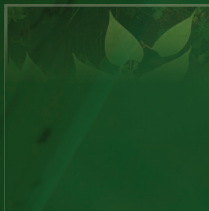
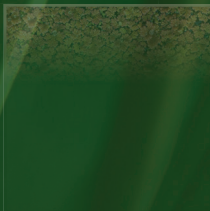




Common Invasive Species in Ireland



Dr. Amanda Greer, Christopher Walsh and Dr. Sabine Keuter

FRONT COVER



Envirico

Envirico are an Irish environmental and invasive species control company with expertise in the control and eradication of a wide range of harmful invasives, including all of those found within this booklet. For any further queries or to arrange a consultation about an invasive species infestation, please contact our

Senior Project Manager –

Dr. Amanda Greer

on **056 7801277** or **info@envirico.ie**

or visit our website **www.envirico.ie**

For further information about any of the species in this booklet or to record a sighting, please visit our website www.envirico.ie

Front cover images:

Left to right – close up of Water fern, Himalayan knotweed,
Asian clams in huge numbers.

Back Cover: Japanese knotweed shoots

The authors would like to thank Dr. AM Mahon for her valuable feedback and comments on the 1st edition of this booklet.

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3rd Edition [November 2019]

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Japanese Knotweed

[Fallopia japonica]





Common Invasive Species in Ireland

Identification

- A** Leaves have a pointed tip, flat-base and grow up to 15cm long. Flowers are small and creamy-white and may be seen from August to October.
- B** Stems are bamboo-like with purple speckles and can grow over 3m high.
- C** Roots are bright orange when cut and snap like a carrot.
- D** Dies back in late autumn, leaving dead canes behind. New shoots appear again in March.

Threat

Japanese knotweed can cause massive structural damage to buildings and roads as it grows so vigorously that it can push through tiny cracks in foundations and tarmac. In the UK, people can be refused mortgages because the plant is on their property!

Can severely reduce biodiversity as the mature plants grow into immense stands that block the sun from native species.

The root system may be twice as large as the above ground plant enabling it to survive lack of sunlight, drought and extreme heat.

Action

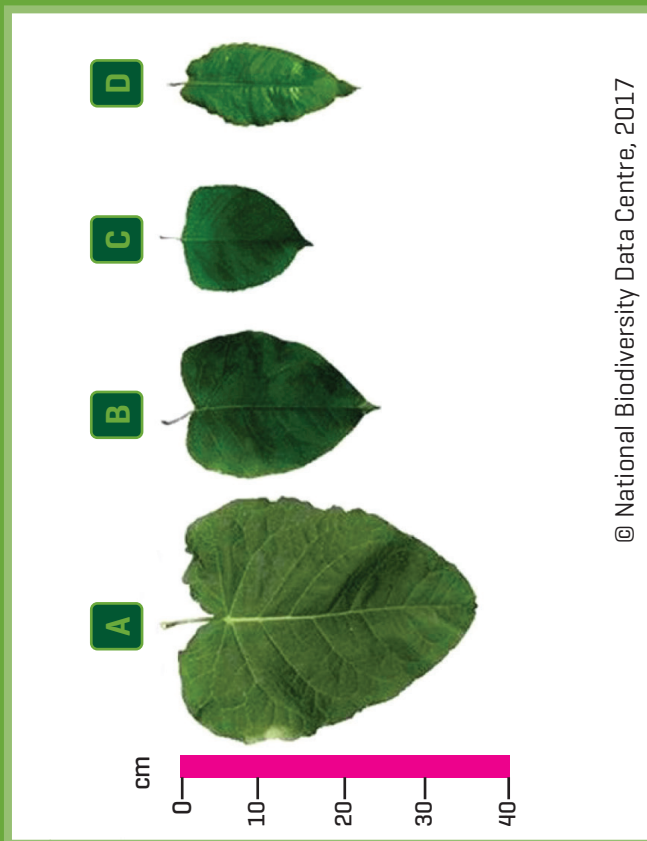
Turn to page 5 for Action for all knotweed species.

Record your observations in the back of this booklet or on www.envirico.com/log. Take photographs if possible.





Other Knotweed Species





Common Invasive Species in Ireland

Identification

- A** **Giant knotweed** leaves are up to 40cm long, with a heart shaped base.
- B** **Bohemian knotweed** [hybrid] leaves are up to 25cm long, with a slightly curved base. Its leaf looks midway between that of a Japanese and Giant knotweed leaf.
- C** **Japanese knotweed** leaf.
- D** **Himalayan knotweed** leaves are long and narrow, up to 20cm and have a red mid-vein. Flowers are held on red stalks.

Threat

The other three types of knotweed present in Ireland all pose the same threats as Japanese knotweed. These are: Giant knotweed; Bohemian knotweed, which is a hybrid between Giant and Japanese knotweed; and Himalayan knotweed. The various types can be identified by their different leaf shapes.

Action

If you find a knotweed, **DO NOT CUT OR BREAK** it! Stem and root fragments can easily regrow as new plants.

DO NOT TRANSPORT knotweed anywhere. It is illegal to move knotweed waste except to bring it to a licensed waste facility that has been given prior notification.

Any eradication or control of knotweeds **MUST** be undertaken by a reputable invasive species control company. Poorly planned treatments will increase the plant's resistance to future control methods.

Record your observations in the back of this booklet or on www.envirico.com/log. Take photographs if possible.





Common Invasive Species in Ireland

Giant Hogweed

[Heracleum mantegazzianum]

A



B



C



D





Common Invasive Species in Ireland

Identification

- A** Impressive, 2 - 5m tall plant with leaves often more than 1m across. Leaves are divided and pointed.
- B** Stems are large, with reddish/purple speckles. They are ribbed lengthways and covered in bristles.
- C** Flowers are small, white, and grouped together in an umbrella shape [similar to cow parsley, only much larger]. Visible from June to August.
- D** Dies back in autumn each year but leaves brittle stems behind.

Threat

Giant hogweed sap is dangerous. It can burn if left on the skin and exposed to sunlight. Even 7 years later, sun exposure can trigger new blisters.

Greatly reduces biodiversity by forming huge stands that block the sunlight from our native plants. A single plant can produce up to 50,000 seeds, which disperse by wind, water and human activities.

Action



DO NOT TOUCH Giant hogweed! The sap can cause severe skin damage! Everyone operating in infested areas should ensure they are wearing the appropriate PPE to protect from chemical burns.

If sap comes into contact with the skin, **WASH** with soap and water **A.S.A.P.** and **KEEP** the area **AWAY FROM SUNLIGHT** for at least 48 hours. If the sap comes into contact with the eyes, or a reaction occurs, seek immediate medical advice.

Record your observations in the back of this booklet or on www.envirico.com/log. Take photographs if possible.





Common Invasive Species in Ireland

Himalayan Balsam [*Impatiens glandulifera*] AKA Indian Balsam, Policeman's Helmet

A



B



C



D





Common Invasive Species in Ireland

Identification

- A** Grows up to 3m tall.
- B** Flowers are pink/purple, approx. 3cm long and may be visible from late May to October. Seed pods are 1.5 – 3.5cm long.
- C** Leaves are long [6 – 15cm] and narrow with sharply toothed edges and a reddish mid-rib.
- D** Roots are reddish and very shallow.

Threat

Himalayan balsam destabilises the river banks along which it grows as when it dies in winter there are no longer roots holding the soil together.

Native species are less able to reproduce when Himalayan balsam is present as bees prefer to visit its flowers because they produce a huge amount of nectar.

Action

Do not touch the plant if seed pods are already present or the seeds will spread.

Small infestations of Himalayan balsam can be controlled by hand-pulling the whole plant [including roots] in April and any new growth until September; or by regular grazing, strimming or the application of herbicides.

For large or riverside infestations, a specialist invasive species control company should be consulted.

Record your observations in the back of this booklet or on www.envirico.com/log. Take photographs if possible.





Giant Rhubarb

AKA Chilean Rhubarb [*Gunnera tinctoria*]

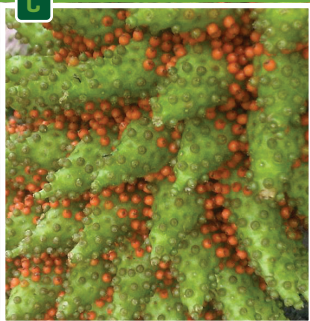
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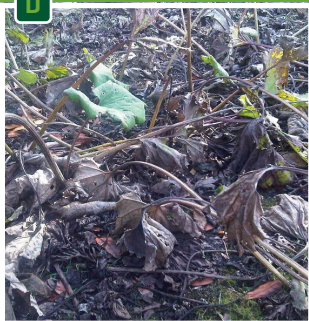
B



C



D





Common Invasive Species in Ireland

Identification

- A** Leaves are rhubarb-like and up to 1.5m across.
- B** Stems are prickly, reddish and can be 3.5m long.
- C** Flower heads are long, cone-like structures with thousands of small, reddish flowers. Later, small orange/red fruits contain the seed. Usually visible from April to October.
- D** Dies back from the beginning of October.

Threat

Giant rhubarb badly affects biodiversity by forming large, dense stands along river banks, lakes, cliffs, roads and urban areas that block the sunlight from native species.

Increases the risk of flooding as its huge leaves can block drains and streams, and it can obstruct access to recreational areas.

In winter, when the plant dies back, its decaying leaves give off a strong, rotting smell.

Action

Remove any flower heads as early as possible as most seeds produced will germinate.

Giant rhubarb can regrow from tiny fragments of stem and root. Please consult a specialist before proceeding with a control program as incorrect action is likely to lead to spread.

Record your observations in the back of this booklet or on www.envirico.com/log. Take photographs if possible.



Rhododendron

[*Rhododendron ponticum*]





Common Invasive Species in Ireland

Identification

- A** A large evergreen shrub with wide spreading, dense, waxy foliage.
- B** Leaves are long (6-12cm), slender and arranged in a spiral at the end of the stem. They are pale underneath with a green upper-surface.
- C** Attractive pink/purple flowers are produced in May or June.
- D** Stems can be up to 15cm in diameter and up to 5m tall. Often twisted.

Threat

Rhododendron ponticum badly affects biodiversity by quickly forming large, dense stands which block out the sunlight from native species. A single *Rhododendron* can produce over 1 million wind-dispersed seeds in a single season. Some of Ireland's most iconic National Parks are under severe stress from this invasive species.

Action

Do not plant as a garden plant.

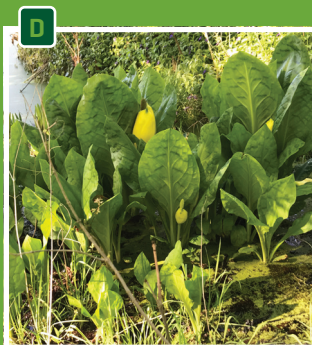
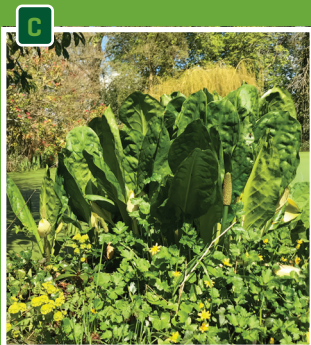
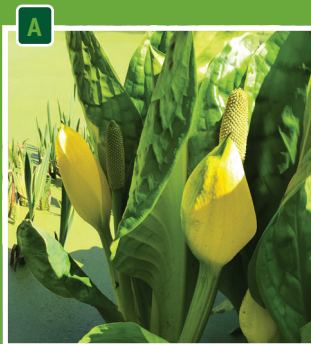
A combination of mechanical and herbicidal control will be necessary, depending on the growth stage of the plant. Large-scale infestations will require a great deal of manpower and a multi-year action plan to bring under control. Control of large *Rhododendron* during March to August may be restricted due to the possibility of nesting birds.

Record your observations in the back of this booklet or on www.envirico.com/log. Take photographs if possible.



American Skunk Cabbage

[Lysichiton americanus]





Common Invasive Species in Ireland

Identification

- A** Flower is a large yellow leaf (up to 45cm) surrounding a green spike.
- B** Leaves are leathery, bright green.
- C** Grows up to 1.5m tall. Commonly found in wet areas such as wetlands and lake/pond margins.
- D** Produces a bad, rotting meat smell from its flower in order to attract flies for pollination.

Threat

American skunk cabbage forms large, dense stands along water bodies or in wetlands that block out the sunlight from native species.

The seeds of this species float, meaning that it can take over river banks or lake sides very quickly.

Action

Do not plant as a garden plant.

Remove any flower heads as early as possible as most seeds produced will germinate.

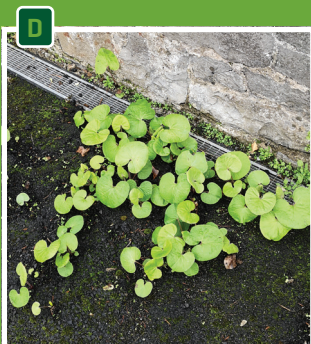
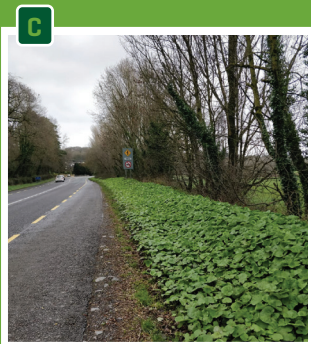
Please consult a specialist before proceeding with a control program as incorrect action is likely to lead to spread.

Record your observations in the back of this booklet or on www.envirico.com/log. Take photographs if possible.



Winter Heliotrope

[Petasites pyrenaicus]





Common Invasive Species in Ireland

Identification

- A** Leaves are kidney or heart shaped and up to 30cm across.
- B** Flowers in Winter (Nov-Feb). Has white/purple flowers that smell strongly of vanilla.
- C** Commonly forms large mats along road verges and river banks.
- D** Winter Heliotrope can grow up through tarmac and other surfaces causing damage.

Threat

Winter heliotrope forms dense stands mainly along verges, riversides and disturbed ground, where it shades out native species.

Can prove problematic on construction sites, as leaving the plant untreated and covering with tarmac or hardcore may lead to future damage of these surfaces.

Action

Herbicide application at the right time of year can prove very effective.

Do not attempt to dig out this species as it has an extensive underground rhizome network. A small fragment of rhizome can grow into a new plant causing spread.

Please consult a specialist before proceeding with a control program as incorrect action is likely to lead to spread.

Record your observations in the back of this booklet or on www.envirico.com/log. Take photographs if possible.

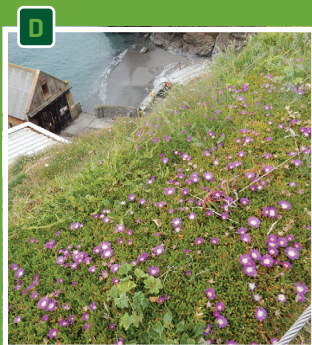




Common Invasive Species in Ireland

Hottentot Fig

AKA Ice Plant [*Carpobrotus edulis*]





Common Invasive Species in Ireland

Identification

- A** Fleshy, green leaves, in opposite pairs. Leaves have a triangular cross-section. Some older leaves may appear reddish.
- B** Solitary yellow or purple flower with a yellow centre (May – July). The flower only opens in sunlight, generally in the afternoon.
- C** Seeds ripen from July – Sep. Fruits are fleshy and turn yellow to red as they mature.
- D** Can also reproduce by producing runners (like a strawberry plant).

Threat

Competes aggressively for space with native plant species. Can severely damage some of our rare coastal habitats.

Can hybridize with other species, which can lead to intensified invasions.

Action

Do not plant this species. Dispose of domestic plant material carefully.

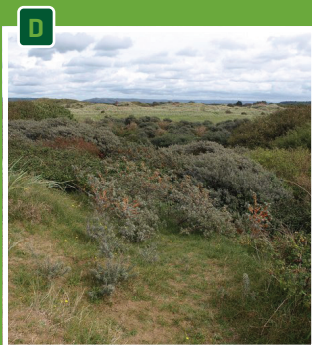
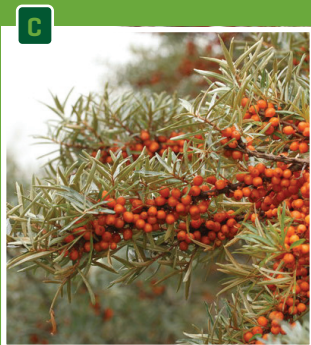
For smaller infestations – careful manual removal or shade out the plants. For largescale infestations – treatment with herbicide.

Record your observations in the back of this booklet or on www.envirico.com/log. Take photographs if possible.



Sea Buckthorn

[Hippophae rhamnoides]





Common Invasive Species in Ireland

Identification

- A** Silver-green shrub with dense, stiff branches and large thorns. Can grow up to 10m tall.
- B** Narrow leaves 3-8cm long. Leaves are pale, silvery-grey underneath with a darker shade on the upper-surface.
- C** Clusters of bright orange berries are produced in Autumn.
- D** Commonly found growing in sand dunes and along sea cliffs.

Threat

Sea buckthorn badly affects our dune habitats by taking over and replacing native dune plant species. A Sea buckthorn infestation also changes the nutrient content of the dune system (enrichment) and the invertebrate species that are common in the area.

Action

Do not plant.

Careful mechanical removal or cutting of large plants and application of herbicide to the cut stump will be necessary. Control of large Sea buckthorn during March to August is restricted as birds may be using the plants for nesting.

Please consult a specialist before proceeding with a control program as incorrect action is likely to lead to spread.

Record your observations in the back of this booklet or on www.envirico.com/log. Take photographs if possible.



Invasive Aquatic Weeds



New Zealand Pigmyweed © Benjamin Blondel.



Common Invasive Species in Ireland

Threat

The aquatic weeds included in this booklet all form thick, dense mats over the surface of the water. This causes the following problems:

- Prevents light from reaching native plants.
- Prevents oxygen from entering the water, which may suffocate fish and other aquatic life.
- Reduces visibility in the water and often results in a bad smell.
- Reduces access for recreational water activities.
- Increases the risk of flooding and reduces water flow.
- Can easily be mistaken for solid ground by children and animals.

Aquatic weeds spread mainly by fragments that are transferred into different areas by boats, uncleaned equipment, and water-birds. Even tiny fragments can grow into new plants and infest a new area.



New Zealand Pigmyweed

AKA Australian Swamp Stonecrop [*Crassula helmsii*]

A



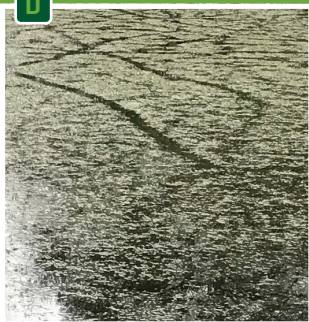
B



C



D





Common Invasive Species in Ireland

Identification

- A** Leaves are 4mm – 2cm long and arranged opposite each other. Stems are round and rigid.
- B** Grows in three different forms: (i) submerged [permanently under water] (ii) emergent [coming out of the water] and (iii) terrestrial [on land]. This picture shows the submerged and emergent forms in summer.
- C** Flowers with 4 white petals may be seen from July to September. This picture shows the terrestrial form.
- D** The submerged form in winter.

Threat

See threats listed on page 23 under Invasive Aquatic Weeds.

Action

Check, clean and disinfect all equipment, boots, wheels and anything that made contact with the water. This will ensure you don't carry fragments or microbes to other potential habitats.

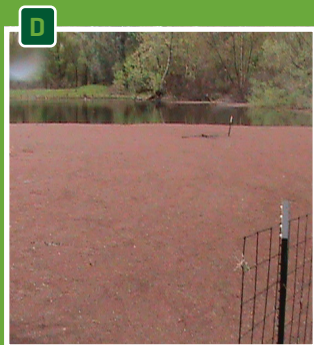
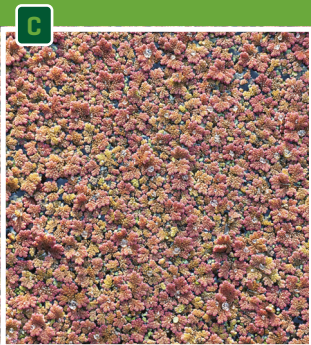
The control of large infestations of aquatic weeds will require the services of an appropriately certified invasive species control company.

Record your observations in the back of this booklet or on www.envirico.com/log. Take photographs if possible.



Water Fern

AKA Fairy Fern [*Azolla filiculoides*]





Common Invasive Species in Ireland

Identification

- A** Distinctive, small, floating plant. The fern-like leaves are bright green with a thin red border. The leaf surface is water-repellent.
- B** Roots hang freely down into the water.
- C, D** Whole leaves become red in winter or when exposed to stress, for example shade or low temperatures.

Threat

See threats listed on page 23 under Invasive Aquatic Weeds.

Action

Check, clean and disinfect all equipment, boots, wheels and anything that made contact with the water. This will ensure you don't carry fragments or microbes to other potential habitats.

The control of large infestations of aquatic weeds will require the services of an appropriately certified invasive species control company.

Record your observations in the back of this booklet or on www.envirico.com/log. Take photographs if possible.



Curly Waterweed

AKA African Curly Waterweed [*Lagarosiphon major*]

A



B



C





Common Invasive Species in Ireland

Identification

- A** Underwater plant with leaves arranged in spirals around the stem.
- B** Leaves are very curled and form a tightly-packed cluster at the top of the stem. The stem is hollow, brittle and can be up to 3m long.
- C** Curly waterweed can be confused with Nuttall's or Canadian waterweed (page 30) but their leaves are arranged in a circle (rather than a spiral) around the stem.

Threat

See threats listed on page 23 under Invasive Aquatic Weeds.

Action

Check, clean and disinfect all equipment, boots, wheels and anything that made contact with the water. This will ensure you don't carry fragments or microbes to other potential habitats.

The control of large infestations of aquatic weeds will require the services of an appropriately certified invasive species control company.

Record your observations in the back of this booklet or on www.envirico.com/log. Take photographs if possible.



Nuttall's Waterweed [*Elodea nuttallii*] and Canadian Waterweed [*Elodea canadensis*]





Common Invasive Species in Ireland

Identification

- A** Underwater plants with thin branching stems up to 3m long.
- B** Leaves of both species are arranged around the stem in circles of three leaves. **Nuttall's waterweed** leaves are thin, less than 2mm wide, and curl back strongly towards the stem.
- C** **Canadian waterweed** leaves are tongue-shaped, broader (up to 4mm) and not as curled.
- D** Flowers with small white petals peek out of the water from May to October. They are held on long, thread like stalks.

Threat

See threats listed on page 23 under Invasive Aquatic Weeds.

Action

Check, clean and disinfect all equipment, boots, wheels and anything that made contact with the water. This will ensure you don't carry fragments or microbes to other potential habitats.

The control of large infestations of aquatic weeds will require the services of an appropriately certified invasive species control company.

Record your observations in the back of this booklet or on www.envirico.com/log. Take photographs if possible.



Parrot's Feather

AKA Milfoil [*Myriophyllum aquaticum*]

A



B





Identification

A Leaves are arranged in circles (whorls) of 4 – 6 leaves, and are grey-green and feathery. Leaves are stiffer above the water's surface. Stems are brittle.

B Grows up to 30cm above the water's surface and 2m below, and can also invade muddy banks. The above-water plant dies back in winter, but it is found submerged throughout the year.

Threat

See threats listed on page 23 under Invasive Aquatic Weeds.

Action

Check, clean and disinfect all equipment, boots, wheels and anything that made contact with the water. This will ensure you don't carry fragments or microbes to other potential habitats.

The control of large infestations of aquatic weeds will require the services of an appropriately certified invasive species control company.

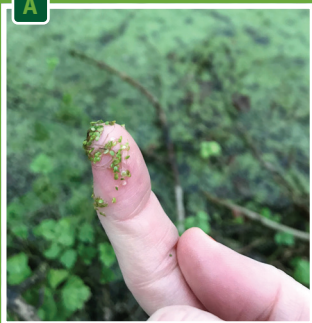
Record your observations in the back of this booklet or on www.envirico.com/log. Take photographs if possible.



Least Duckweed

[Lemna minuta]

A



C



B





Identification

- A** Least duckweed is one of the world's smallest flowering plants. Its leaves are slightly translucent green with a single vein and only 4mm long.
- B** Floating aquatic plant that is found in still or slow-flowing waterbodies. Least duckweed grows in such large numbers that it forms a green cover over the water surface throughout the year.
- C** During summer, Least duckweed numbers multiply rapidly, and it turns into a thick mat covering the surface of the water.

Threat

See threats listed on page 23 under Invasive Aquatic Weeds.

Action

Check, clean and disinfect all equipment, boots, wheels and anything that made contact with the water. This will ensure you don't carry fragments or microbes to other potential habitats.

There is no effective herbicide against this species currently licensed for use in aquatic environments.

The control of large infestations of aquatic weeds will require the services of an appropriately certified invasive species control company.

Record your observations in the back of this booklet or on www.envirico.com/log. Take photographs if possible.



Zebra Mussel

[Dreissena polymorpha]

A



B



C



D





Identification

- A** Small, freshwater mussel with a triangular shape, usually 2 – 5cm long. Zebra mussels often have yellowish and brown zigzag banding but colours can vary a lot.
- B** Attach to hard surfaces by sticky threads. When placed on a flat surface they lie steady rather than rolling around as they have a flat underside.
- C, D** Rarely seen alone, Zebra mussels often occur in huge numbers.

Threat

After one year, a female Zebra mussel can produce up to 1 million eggs. The larvae are free swimming for several weeks, and then settle on any hard surface under water.

In large numbers, they can filter the water so effectively that there is little food left for native aquatic animals.

Can clog intake pipes and completely cover underwater objects, including boat hulls and our native mussel species.

Action

Inspect and clean all equipment like boats, waders, engines etc. with high pressure hot water and/or an appropriate disinfectant before and after use in lakes and waterways. Unclean equipment can result in the spread of invasive species into different catchment areas.

Effective control of a Zebra mussel infestation will require consultation with an appropriately certified invasive species control company.

Record your observations in the back of this booklet or on www.envirico.com/log. Take photographs if possible.



Asian Clam

[Corbicula fluminea]

A



B





Common Invasive Species in Ireland

Identification

- A** Small, freshwater clams from 0.5 to 2.5cm. Shells are olive to brown with deep concentric rings. The color can flake off, leaving white patches on the shell surface.
- B** The inner clam shells range in colour from white to a deep purple.

Threat

Can produce up to 70,000 young per year. They are hermaphrodites (both male and female) so they can reproduce even if only one enters a location.

In Ireland, Asian clams have been recorded in densities of over 10,000 per m². In high numbers, they filter the water so efficiently that native fish and clams may starve due to reduced phytoplankton concentrations.

Action

Inspect and clean all equipment like boats, waders, engines etc. with high pressure hot water and/or an appropriate disinfectant before and after use in lakes and waterways. Unclean equipment can result in the spread of invasive species into different catchment areas.

Effective control of an Asian clam infestation will require consultation with an appropriately certified invasive species control company.

Record your observations in the back of this booklet or on www.envirico.com/log. Take photographs if possible.



Common Invasive Species in Ireland

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Common Invasive Species in Ireland



RECORDING LOG

Location: Date:

Pictures Taken? Yes ☐ No ☐

Name:

Job Title:

Species Name:

Area Covered: m² or ft²

Is the invasive species close to or in any of the following?

Road	<input type="checkbox"/>	River/Stream	<input type="checkbox"/>
Town Centre	<input type="checkbox"/>	Pond	<input type="checkbox"/>
Houses	<input type="checkbox"/>	Sea	<input type="checkbox"/>
Other buildings	<input type="checkbox"/>	Woods	<input type="checkbox"/>
Nature Reserve	<input type="checkbox"/>	Park	<input type="checkbox"/>

Has the invasive species caused any structural damage?

Yes ☐ No ☐

Any Other Comments

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REMEMBER NOT TO SPREAD INVASIVE SPECIES. CLEAN YOURSELF AND YOUR EQUIPMENT IF YOU ENTERED WATER OR DISTURBED AN INVASIVE PLANT.

For free help with identification, advice on appropriate actions, or to discuss treatment options, please contact us on info@envirico.com or 056 7801277.

Sightings can also be logged on our website www.envirico.com/log.



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INSIDE BACK COVER




OUTSIDE BACK COVER