

Iascach Intíre Éireann
Inland Fisheries Ireland







## Scope

This best practice document provides guidance to stakeholders on effective measures to control the highly invasive riparian plant Himalayan balsam *Impatiens glandulifera* based on methods used and developed by IFI under the EU LIFE+ funded Control of Aquatic Invasive Species and Restoration of Natural Communities in Ireland (CAISIE) project.

# **Identification**

Tall (to 3 m) annual plant with pink-purple trumpet flowers and fleshy, hollow stems. Leaves have serrated edges and pointed tips **[Figs.1 & 2]**. Seed capsules pop to the touch when mature. An identification sheet and video can be found here: http://www.fisheriesireland.ie/Invasivespecies-list/curly-leaved-waterweed.html

## Impacts

Reduces soil stability along river banks when plant dies back in winter. Competes with native plant species.

### **Pre-control** assessment

Establish the distribution and abundance of the weed in the target area: Mark the location of all weed stands present on a map or using a GPS. Record the size and percentage cover of each stand. The percentage cover and speciation of any native vegetation encountered should also be recorded. Data should be entered into a GIS mapping system, if possible.

# Effective control measures

It is possible to eradicate Himalayan balsam from infested river catchments because its morphology and life cycle display a number of weaknesses that are uncharacteristic of other such high profile invasive species. These include the following. The plant has an annual life cycle, meaning it germinates, grows, flowers, seeds and dies in the one year. The plant has a shallow root ball so is easily removed by hand-pulling. The majority of the seeds germinate after one year and seeds are the only propagation method of this species. Ideally, Himalayan balsam control should be undertaken from mid-May to the end of June, well before the seed capsules appear. As research has shown that the seeds present in the soil can remain viable for up to two years, repeated control over a number of years in the target area is required to achieve eradication. The following effective methods have been successfully trialled and used by IFI under the EU LIFE+ CAISIE project to control Himalayan balsam.

10.3

Requirements: Suitable footwear (boots or wellies), durable gloves, long-sleeved trousers, long-sleeved upper garments and jute material.

## Manual removal (hand-picking)

is the optimal method of control, especially to treat low density infestations, as it can selectively target individual plants and minimise any impact to adjacent non-target native plant species. The combination of Himalayan balsam attributes described above means it is also possible for large, well organised groups of individuals to physically remove the plants from long sections of river bank. This is commonly referred to as 'balsam bashing'.

On river banks, plant removal should commence at the farthest upstream site from which it was recorded and continue progressively downstream. To manually remove the plant, the stem should be gripped about 0.5 metre above the ground and carefully pulled. As the plants tend to grow in dense patches, it is often possible to remove two or more plants in one go. The minimum of pressure is normally required to remove the root in its entirety from the ground due to its shallow root. Having removed the balsam plant from the ground, it should be thrown landward, away from the river, and gathered into piles. Covering the piles with a layer of jute material in order to eliminate light can hasten its demise and ensure that it will not flower and set seed. The jute will rot down with the composting balsam plants. Where it is not possible to leave the plant piles in situ, they should be transported to suitable licensed composting facilities.

**Herbicide treatment** can be an effective means to target extensive dense stands of Himalayan balsam where manual removal is not a feasible option. Herbicide application should only be carried out by suitably qualified contractors or operators with strict reference to the product label, local land use, health and safety considerations and any pertinent regulations.

Two principal herbicides can be used to control Himalayan balsam, glyphosate and 2-4D amine. Which herbicide to use is dictated by the nature of the infestation. Only certain formulations of glyphosate and 2-4D amine are approved for use near waterways. Glyphosate is a non-selective herbicide whereas 2-4D amine is a selective herbicide targeting broad-leaved weeds but having no effect on narrow-leaved plants such as grasses.

#### **Requirements:**

Appropriate herbicide and personal protective equipment, qualified contractor / operators, knapsack sprayer and long-lance. Therefore, 2-4 D amine is more appropriate for extensive but low density infestations interspersed with native grasses. Only glyphosate was used during the project (application rate of 5 litres per hectare). Herbicide should be applied in a manner (e.g. using spot treatment when possible) to minimise drift to any adjacent non-target native plant species present. Knapsack sprayers are most appropriate for bankside work with long-lances useful for treating hard to reach areas.

# **Post-control monitoring**

In order to properly evaluate the efficacy of the control measures implemented and monitor the natural recovery of the native habitat, post-control assessment is necessary. Such monitoring should be conducted four weeks after the control operations have concluded to assess the need for further control and additionally on at least an annual basis. Re-survey the area targeted in the same manner used during the pre-control assessment and compare the results. Consider appropriate remediation measures to enhance habitat recovery if required in consultation with appropriate experts and agencies. This may include the re-planting, re-location or transplantation of extirpated native species. Consider further control

## Further information

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## Additional considerations

An appropriate risk assessment, which includes Health & Safety considerations, should be carried out before any control or survey work is undertaken. Permission or licences from the appropriate authorities may be required to carry out invasive species control work in some locations such as Natural Heritage Areas, Special Areas of Conservation, Special Protection Areas and waterways. Ensure that the herbicidal product used to treat the weed is cleared for use in or near watercourses. Check the label to determine this. The requirements listed under each control method are not prescriptive and only provide information on the principal items required.



The CAISIE Project is an EU Life+ funded programme co-financed by the National Parks and Wildlife Service.

The primary purpose of the project is to control and possibly eradicate aquatic invasive species in Lough Corrib and the Grand Canal and Barrow Navigation, the development and dissemination of effective control methods and raising the awareness of such species through stakeholder engagement.

> Please report aquatic invasive species sightings to info@caisie.ie or Lo-Call 1890 34 74 24







An Roinn Ealaíon, Oidhreachta agus Gaeltachta Department of Arts, Heritage and the Gaeltacht



# Be biosecurity <u>aware!</u>

http://www.fisheriesireland.ie/invasive-Species/ invasive-species.html

For information and to report

LO-CALL: 1890 34 74 24

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