weave of the matting a re-colonise within 2 months of deployment
- Jute matting is made from a natural, biodegradable fibre means there will be no unnecessary costs incurred in having to remove the material from the water once it has achieved its purpose
- The use of jute matting for aquatic weed control has the additional demonstrated benefit of facilitating the regeneration of native Charophytes and other vegetation that can germinate from seed reserves and re-establish in the absence of the invasive weed
- Jute matting eventually biodegrades

Limitations of installing light inhibiting materials:

- Large roles of jute are required
- The jute must be weighed down
- Large areas require specialised equipment to lay
- Difficulty/expense in implementing at a large scale
- Relatively new method without an extensive local track record

Different methods of laying jute matting





Environmental Control

- Emergent species such as Parrots feather (*Myriophyllum aquaticum*) are not tolerant of fast flow and do not appear to grow in rivers or fast flowing streams. Increasing flow by narrowing slow flowing channels may be a way of controlling the growth of this species
- This effect is achieved when the plant itself grows in slow flowing systems and may result in self-limitation in this type of channel
- Increasing shade can be achieved by using light barriers such as UV sheeting weighted down (see previous note)
- The planting of trees along the south side of water bodies or by placing a floating opaque material over the water surface in early spring has also been suggested.
- Shade needs to be maintained for at least twelve months to give good control.
- Because of the association with eutrophic waters a reduction in the nutrient loading to the water may help reduce the competitive ability of this species and lead to a re-establishment of the native species
- This can be achieved by buffer strips if non-point nutrient sources can be identified and by a reduction in phosphate loading from other point sources such as sewage works and farm effluents
- Often an abundance of invasive aquatic weeds can be an indicator of too many phosphates entering the water body and excessive effluent outlets, sometimes illegally, should be identified and rectified where possible

Limitations of Chemical control:

- The Department does not support unjustified general, non-specific chemical control of aquatic invasive species due to potential impacts on:
 - I. Non-target species
 - II. Residual impact and persistence in the environment

- III. The lack of associated rigorous monitoring to appraise effectiveness of control methods
 - IV. The potential noncompliance with the Water Framework Directive
- Targeted and appraised chemical control does have a role to play in management of aquatic invasive species, but should be seen as a last resort, after all other alternative control options have been thoroughly considered and assessed
 - Consider if you can successfully and safely carry out the work or if professional practitioners, with 5. relevant training and certificates should undertake the work
 - Before undertaking a chemical control programme, a transparent cost/benefit analysis identifying the risks associated with intervention options and risks of non-intervention must be carried out
 - A transparent cost/benefit analysis of management options should include the following:
 - I. Knowledge of the invasive species occurrence/distribution at and around the location
 - II. Thorough knowledge of the invasion ecology and life history of the species
 - III. An assessment of the potential impacts based on invasive history elsewhere and similarity of local habitats
 - This should include the identification of:
 - I. The sensitivity of native species, habitats and ecosystems present in respect to international, European and domestic legislative obligations and concerns
 - II. Impacts on economic and amenity values
 - III. Potential impact of both the invasive alien species and the proposed control methodology
 - IV. Other human, animal and plant health issues
 - The need for appropriate assessments
 - Efficacy of control and eradication methods available based on assessment of experience elsewhere and on site, if applicable
 - Assessment of known impacts of potential control methods on non-target species and residual impacts in the environment
 - Due consideration of the legal status of the options considered
 - A planned schedule of works with disposal procedures for waste predetermined
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Biological control:

- Trials on some species have been carried out in GB and Ireland but as yet Northern Ireland have not used any of the biological control methods available.

You can read about the latest research on the Cabi website:

[Floating pennywort](#)

Other resources:

- <http://invasivespeciesni.co.uk/download-resources/site-management-resources/>
- <http://invasivespeciesni.co.uk/what-can-i-do/check-clean-dry/>
- <http://invasivespeciesni.co.uk/what-can-i-do/check-clean-dry/check-clean-dry-resources/>
- <http://invasivespeciesni.co.uk/list-of-identification-guides/>