Ymddiriedolaeth Natur Gogledd Cymru
North Wales Wildlife Trust

WaREN
Rhwydwaith Ecolegol Gwydn Cymru
Wales Resilient Ecological Network

WaREN II

Wales Resilient Ecological Network

Invasive Species Toolkit:
Supporting Volunteer Action in Wales

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Front cover: photograph by Jessica Minett – WTSWW/NWWT

This toolkit was written and produced by the North Wales Wildlife Trust (NWWT) and the Wildlife Trust of South and West Wales (WTSWW) for the Wales Resilient Ecological Network (WaREN II) project. We work in partnership with 45 other Wildlife Trusts as part of the largest UK voluntary organisation dedicated to conserving all of the UK's habitats and species, whether in the countryside, towns, or the sea.

The WaREN II project has received funding through the Welsh Government Rural Communities - Rural Development Programme 2014-2020 – Sustainable Management Scheme which is funded by the European Agricultural Fund for Rural Development and the Welsh Government.

About this toolkit

What is this toolkit for?

This toolkit aims to support volunteer action and help you tackle invasive species in Wales. This toolkit should include all the resources you need, including information on best practice management, project planning, biosecurity, and awareness raising.

How do I use it?

There are lots of ways you can help tackle the threats posed by invasive species. This toolkit breaks down this information to help you protect our environment.

What does it include?

- Information on what an invasive species is and why they are a concern
- Details on how to ID and report invasive species in Wales
- Management guides
- Details on how to get involved, volunteer, and help tackle invasive species through Local Action Groups
- An introduction to biosecurity and how you can help stop the spread of invasive species
- Useful links and resources to help raise awareness

What is the Wales Resilient Ecological Network?

The Wales Resilient Ecological Network (WaREN) project is funded by the Welsh Government Sustainable Management Scheme to promote biodiversity and ecological resilience. We are achieving this by developing a collaborative and sustainable approach to tackling invasive species across Wales. WaREN is very grateful for the support of our project partners; check out our webpage to see all of our partners.

Who are the Wildlife Trusts?

As a grassroots movement, the Wildlife Trusts believe we need nature, and it needs us. Together, with members and volunteers, we work to make our local area wilder and make nature a part of life for everyone. Find out more about the work of the Wildlife Trusts in Wales and how you can help wildlife near you here!

Contents

Abbreviations

BIS	Biodiversity Information Service
CABI	Centre for Agriculture and Bioscience International
COSHH	Control of Substances Hazardous to Health
Defra	Department for Environment, Food & Rural Affairs
eDNA	Environmental DNA
GB	Great Britain
GB NNSS	GB Non-Native Species Secretariat
IAS	Invasive Alien Species (i.e., invasive species)
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
INNS	Invasive Non-Native Species (i.e., invasive species)
LAG	Local Action Group
LERC	Local Environmental Record Centre
NBN	National Biodiversity Network
NOBANIS	European Network on Invasive Alien Species
NRW	Natural Resources Wales
NWWT	North Wales Wildlife Trust
PAP	Pathway Action Plan
PCA	Property Care Association
PPE	Personal Protective Equipment
SEWBReC	South East Wales Biodiversity Records Centre
WaREN	Wales Resilient Ecological Network
WBP	Wales Biodiversity Partnership
WTSWW	Wildlife Trust of South and West Wales
WWBIC	West Wales Biodiversity Information Centre

Himalayan balsam *(Impatiens glandulifera)*

ID and Reporting Invasive Species

Signal crayfish *(Pacifastacus leniusculus)*

What are invasive species?

Invasive species are non-native species that have been intentionally or unintentionally introduced beyond their native range by humans.

Importantly, their spread threatens native biological diversity and can cause damage to the environment, the economy, our health, and the way we live.

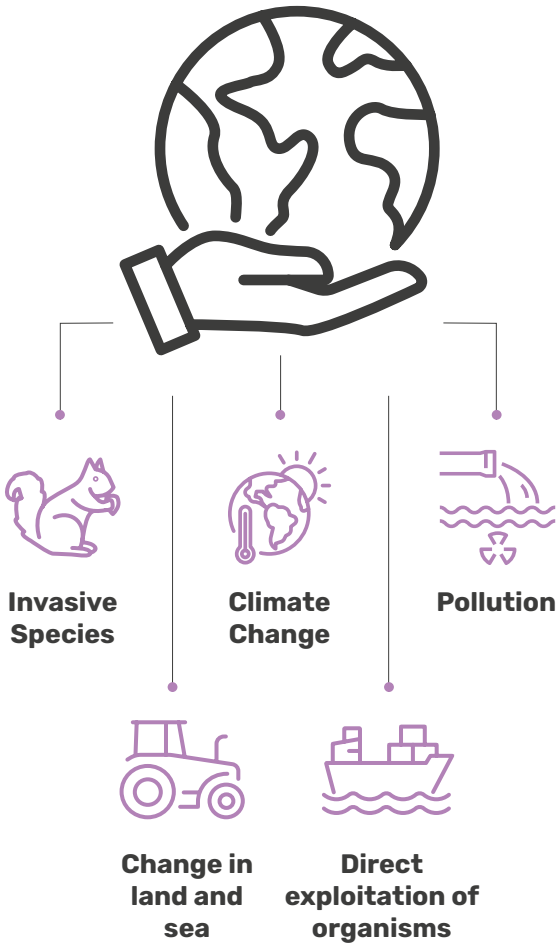
Invasive non-native species (INNS) are also referred to as Invasive Alien Species (IAS). Here we refer to them as **invasive species.**

Why is it important?

We are currently in a global nature and climate crises. Invasive species and have been identified as one of the five main drivers of biodiversity loss globally by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)[1].

They can have many negative impacts on our environment. For example, they can compete for resources such as light and water, predate on native species, carry new diseases, and hybridise with native species.

The economic impact of invasive species has been rapidly rising in the UK. Since 1976 invasive species have been estimated to cost the UK economy between £5.4 and £13.7 billion, approximately £122 million per year! This cost is only likely to increase as more invasive species are introduced[2].



Invasive species have been estimated to cost the UK economy between

£5.4 and **£13.7 billion**

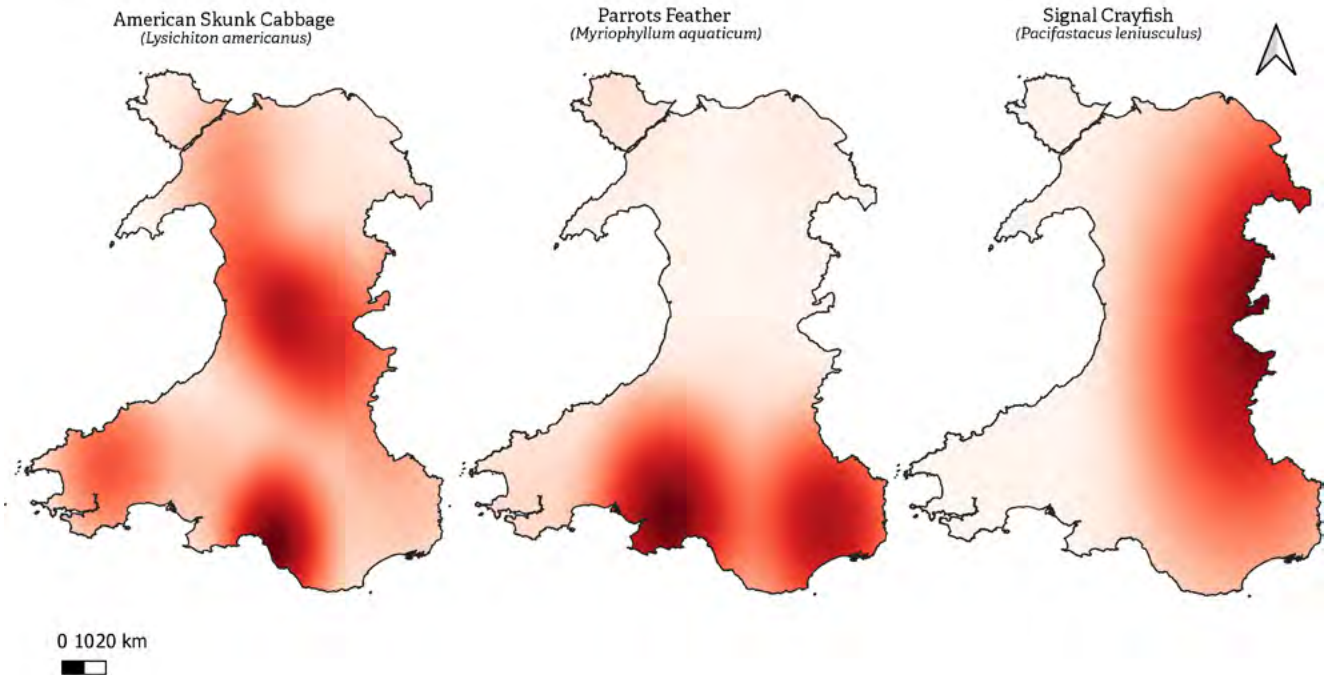
approximately **£122 million** per year!

1 IPBES: Global assessment report on biodiversity and ecosystem services
2 Cuthbert *et al.* (2021) Economic costs of biological invasions in the United Kingdom

Only a small number of non-native species go on to become invasive, threatening our native biodiversity and ecological resilience. Species that are problematic in one area may not be an issue in another. But by tackling these species, we can help improve our ecosystems resilience to climate change and other environmental issues[3]. To find out more about invasive species in Wales, check out the WaREN webpage.

How can you help?

There are lots of things we can all do to help tackle the threats posed by invasive species:



American skunk cabbage *(Lysichiton americanus),* parrots feather *(Myriophyllum aquaticum),* and signal crayfish *(Pacifastacus leniusulus)* heatmaps using NBN data from 2010-22.

3 Lopez *et al.,* (2022) Global environmental changes more frequently offset than intensify detrimental effects of biological invasions

Protect Nature Now: Stop the Spread of Invasive Non-Native Species

We are currently developing a charter to unite stakeholders and partners with a common understanding to support the sustainable management of invasive species. This will allow organisations, groups, and/or businesses to show their commitment to tackling invasive species in Wales. Find out more here.

Welsh Priority Species

The Invasive Priority Species for Action in Wales list can be split into three action categories:

Prevention	Species not currently found in Wales but are likely to arrive.
Management	Species that are present or recently present in low numbers or isolated populations and species where eradication is required and possible to prevent widespread establishment. This includes early detection and rapid response species.
Long-term Management	Species that are established in Wales and where long-term management would be beneficial and feasible.

Invasive Priority Species for Action in Wales are chosen based on horizon scanning, risk analysis (risk assessment and management), and consultation with the Wales Biodiversity Partnership (WBP) INNS Group, GB Non-Native Species Secretariat (GB NNSS), National Resources Wales (NRW) and Welsh Government. Species are included in this list as they are:

- A GB priority species
- An Invasive Alien Species of Union Concern
- Or are a species considered a national priority for Wales.

There are also Priority Marine Invasive Species; these species have been ranked and categorised (High, Medium, and Low Risk) based on their potential impacts and suitable management actions.

Click here to find ID guides and information on all current (2018) Invasive Priority Species for Action in Wales.

You can find ID sheets and additional ID resources for other invasive species on the GB NNSS website.

Information portals:

- GB NNSS information portal – detailed information, including ID, impacts and control methods, for over 300 invasive species in GB
- Wales INNS Portal (NBN) – maps and occurrence records
- UK Plant Health Information Portal (Defra) – an online hub for plant health information, data, and resources.
- Centre for Agriculture and Bioscience International (CABI) - Invasive Species Compendium – detailed coverage of invasive species threatening livelihoods and the environment worldwide

Photo galleries:

- GB NNSS photo gallery
- NOBANIS Alien Species Photo Bank

Grey Squirrel *(Sciurus carolinensis)*

Species Alerts

What is a Species Alert?

Species Alerts are a key part of the early warning and rapid response to a new invasion. They are often used to raise awareness of particular species, inform the public on the action that may be required, and encourage reporting of species sightings.

To check out the current Alert Species and where to report sightings visit GB NNSS website.

Reporting

Recording sightings of invasive species is essential in allowing us to coordinate management and strategically tackle invasive species.

In Wales there are four Local Environmental Record Centres (LERCs):

- South East Wales Biodiversity Records Centre (SEWBReC)
- West Wales Biodiversity Information Centre (WWBIC)
- Biodiversity Information Service (BIS) for Powys and Brecon Beacons National Park
- Cofnod (North Wales)

LOCAL ENVIRONMENTAL RECORDS CENTRES **WALES**

CANOLFANNAU COFNODION AMGYLCHEDDOL LLEOL **CYMRU**

You can report invasive species sightings directly to your nearest LERC or using a variety of apps and online tools, such as iRecord or the LERC Wales app. It is especially important to report Alert Species. Alert Species need to be reported to the relevant body, find out more and where to report them on the GB NNSS website.

Recording management

A partnership project is currently developing a tool called **INNS Mapper** for recording invasive species across GB. Importantly this will enable you to record your management efforts. Find out more here.

Management

© Jess Minett - WaREN

Management of invasive species

Before managing an invasive species, it is really important to think about the following three key points:

Know your species

What are the characteristics, such as life cycle and dispersal methods of your chosen invasive species?

Know your site

What are the characteristics of the habitat or environment – resource availability (e.g., light, water, etc.), level of disturbance, and sources of spread into the area?

Know your neighbour

Who lives near your site? Who might be interested in what you're doing? What stakeholders in your community could support your work?

Your management actions can all be affected and altered by the species, site, and your neighbours.

Invasive species:

Invasive species are non-native species that have been intentionally or unintentionally introduced beyond their native range by humans. They have been identified as one of the five main drivers of biodiversity loss globally by IPBES[1]. Their spread can cause damage to the environment, economy, and our health. Invasive non-native species (INNS) are also referred to as Invasive Alien Species (IAS). Here we refer to them as **invasive species.** Find out more on our webpage.

Zebra mussel *(Dreissena polymorpha)*

Floating pennywort *(Hydrocotyle ranunculoides)*

1 IPBES: Global assessment report on biodiversity and ecosystem services

Good practice management

Here we have linked to good practice management guides for all of the Invasive Priority Species for Action in Wales and Welsh Contingency Plan Species.

Contingency Plan Species

These have been identified by the Welsh Government as invasive species that are not yet present or established in Wales, but whose establishment is considered high risk and could have major impacts. Some species are included in contingency plans as the UK has a statutory obligation to eradicate them, while others are considered Welsh priorities. The management of these species will be undertaken by specific and designated stakeholders.

Contingency plan species have been split into five groups, and general contingency plans outlining what would happen following a report of one of these species in Wales have been produced.

Management of other invasive species

You can find good practice management information on species not on the Invasive Priority Species for Action in Wales list from the below organisations:

- GB NNSS
- CABI
- Invasive Species Northern Ireland

Pathway Action Plans

Pathway Action Plans (PAPs) are plans that aim to prevent or control the risk of particular introduction pathways (i.e., source) by increasing public awareness of invasive species, implementing appropriate border control, and by minimising contamination of goods, commodities, equipment and vehicles.

There are currently six PAPs:

- Hull fouling: including recreational boating
- Horticultural escapes
- Contaminants of ornamental plants
- Ballast water
- Stowaways on fishing equipment
- Zoo or botanic garden escapes

Best practice management videos

External videos of invasive species management:

- Property Care Association (PCA) YouTube channel

Licencing

Licences are required to carry out activities to manage some invasive species.

Licences for managing species of special concern

Under the Invasive Alien Species (Enforcement and Permitting) Order 2019, it is an offence to import, keep, breed, transport (except for eradication), use or exchange, sell, grow, cultivate or permit to reproduce, allow to escape or release into the environment any animals or plants listed as invasive species of special concern. A licence may be required to carry out these activities in Wales. For more information, see the NRW Invasive alien species regulations.

When a licence may not be needed for widely spread species of special concern

A licence is not always needed for general management (including eradication) of widely spread species of special concern, such as Himalayan balsam *(Impatiens glandulifera).* For example, as part of conservation efforts to control a species. You can check and find out more information and apply for a management measures licence on the NRW website.

Licences for species covered by Section 14 of the Wildlife & Countryside Act 1981

To release or allow the escape of any animal or bird that is not ordinarily a resident in and is not a regular visitor to the GB in a wild state, or is included in Part 1A or 1B of Schedule 9 is an offence under Section 14 of the Act. It is also an offence to plant or otherwise cause to grow any plant listed on Part II Schedule 9 of the Act. These activities may only be licenced in certain limited circumstances, e.g., for scientific purposes. Further information can be obtained by contacting NRW Species Permitting Team: specieslicence@naturalresourceswales.gov.uk

Other permissions

Some species of special concern may require additional permissions, such as:

- Ruddy duck *(Oxyura jamaicensis)* – to kill or take ruddy duck or to take or destroy their nests or eggs for the purpose of conserving wild birds, a General license 005 is required from NRW. More information can be found on the NRW website.
- Signal crayfish *(Pacifastacus leniusculus)* – require a trapping authorisation and may also need a management of invasive species license, both of which can be obtained from NRW.

Training and additional resources

For examples of training and additional management resources, please click here.

Ruddy duck *(Oxyura jamaicensis)*

Project Planning

© Zoe Richards Ramblers Cymru

© Wye Valley AONB

Project Planning

Local Action Groups

What is a Local Action Group (LAG), and why are they so important?

A LAG is typically a volunteer-run community group set up with a common interest, such as invasive species. LAGs often carry out work on the ground and are directly involved in the management† of invasive species in their area. LAGs play an incredibly important role in tackling invasive species by being directly involved in management, building relationships and partnerships with local landowners, community groups and volunteers, and by raising awareness of invasive species.

As invasive species continue to spread, the need for LAGs increases. With LAGs, a collaborative Welsh approach to tackle invasive species is possible!

No commitment is too small! For example, you could start by removing invasive plants, e.g., Cotoneaster species. from your garden or pulling Himalayan balsam (Impatiens glandulifera) from an area in your local community. Every effort to tackle invasive species at a small scale in a local community adds up to a national effort and will help protect native biodiversity and ecosystems across Wales. Find your nearest LAG on our webpage. If you are interested in setting-up a LAG in your area find out how in the rest of this section.

Invasive species:

Invasive species are non-native species that have been intentionally or unintentionally introduced beyond their native range by humans. They have been identified as one of the five main drivers of biodiversity loss globally by IPBES[1]. Their spread can cause damage to the environment, economy, and our health. Invasive non-native species (INNS) are also referred to as Invasive Alien Species (IAS). Here we refer to them as **invasive species.** Find out more on our webpage.

Cotoneaster species © GB NNSS

1 IPBES: Global assessment report on biodiversity and ecosystem services

† Here, management is used to collectively refer to monitoring, control, and/or eradication of invasive species.

How to set up a Local Action Group or develop a project

This toolkit contains information, templates, and tips to strategically and effectively set-up a new LAG or invasive species project. Although this guide covers a lot of information, not everything will be covered or required depending on your group.

New LAG set-up checklist:

☐	Decide on a name
☐	Decide on a purpose and set out your aims and objectives
☐	Produce a strategic action plan
☐	Produce governing documents for your group
☐	Advertise your group and find volunteers
☐	Assign your committee and roles for members and volunteers
☐	Get insurance
☐	Does your group need funding?
☐	Assess health and safety and complete risk assessments for all events or activities
☐	Advertise your events or activities, raising awareness of invasive species and the issues they cause
☐	Ensure you have up to date records of any medical issues and emergency contacts for all volunteers participating in activities
☐	Organise meetings to encourage people to get involved and feedback results
☐	Keep volunteers motivated and involved (especially keeping people engaged over the winter when management activities have ceased)
☐	Ensure everyone has the required PPE and equipment
☐	Does anyone in your group require training – First Aid, management, etc.
☐	Talk to your volunteers about the importance of good biosecurity and make sure everyone understands why it is essential when dealing with invasive species

More information on each item in the checklist can be found in the following sections.

Name and committee

Your name is important as it will allow you to promote your group and may be essential for insurance and other legal documents. You can name your group in many ways. It may be beneficial to include your location or species of interest, for example:

- Friends of [Location]
- [Location] Local Action Group
- [Location] Invasive Species Group
- [Location] [Species] Local Action Group

It is also important to consider your group's committee and management roles. At first, you may only need a few committee members, but as your group grows, you may wish to add to the standard committee roles. You could also consider roles for:

- **Health and safety officer –** person in charge of ensuring that health and safety guidelines are followed, and that risk assessments are conducted for any activity or event.
- **Database manager –** someone in charge of compiling and updating a database of invasive species and management actions. This may be beneficial if you are planning on surveying or mapping species or carrying out management.
- **Biosecurity officer –** someone in charge of ensuring that biosecurity protocols and guidelines are followed for any activity or event.

Purpose, aims, and objectives

It is important to think about your group's **purpose** (the reason you wanted to set up a LAG), the area or region that your group will cover (small and local vs a whole catchment), and a schedule for meetings.

Examples of some common purposes:

To tackle invasive species in [area]

To raise awareness of invasive species in [area]

To develop and share information/experience of good practice management

To encourage recording and reporting of invasive species

To provide advice on invasive species management

To encourage the implementation of good biosecurity practice

The next step is to set out your group's **aims** (broad targets that you want to achieve) and **objectives** (how your LAG will achieve its aims). Objectives can be further split into tasks; these tasks can be used as milestones to monitor progress.

To ensure your objectives are achievable, we recommend you follow the SMART methodology[4].

Make your objectives:

S **Specific**

M **Measurable**

A **Achievable**

R **Results-orientated** (realistic and relevant), and

T **Time-bound**

Examples of some common aims and objectives:

To eradicate [species e.g., Himalayan balsam] from [area] in [number] years by annually mapping the presence of [species], identifying priority sites for management, preparing a strategic plan, and implementing management actions

To raise awareness of invasive species by attending and organising events, producing and disseminating information, and encouraging community involvement (including landowners and volunteers)

To provide advice on invasive species by producing and disseminating leaflets and posters, providing training, and attending or organising events

To promote good practice management by identifying and keeping up to date with the best available techniques, alternative methods and through liaising with other groups working on the same species or issues.

4 Setting Goals: SMART (PDF)

Strategic action plan

To maximise your impact and effectiveness it is important to develop a strategic action plan. A good strategic action plan should include the following:

- Timelines and milestones
- Budget and time, e.g., the number of worker days or cost per milestone
- Regular monitoring to check the project is on track
- The capability and flexibility to adjust plans or timelines as required
- Stakeholder engagement
- Making records and data available to other interested groups

Your strategic action plan should contain your aims, objectives, the tasks required to achieve them, and your priorities for action, such as:

- Carrying out a survey
- Practical removal of invasive species
- Monitoring
- Public awareness campaigns
- Training volunteers

You can find a template of a strategic action plan here.

Prioritising actions:

Preference should be put on **prevention;** where this is not possible, priority should be placed on **detection** (through monitoring), followed by **eradication** and **control**[5].

Prioritising projects can be challenging as many factors often require consideration. Projects can be examined and ranked under four categories to help highlight priority and determine where to concentrate efforts. However, prior information on species presence may be required; therefore, surveys will be needed to inform project development.

5 Convention on Biological Diversity (2006) Global Biodiversity Outlook 2

Category 1 - The The current and potential extent of the invasive species on or near the site:

1	Species not yet present but are present at a site nearby, pay particular attention to known invasive species elsewhere in the region
2	Species present on the site as a new population or outliers of larger infestations, especially if rapidly expanding
3	Species present on the site in large infestations that continue to expand
4	Species present on the site in large infestations which are not expanding

Category 2 - The current and potential impacts of the invasive species:

1	Species which alter ecosystem processes, such as fire frequency, sedimentation, or nutrient cycling
2	Species that kill, parasitise, hybridise or outcompete natives or dominate a community
3	Species that prevent or depress recruitment or regeneration, reduce or eliminate resources, or promote populations of invasive species
4	Species that overtake or exclude natives following natural disasters

Category 3 - The value of the habitat and/or area that the invasive species has infested or may infest:

1	Species that impact the most highly valued habitat or area (including areas of rare or highly valued species or vital resources)
2	Species that impact less valued habitats (including areas that are already affected by other invasive species)

Category 4 - The difficulty of controlling the invasive species:

1	Species likely to be eradicated or controlled with available technology and resources which will be replaced by native species
2	Species likely to be controlled but not replaced by native species without a restoration program
3	Species difficult to control and/or whose control will likely have negative impacts on other native species
4	Species unlikely to be controlled and species of decreasing populations, those that only colonise disturbed areas

These four categories are suggestions of how priority should be ranked at a **national scale** but can be adopted at a local level. As a LAG, you are more likely to be directly working towards **eradication** or **control** rather than prevention.

Governing documents

You may need to produce a Terms of Reference, governing document or constitution. This will inform members and the public of the groups aims and how these aims with be reached. You should also clearly set out how the group will be run. Having a Terms of Reference or constitution can be very beneficial, especially if you are considering applying for funding.

The Wales Council for Voluntary Action can help local groups get off the ground and provide advice and assistance in setting-up. We have also produced a template Terms of Reference, constitution, and code of conduct that you can edit for your LAG's own use.

Promoting your group and finding volunteers

To be effective and sustainable you need to promote your group and find volunteers. You should register your LAG on the GB NNSS website. You could also try mapping your community (e.g., Friends of the Earth community mapping exercise, see additional resources doc) to see who you want/need to approach.

Examples of where and how to find volunteers:

- **Talk to friends, other local organisers and groups**
- **Social media:**
  - Create a group on social media and keep it updated
  - Post in local events and community pages, websites, blogs and forums
- **Recreational groups** e.g. angling clubs, gardening groups, Scouts, wildlife recorders, Duke of Edinburgh award
- **Private sector** – local businesses
- **Parish or community councils**
- **Environmental charities** e.g. Wildlife Trusts, etc.
- **Create a flyer or poster** and place around the community
  - Community buildings and centres
  - Local shops and post office
  - Library and surgery
- **Stalls at a local event and show, local presentations**
- **Send out newsletters**
- **Freshers week at universities**

It is important to consider who your target audience is and how to reach them. This will help you attract volunteers. You should also:

- Provide refreshments e.g. tea or coffee and biscuits
- Provide information (e.g. ID guides) and inform volunteers why the work important
- Illustrate successes and benefits e.g. recolonization of native species and wellbeing benefits for volunteers, etc.
- Provide training and the opportunity for volunteers to gain new skills
- Provide transport to the site
- Link to other environmental issues (e.g. litter or climate change)
- Allow volunteers to take on more responsibility e.g. awareness raising, recruiting, mapping, campaigning, etc.
- Gather interest with the help of celebrities

Once you have attracted volunteers to your LAG it is important to retain them, try and:

- Vary tasks and break up the day
- Host an annual gathering to give out updates and thank volunteers
- Keep momentum going by working in new areas and on other invasive species
- Build commitments and promote a community identity, e.g., initiate an adopt an area scheme where individuals or small groups take responsibility for a patch
- Talk to volunteers and encourage them to see the bigger picture, e.g. why is it important to manage the catchment as a whole? What are the benefits of controlling and removing invasive species?

© Rob Jordan 2020VISION

Word cloud of ways to attract and retain volunteers, word cloud created using wordclouds.co.uk

Before volunteers take part in any activities make sure you have a record and are aware of any medical issues and emergency contacts. You can find a template volunteer registration form and database here. Any volunteer information you collect needs to be complaint with the General Data Protection Regulation.

Health and safety

Insurance is very important and will be required if you are planning to conduct any events, activities, or meetings. Having insurance will not only protect your group and volunteers but also show that you act responsibly.

Examples of where you can find insurance for your LAG:

- Keep Wales Tidy offer a 'Community Group Insurance Scheme'. Basic insurance is free to groups formed in the last 12 months.
- Trust for conservation volunteers offers discounted insurance for members underwritten by Zurich.
- Zurich offers a 'charity, club and not-for-profit insurance'.
- Local council, you may also be able to get volunteer insurance through your local council.

While this information should be a useful resource, WaREN cannot endorse and does not provide recommendations on insurance for LAGs.

Risk assessments:

It is essential to consider health and safety issues and complete sufficient risk assessments for your LAG and any event or activity you plan to run. We have produced an example risk assessment containing many possible hazards you may face and information on how these risks could be mitigated. A separate risk assessment will be required for some activities e.g. spraying pesticides. These examples are included as templates only, you will need to assess specific risks to you.

As part of your risk assessment it is also important to consider what **Personal Protective Equipment (PPE)** may be required. This information should be passed along to volunteers, ensuring everyone has the correct and appropriate PPE.

The **welfare facilities** available should be assessed for all events or activities. Where possible locations with good facilities should be chosen. If facilities are not available think about how you could provide alternative resources, e.g. if there are no hand washing facilities make sure you bring wipes or hand sanitiser so everyone can clean their hands before eating and drinking. Some funders or landowners may require a welfare assessment in order to administer funds or allow access onto their land. You can find a template Welfare form here, however, you will need to assess specific requirements.

Biosecurity:

Biosecurity reduces the risk of spreading invasive species. Good biosecurity practices should be included in your risk assessment. Find out more in the biosecurity section this Toolkit.

Before starting anything make sure you complete this health and safety tick list:

Find out more.

☐	Assess all possible health and safety issues
☐	Preform an adequate site- and activity-specific risk assessment (general and pesticide spraying)
☐	Ensure all volunteers have the correct and adequate PPE
☐	Have up to date and comprehensive insurance cover
☐	Ensure you have up to date records of any medical issues and emergency contact details for all volunteers
☐	First aider with adequate equipment
☐	All electrical equipment is Portable Appliance Testing (PAT) tested
☐	Give a safety briefing and explain the work before starting, including the importance of biosecurity when working with invasive species.

Training

You may want or need training for your LAG members, such as:

- Pesticide PA1 and PA6 training
- First Aid

To find out more, check out our training and additional resources document.

© Lesley James

Tips from local action groups

Brian Mahony - The Narth and District Footpath Group

Tackling Himalayan balsam makes a great community nature conservation project. Himalayan balsam is easy to remove and is a satisfying communal task for a team working together. Balsam bashing requires little in the way of specialist equipment - boots and gloves are a must and a slasher can be helpful to find your way in and to chop up the pulled plants.

Always start off with a survey to identify where the balsam is growing and make a map. Think about the number of plants, the ground conditions (making sure it isn't too wet or too steep for volunteers to work safely), find out who owns the land and ask their permission.

Choose a time when the balsam is clearly visible, but before the seed pods start to form, and away you go! Himalayan balsam is an annual plant, so the aim is to prevent it seeding and to reduce the number of plants that will grow in the following year. The results can be startling - a dense mat of many thousands of plants in Year one can be reduced to just a few hundred in Year two and tens of plants in Year three. It's important to stick at it! After the initial first year balsam bash, follow up with a couple more visits to check for stragglers and pull them up too.

Keep a good record of where you have worked and roughly how many plants you have pulled. Use this to plan what follow up sessions are needed in years two, three and beyond. Each plant can produce hundreds of seeds, so follow up is vital to stop balsam re-establishing itself. As the areas are cleared, native plants will return.

Our Himalayan Balsam Project has been a great success. Our roadsides, streams and wetland areas are no longer a sea of pink in summer. The change in our landscapes and habitats is clear to see and very rewarding for all involved!

A simple guide to leading a management day
8 point plan

Equipment check list:

- [ ] Management equipment
- [ ] Alcohol/hand gel wipes
- [ ] Risk assessment
- [ ] Biosecurity kit
- [ ] Register
- [ ] First Aid kit
- [ ] Up to date insurance cover
- [ ] Biscuits

1

Coordinate with other LAGs and projects

Are there any other LAGs in the same area working on the same thing? Do they want to collaborate?

2

Choose your site

Choose a site where your actions will make a difference, make sure you have landowner permission and that area can be safely accessed by volunteers

3

Complete your risk assessment

Complete your risk assessment. Ensure you have identified hazards and how they can be controlled. Share this with volunteers!

4

Plan your day and spread the word

Set a time and date. Advertise your activity. Check you have all the equipment and don't forget your biosecurity kit and biscuits!

5

Lead your team

Set out the structure of the day and let your volunteers know when breaks will be. Communicate why managing invasive species is important.

6

Demonstrate the task

Before starting demonstrate best practice control methods and explain why they are important.

7

Biosecurity

Don't forget to undertake good biosecurity practices and explain why they are so important to prevent spread!

8

Record your activity

Don't forget to record your management activity, upload any sightings to LERC Wales or INNS mapper, and take before and after photos!

Monitoring and management

Surveying

Surveying is straight forward and used to determine what species are present. Surveying is also an essential method for detecting new species and monitoring their spread. Surveys are often the first step toward invasive species control and should, where possible, map distribution and abundance. Surveys should be used to identify the source of spread, particularly for species that can spread downstream, in order to implement strategic management actions, e.g., starting at the upper-most source and working downstream.

Surveys can typically be split into three categories or types:

- **General –** looking for large or clearly visible plants and animals
- **Site-specific –** looking at all species present within a targeted site
- **Species-specific –** looking for a particular species, these surveys are usually undertaken where a clear threat has been identified or prioritised

Asian hornet (Vespa velutina)

You can report your survey data and sightings to your Local Environmental Record Centre (LERC), using the LERC Wales App, online through iRecord, or using INNS mapper. Alert Species need to be reported to the relevant body, find out more and where to report them on the GB NNSS website.

Survey tips:

- Know your species, this will help you ID species and determine if they are new to the area
- Find local experts and see if they are willing to help with surveying or subsequent identification
- Record and report all species sightings
- Take pictures of new sightings, this will aid with identification
- Search for signs of species presence e.g. tracks, droppings or feeding damage
- Survey at appropriate times of year to increase chances of identifying target species
- Implement good biosecurity practices and ensure you are not transporting any invasive species or diseases

Alternative survey methods

Innovative alternative methods are continuously being developed and implemented, such as the use of drones and environmental DNA (eDNA).

Drones have been used to detect the presence of invasive plants and are particularly useful when surveying hard-to-reach or dangerous areas. The Scottish Invasive Species Initiative and the Spey Fisheries Board[6] have used drones to locate hidden patches of giant hogweed and Japanese knotweed. Drone technology is constantly being developed to reduce the time and resources required to detect invasive plant species. For example, the Centre for Ecology and Hydrology Keen AI[7] is developing a new artificial intelligence system that can quickly survey an area and identify invasive species.

© Gemma Rose - NWWT

Environmental DNA (eDNA) is DNA that has been released into the environment by plants and animals through skin, mucus and faeces, or when they die. By collecting and analysing environmental samples (e.g., water or soil) for DNA traces, we can obtain a snapshot of the species present in the area. eDNA can be used to detect the presence of invasive species.

© Freshwater HabitatsTrust

6 Scottish Invasive Species Initiative: Eye in the sky reveals hidden alien invaders
7 UK Centre for Ecology & Hydrology: AI system could identify roadside invasive species

Monitoring

Why is it important to monitor management?

Effective and sustainable management† requires information on where invasive species are found and whether they are being tackled, allowing government agencies (e.g., NRW), projects, organisations, and LAGs to collaborate and avoid duplication of effort.

Monitoring progress also ensures that your project is on track and enables the evaluation of management methods, e.g., confirming the absence of a species following an eradication program. This can be achieved by setting a series of tasks and milestones in your strategic action plan.

How should management be monitored?

The success of management efforts cannot be determined by measuring the amount of work undertaken (although these records can help keep volunteers motivated!). Instead, the number of remaining invasive species and the condition of the ecosystem needs to be measured. Monitoring management success does not have to be complicated and can be easily achieved by annually categorising species abundance. You can find a guide on simply and effectively mapping species and a template for recording your management actions here.

Alpine newt (Ichthyosaura alpestris)

Removing invasive species will not always result in the immediate return of native species and improved target habitat. Sometimes invasive species removal can result in colonisation by other non-native species (which are not invasive) or species which do not constitute the target habitat. This is important to consider when planning your project and monitoring management. Check out our training and additional resources document for more info.

† Here, management is used to collectively refer to monitoring, control, and/or eradication of invasive species.

Recording management

A partnership project is currently developing a tool called **INNS Mapper** for recording invasive species across GB. Importantly this will enable you to record your management efforts and see the management efforts of others. Find out more here.

Management information

There are three broad management options. The most desirable being **eradication,** although it is often not feasible. Where eradication is not possible, you should aim to **contain** the species or implement **control** measures.

To successfully and effectively control an invasive species you must choose the most appropriate method and carry out management at the most suitable time of year and life stage. Management methods can typically be split into five categories:

Rust fungus biocontrol of Himalayan balsam *(Impatiens glandulifera)* © NWWT

Manual or Mechanical	**Plants –** e.g., uprooting, cutting, pulling, raking and excavation **Animals –** e.g., trapping, shooting, and seine netting or electrofishing for fish
Chemical	Using specific chemicals e.g. herbicides and insecticides to kill invasive species **Plants –** e.g., spraying, stem injections or applying a herbicide through a spot-on treatment **Animals –** e.g., bait stations
Biological	Using pests, disease or predators from the native range of an invasive species as an eradication or control method **Plants –** e.g., rust fungus for control of Himalayan balsam
Natural	Using natural predators to weaken an invasive species and preventing it from becoming a problem **Plants –** e.g., grazing
Environmental	Altering or manipulating the environment so that a habitat or ecosystem is more resilient and invasive species are less likely to colonise and/or spread. e.g., through changes in water velocity

Species specific management options can be found in the Management section of this Invasive Species Toolkit.

Funding

Although not essential you may want to apply for funding to help run your LAG or project. For example, you may require funding to purchase insurance, equipment or to conduct training.

Where to find funding?

We have produced a funding database that contains information on many different funding bodies and grants. You may also find funding opportunities through:

- Local Authorities – funding community projects
- Community Foundation Wales
- Funds Online
- GrantScape

and many more.

It is important to keep in mind that your funding may come from something other than a bid aimed specifically at invasive species. Keep an eye out for anything related to (but not limited to) ecological resilience, global change, increasing biodiversity and community engagement.

You may also be able to get some money from donations or your local community. If you are conducting management actions on private land, consider asking them for a donation to help pay for equipment or refreshments. You may also be able to get in-kind donations from the local- or community-council. For example, could you ask the council to provide equipment, training, or contractor hours?

© Andy Morris

National plans and strategies

When establishing your LAG or applying for funding, it is important to link with local and national priorities. There are a number of GB and Welsh plans or strategies that involve management of invasive species, such as:

Welsh strategies:

State of Natural Resources Report (SoNaRR) for Wales 2020

- Illustrates the key challenges, priorities and opportunities for sustainable management of natural resources

Welsh Government tree health strategy

- Tree health strategy for woodlands in Wales

Woodlands for Wales

- Welsh Government strategy for woodlands and trees

Strategies for Great Britain:

The Great Britain Invasive Non-Native Species Strategy (2023 – 2030)

- Sets out the key aims and actions needed to develop a coordinated approach to addressing the threats caused by invasive species

Nature 2000 thematic action plans for invasive species and pathogens

- Identifies they key challenges facing protected sites, species and habitats, and determines the actions required, costs and funding opportunities to address them

Plant biosecurity strategy for Great Britain (2023 to 2028)

- GB strategy towards plant biosecurity and to protect the health of our plants and trees.

Local plans and strategies

Many Local Authorities also have their own invasive species strategy or strategies that involve invasive species management(*), please contact your Local Authority for more info.

Anglesey

- *Anglesey and Gwynedd joint local development plan

Blaenau Gwent

- *Biodiversity and ecosystem resilience forward plan 2019-2022 and local biodiversity action plan 2015

Bridgend

- *Biodiversity and ecosystem resilience forward plan 2018-2022, local biodiversity action plan and technical report

Caerphilly

- *Biodiversity action plan for Caerphilly County Borough: overview and habitat statement

Cardiff

- *Managing biodiversity and natural environment in Cardiff

Carmarthenshire

- Carmarthenshire nature recovery plan: plan for invasive non-native species is in draft

Ceredigion

- *Local biodiversity action plan

Conwy

- *Conwy Local development plan 2007-2022

Denbighshire

- *Biodiversity duty delivery plan and Protected species in Denbighshire

Flintshire

- Injurious weed and INNS
- *Biodiversity and ecosystem resilience duty delivery plan and Supporting nature in Flintshire

Gwynedd

- Invasive plants action plan
- *Anglesey and Gwynedd joint local development plan, Biodiversity duty plan 2017-2019 and Snowdonia local biodiversity action plan

Merthyr Tydfil

- *Supplementary planning guidance note 5, Action for wildlife in Merthyr Tydfil and Nature recovery action plan for the Brecon Beacons National Park 2019-2024

Monmouthshire

- *Habitat regulation assessment of the Monmouthshire replacement local development plan, Monmouthshire local biodiversity action plan and Monmouthshire public rights of way biodiversity action plan

Neath Port Talbot

- *Biodiversity duty plan (2017) implementation report

Newport

- Invasive non-native species policy and action plan
- *The biodiversity and resilience of ecosystems duty report 2019 and Local biodiversity action plan

Pembrokeshire

- Invasive non-native species action plan
- *Nature recovery action plan for Pembrokeshire Part 1

Powys

- Alien plant species action plan
- Part II-E the management of invasive species
- *Powys local biodiversity partnership: LBAP review and Powys local development plan (2011-26)

Rhondda Cynon Taf

- *Action for nature 2008, Habitat regulations assessment of the Torfaen replacement local development plan, and Action for nature 2008

Swansea

- *Local biodiversity action plan

Torfaen

- *Habitat regulations assessment of the Torfaen replacement local development plan

Vale of Glamorgan

- *Local development plan 2011-2026, and Biodiversity forward plan

Wrexham

These are only examples of national and local plans and strategies to consider, there are also local wellbeing plans and NRW Area Statements.

Biosecurity

© NWWT

Biosecurity

What is biosecurity?

Biosecurity is the term given to any protection or precautionary steps to reduce the introduction and spread of invasive species (and other harmful organisms e.g., diseases). Biosecurity can take many forms but typically involves simple practices such as cleaning equipment, vehicles, and footwear between sites to reduce the transfer of invasive species.

Why is biosecurity important?

With increasing global trade and movement, the risk of invasive species introduction, spread and their threat to natural resources is increasing.

Between 1976 and 2020, invasive species were estimated to cost the UK between £5.4 - £13.7 billion[2]. In 2010 this cost was estimated to be at least £125 million to Wales alone[8], which is only likely to increase. Biosecurity is an important tool and our first line of defence in preventing their spread. Once introduced, invasive species can be extremely difficult and costly to contain and/or eradicate.

What can we do to be more biosecurity conscious?

Biosecurity is relevant to everything we do, including everyday activities, such as going for a walk or fishing. We can all become more biosecurity conscious by taking small precautions which require very little time and resources, such as cleaning our footwear after a walk. See the risk assessment and biosecurity best practice sections for more information. Biosecurity requires us to all actively think about: how we interact with the natural environment, how we could be unintentionally spreading invasive species, and what we can do to reduce their spread.

Invasive species:

Invasive species are non-native species that have been intentionally or unintentionally introduced beyond their native range by humans. They have been identified as one of the five main drivers of biodiversity loss globally by IPBES[1]. Their spread can cause damage to the environment, economy, and our health. Invasive non-native species (INNS) are also referred to as Invasive Alien Species (IAS). Here we refer to them as **invasive species.** Find out more on our webpage.

Signal crayfish *(Pacifastacus leniusculus)*

1 IPBES: Global assessment report on biodiversity and ecosystem services
2 Cuthbert *et al.* (2021) Economic costs of biological invasions in the United Kingdom
8 Williams et al (2010) The economic cost of invasive non-native species of Great Britain

Wales Biosecurity Strategy

With the current nature and climate crises affecting Wales, WaREN is drafting a Wales Biosecurity Strategy to help protect Wales' biodiversity and ecosystems from invasive species. The Strategy is aimed at individuals, WaREN stakeholders, and WaREN. It has two aims:

1. Improve the understanding of biosecurity and how it helps to reduce the risk of introducing or spreading invasive species across Wales, and
2. Improve the uptake of biosecurity actions (or measures) across Wales.

Protect Nature Now Charter

Our Wales Biosecurity Strategy will be launched alongside our charter. Our Protect Nature Now charter will be important to help achieve the aims the Strategy by allowing organisations, groups, and/or businesses to show their commitment to tackling invasive species in Wales. Find out more here.

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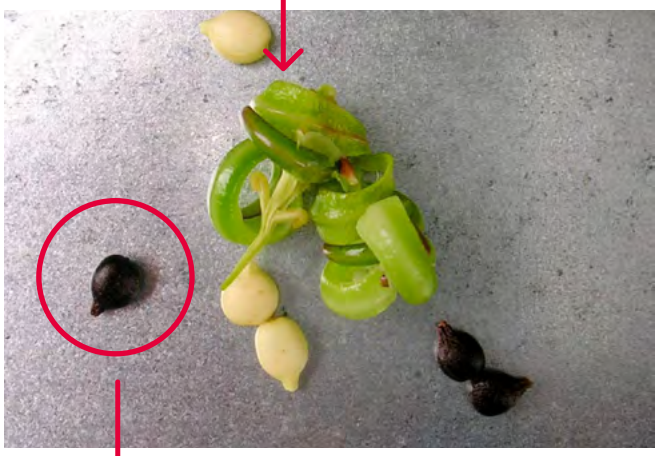

© Snowdonia National Park Authority

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Himalayan balsam *(Impatiens gladulifera)* flowers and seeds and how seeds can get trapped/stuck to the tread of footwear.

How are invasive species spread?

Once present and established in the environment, invasive species can spread naturally or by humans.

Natural dispersal

Natural dispersal within an invasive range occurs through wind, water, and wildlife (e.g., birds dispersing seeds).

Spread by natural means can be difficult to manage, monitor and control.

©Jess Minett - WaREN

Human dispersal

Humans can spread invasive species in many ways, and they often have the potential to transport organisms quicker and further than by natural means.

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Examples of human dispersal of invasive species.

Human dispersal examples:

Leisure
- Angling
- Water sports
- Hiking
- Gardening

Industry
- Forestry
- Agriculture
- Shipping
- Power

Land Management
- Maintenance
- Development
- Remediation

Field Work
- Surveys
- Research
- Nature conservation

Travel
- Overseas trade
- Holidays
- Expeditions

Humans can easily and unintentionally spread invasive species through leisure activities, industry, land management, fieldwork, and travel. Without effective biosecurity, invasive species have numerous chances to 'hitch a lift', increasing their odds of being introduced and spread.

What to look out for?

Invasive species can use a number of vectors (examples below) to spread. Species can be intentionally or unintentionally spread.

Live individuals	Species at early life stages are often easily and unintentionally spread as they can be very small, sometimes even microscopic. Insects can have a long larval stage and be spread easily with goods and materials.
Seeds and spores	Seeds and spores can occur in a range of sizes from millimetres (e.g., Himalayan balsam) to a few centimetres (e.g., giant hogweed). They can easily be spread in contaminated material as well as by attaching to footwear and clothing.
Plant fragments	Many plants are able to regenerate from small fragments. These fragments can be difficult to see (particularly when small) and easily transported on clothing, machinery or in water.
Biofouling hazards	Invasive species can easily attach, colonize and remain undetected on the underside of boats until they are removed from the water.
Microscopic threats	Viruses, bacteria and fungal spores can all be very easily transported as they are invisible to the naked eye.

© Gemma Rose-NWWT

© Snowdonia Park National Authority

© CCW

Examples of vectors by which invasive species can spread, e.g., sale of individuals, seeds, fragments on machinery and biofouling.

Personal biosecurity kit

To start being more biosecurity conscious all you need is a hard brush and water. You can quickly and cheaply put together a biosecurity kit using items readily available from your local supermarket or hardware shop. Ideally a basic biosecurity kit should contain:

- Plastic storage box
- Supply of clean water (5 litres)
- Hard brush
- Hoof pick or boot-tread scraper
- Brush or sponge
- Paper towels or wipes

Make it more comprehensive by adding:

- Disinfectant
- Vapor-proof container for disinfectant
- Eye and hand protection
- Portable sprayer
- Resealable bags
- Duplicate clothing, footwear, and equipment
- Plastic bags with ties for contaminated clothing/ PPE

It is very important to consider your clothing: Can it be easily cleaned? Does it have any materials that invasive species could easily stick to?

Biosecurity considerations

- Understand the risks of your site and activity; completing and implementing a biosecurity risk assessment is a good way to do this
- Plan your visits from least- to most-risky, ensuring that the highest risk site is your last visit of the day
- Try and avoid areas with livestock and known risks
- Keep access to a minimum
- Do not take vehicles on site (where possible), stick to established tracks and park on hard standing
- Always arrive and leave site with clean footwear, equipment and vehicles
- Only remove materials (e.g., soil, organic matter, seeds etc.) from site when absolutely necessary and in a biosecure and legal way
- Always carry your biosecurity kit with you and make use of any biosecurity facilities on site

You can find out more about personal biosecurity here.

Biosecurity risk assessments

Preventing invasive species from being introduced and becoming established in the wild is one of the main focuses of the GB Invasive Non-Native Species Strategy[9]. Biosecurity is our first line of defence in preventing the spread of invasive species. Once they have been introduced and become established they can be extremely costly to contain and/or eradicate.

How to assess biosecurity risks

When you are running an event or activity, it is vital to consider biosecurity and ensure that invasive species are not being unintentionally spread. Biosecurity risk assessments allow you to understand and mitigate the risks and can easily be incorporated into your current risk assessment. See our risk assessment template for an example.

It is important to consider your activity, site, and equipment; this is also true if you are using contractors. You can then work out your risk level and what biosecurity you require:

© NWWT

Low-risk	Activities that are unlikely to encounter invasive species, e.g., surveying an area with no record of invasive species
Medium-risk	Activities with a possible chance of encountering invasive species, e.g., crossing land to access a site
High-risk	Activities that will likely or definitely encounter invasive species, e.g., invasive species survey or implementing management actions

9 The Great Britain Invasive Non-Native Species Strategy, 2015. Keep a look out for the refreshed 2023-2030 Strategy on the GB NNSS website.

Activity assessment:

- What is the activity? Is it high risk? If so, can the procedure be changed to reduce the level of risk?
- How many people are required to perform the activity?
- Can you minimise the time required on site? E.g., can you prepare anything before arriving on site?

Site assessment:

Site	• What hazards are on site? e.g., is there a river? • Can you carry out management or activities in a particular order to reduce risk?
Facilities	• Are there areas of hard standing? • Is there a biosecurity kit or station on site? • Is there clean water available on site?
Are there any known invasive species on site?	• Are there any invasive species present on site or in the surrounding area? If so, are these records historical or recent? • Check existing invasive species records – NBN atlas Wales INNS portal, iRecord, Local Environmental Record Centers.
Is soil or other organic material being moved?	• Do you have a plan for dealing with soil which may contain seeds, rhizomes or other propagules? • Do you have a plan for dealing with waste vegetation? • Organic matter containing invasive species must be treated as contaminated waste and should only be removed from site by license individuals
Access points and routes	• Can access to high-risk areas be avoided? • Do you know the route that offers the lowest risk of spread?
Visits	• Are you planning on visiting multiple sites in a day? If so plan your visits so you go to the highest risk site last.
Season	• Are the risks at your site higher at certain times of the year? If so, can you avoid visiting when invasive species are most likely to spread, e.g., during seeding in summer/ autumn?

Equipment:

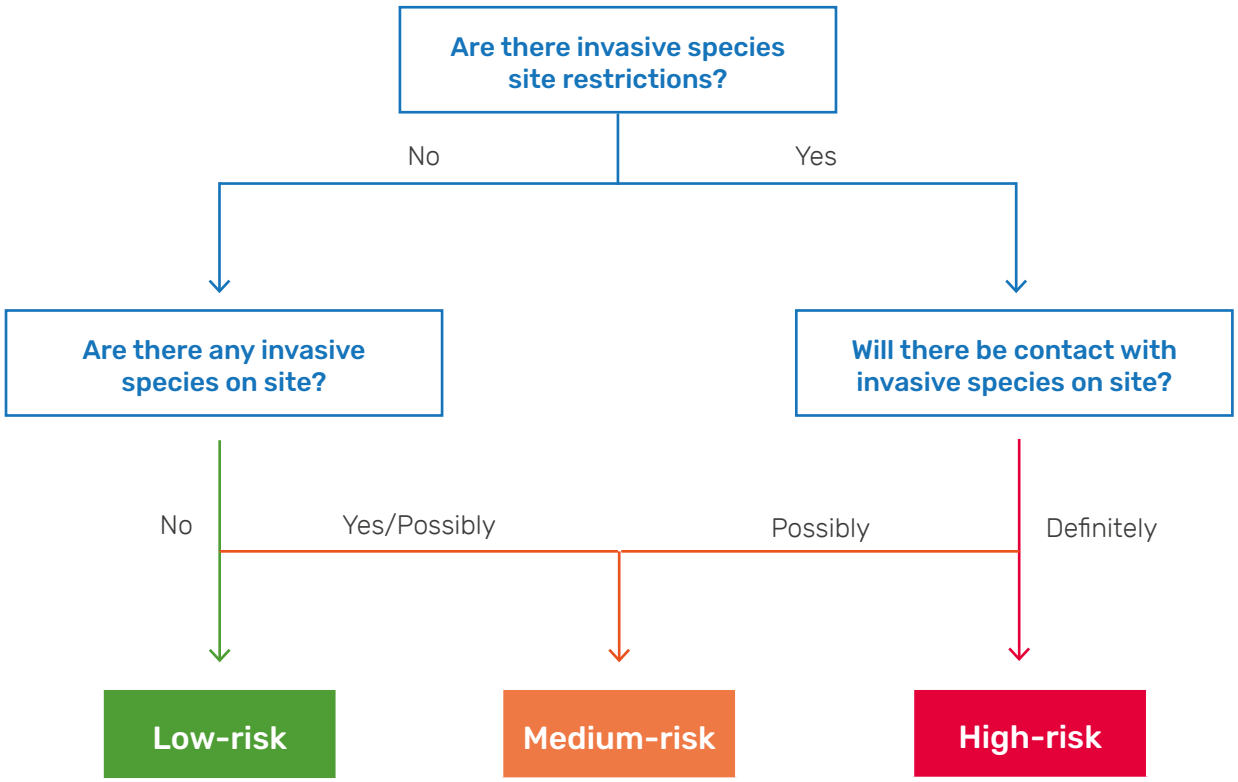
Site	Has your clothing and equipment been thoroughly cleaned and dried before use? Is it easy to clean? Do you require duplicate equipment/clothing to avoid contamination and spread? Do you have the appropriate cleaning equipment/ enough water for the activity/ site? Do you require disinfectant?
Facilities	Is your vehicle clean and free of any mud/plant material? Where are you going to park? Is it on hard standing? Is there a wash down facility available on site?

Biosecurity risk levels

The level of biosecurity required will vary depending on the activity and the site. For high biosecurity risks specific measures may be required.

The site risk level is subject to change with new information, this includes after work has commenced.

Biosecurity measures may require revising at any time, especially if an unknown risk presents itself. You can find out more about the biosecurity procedures in the biosecurity best practice section below.



Biosecurity best practice

Biosecurity best practice refers to the procedures that, when carried out correctly, deliver effective biosecurity. Biosecurity knowledge and understanding is constantly evolving; therefore, you may need to adapt your biosecurity procedures and best practice. Biosecurity measures can be implemented based on your activity and site risk levels. But always make sure to use Check-Clean-Dry methods, even in low-risk areas!

Low-risk

Activities with an unlikely chance of encountering a biosecurity risk. Typically carried out on hard standing or require minimal contact with the environment.

Low-risk biosecurity procedures

- Wear footwear and clothing that can be easily cleaned
- Clean footwear ensuring it is free of soil and organic debris after use
- Only take the required equipment on site and ensure it is free of organic matter
- Ensure you have your personal biosecurity kit (at a minimum you need a hard brush and hoof pick or scraper)
- Only access the areas of the site that are required for the activity

Medium-risk

Activities with a possible chance of encountering a biosecurity risk. Typically, require access through high- or medium-risk routes or are carried out in/or around water, where contact with water is unavoidable.

Medium-risk biosecurity procedures

- Follow low-risk biosecurity procedures
- Consider setting-up a basic biosecurity station on site, allowing everyone to properly clean their footwear before entering and leaving the site
- Clean all equipment thoroughly before leaving the site
- Where possible, do not take vehicles on site. If a vehicle is taken required, clean it before leaving and remove any mud and organic debris, pay close attention to tires and wheel arches
- Plan your activities and visits so you are going to the highest risk area or site last

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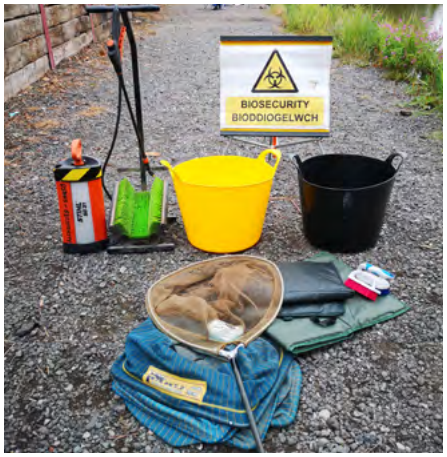

© Ian Doyle Angling Trust - Cheshire Lakes


© NWWT

© Angling Trust - Tamar Lake

Examples of biosecurity stations

High-risk

Activities with a definite chance of encountering a biosecurity risk. Typically require access to areas that contain a biosecurity risk and includes the targeted management of invasive species during high-risk periods, the collection of samples to be taken offsite, or the use of heavy plant or tracked vehicles.

High-risk biosecurity procedures

- Follow low- and medium-risk biosecurity procedures
- Consider setting-up a full biosecurity station including a wash down facility
- Clean footwear and outerwear between sites and spray with disinfectant until it runs off (ensure this is done on a hard standing away from water courses, footwear can be dipped in disinfectant)
- Clean and disinfect all tools and equipment before leaving site
- Keep to established hard tracks
- Remove any mud and organic debris from wheels and wheel arches and spray with disinfectant, where possible avoid vehicle access and park offsite.
- If the site is open to the public consider closing or re-routing footpaths
- Develop an in-depth biosecurity plan

Disinfectant

Disinfectant can be useful if you have come into contact with any pathogens or disease, however, it is not effective against most invasive species.

If you are thinking of using a disinfectant you will require:

- A risk assessment
- Control of Substances Hazardous to Health (COSHH) assessment
- Personal Protection Equipment (PPE) – eye and hand protection
- You also need to consider disposal

Before applying, any organic debris and mud should be removed. Disinfectants should only be used on flat areas, away from the watercourse, do not allow any disinfectant to wash into surface water drains or springs/wells. Always follow manufacture instructions.

You can find out more about disinfectants approved for use against animal pathogens in the UK from Defra

Hot water

Submerging equipment and clothing in hot water (>40°C) for 15 minutes is effective at killing invasive plants and invertebrates, including Australian swamp-stonecrop (Crassula helmsii) and killer shrimp (Dikerogammarus villosus).

While this is unlikely to be practical in many places you could consider washing your clothes at 40°C or above when you return from an invasive species site or activity.

National campaigns

Check-Clean-Dry

The Check-Clean-Dry campaign provides simple yet essential advice to recreational water users and promotes routine cleaning of equipment when moving between sites. Specific biosecurity advice has been developed for anglers, boaters, paddlers, and events. However, the principles behind Check-Clean-Dry can and should be applied to all aspects of biosecurity, regardless of whether you have been in contact with water.

CHECK your equipment, boat, and clothing after leaving the water for any mud, aquatic animals, or plant material. Remove anything you find and leave it on site

CLEAN everything thoroughly as soon as you can, paying attention to areas that are damp or hard to access. Use hot water if possible

DRY everything for as long as you can before using elsewhere. Some invasive plants and animals can survive for over two weeks in damp conditions

Where possible you should leave everything to dry for at least 48hrs in sunlight. Thoroughly drying your clothing and equipment is essential as some species, such as killer shrimp, can survive in damp conditions for weeks. However, drying is not a fool proof method. For example, Australian swamp-stonecrop has been known to survive and come back to life after prolonged dry periods.

© NWWT

STOP THE SPREAD

National campaigns

Be Plant Wise

The Be Plant Wise campaign was set up in 2010 to raise awareness of the detrimental impacts of invasive plants and encourage the proper disposal of plant material. Be Plant Wise has developed advice for garden and aquatic plants and tips for retailers.

choose the right plants for your garden, pond, aquarium, and water features

keep your plants in your garden, don't plant them, or allow them to grow, in the wild

dispose of your unwanted plants, roots, weeds, seeds, and seed heads responsibly

Keep it clean

Keep it Clean is a biosecurity campaign aimed at providing advice for activities and keeping our green spaces free of plant diseases. Keep it clean has developed advice for industry professionals and the general public.

Think kit

always start with clean gear and remove any soil and debris from boots and clothing before leaving the site. Clean and disinfect tools regularly and between sites.

Think transport

avoid driving vehicles off road and remove any build-up of soil and debris. Where possible, park on hard standing. Check vehicles and machinery of soil and debris before allowing access. Where possible clean vehicles and machinery before entering and leaving sites

Think trees

choose planting stock from nurseries with robust biosecurity measures, those free of diseases and invasive species. Monitor new stock for signs of ill health and report suspected sightings of pests and diseases to TreeAlert

Disposal of invasive species

Correctly disposing of invasive species is essential to prevent any further spread. Generally, it is best to dispose of plant material via composting, burning, or burial on-site. Alternatively, plant material can be transported and disposed of at a licenced and permitted landfill site. However, this could result in unintentional spread. Disposal of certain species is regulated, such as those listed as Hazardous Waste e.g., Japanese knotweed (Reynoutria japonica). Always check species-specific guidelines and advice on the correct disposal measures and their regulations can be obtained from your local NRW environmental team.

Failure to dispose of invasive species legally and safely could result in prosecution. Always check guidelines or get advice if you are unsure.

Training and e-learning tools

For examples of training and additional resources on biosecurity please click here.

Biosecurity Citizens Army

The biosecurity citizens army is a North Wales Wildlife Trust pilot project to develop a network of 'biosecurity champions' throughout North Wales. They are currently looking to provide 'champions' from LAG's across North Wales with the skills to train their local community in prevention and biosecurity best practice. If you are interested in getting involved contact the NWWT Biosecurity Officer.

If you based in South or mid-Wales and are interested in learning more about biosecurity please contact us

North Wales Wildlife Trust also provides biosecurity training. Find out by contacting the DINNS team: info@northwaleswildlifetrust.org.uk

Raising Awareness

© Tomos Jones

Awareness raising

The impacts of invasive species will continue to grow unless they are tackled through a sustainable and collaborative approach. **That's why we need your support!** Please help us raise awareness of invasive species and their impacts in Wales to improve public understanding.

Campaigning and key messages

There are a few national campaigns in Wales and GB that aim to raise awareness of invasive species and promote biosecurity. For example, Invasive Species Week, which is held annually in Spring.

Do you enjoy gardening?

Ornamental plants have been introduced for centuries to the delight of gardeners. As well as being **beautiful,** they can support **biodiversity** in gardens and benefit our **mental health.** However, a relatively small number of ornamentals have and continue to escape into the wild where they can become invasive.

Follow the three 'top tips' developed by GB NNSS to **Be Plant Wise** and **Stop the Spread** of invasive species into the wild.

Find out more here.

Invasive species:

Invasive species are non-native species that have been intentionally or unintentionally introduced beyond their native range by humans. They have been identified as one of the five main drivers of biodiversity loss globally by IPBES[2]. Their spread can cause damage to the environment, economy, and our health. Invasive non-native species (INNS) are also referred to as Invasive Alien Species (IAS). Here we refer to them as **invasive species.** Find out more on our webpage.

Sour fig *(Carpobrotus edulis)*

Do you enjoy recreational water activities?

Many invasive species have been introduced to waterbodies, such as lakes and rivers, with some accidentally **escaping** from aquaculture facilities and being spread by recreational water users. Invasive species can cause serious and, in some cases, irreversible environmental problems. They can interfere with the activities you enjoy, such as **fishing and paddling,** limiting access and enjoyment.

'Check Clean Dry' is a biosecurity campaign across GB to protect wildlife and the environment from invasive species. Follow its **three simple steps** and help tackle the threat posed by invasive species.

Find out more here.

Ymledwyr Ecosystem Invaders

Ecosystem Invaders is a campaign run in Wales by the Wales Resilient Ecological Network (WaREN). The campaign aimed to raise awareness of invasive species and their impacts in Wales to improve public understanding.

Find out more about Ecosystem Invaders here. You can also access some of our campaign materials from this toolkit.

Topmouth gudgeon *(Pseudorasbora parva)*

Bilingual explainer videos

We have produced bilingual explainer videos to outline the threats invasive species pose, as well as the key steps that the public can take to prevent their spread:

Film 1:
General Explainer

English film | Welsh film

Film 2:
Gardeners Explainer

English film | Welsh film

Film 3:
Recreational Water Users Explainer

English film | Welsh film

Bilingual leaflets

We have also produced bilingual leaflets to explain how gardeners, recreational water users, and the general public can help tackle invasive species.

Leaflet 1:
General Leaflet

Download here

Leaflet 2:
Gardeners Leaflet

Download here

Leaflet 3:
Recreational Water Users Leaflet

Download here

Let's tackle invasive species in Wales!

‘Gwnewch y pethau bychain’

- Dewi Sant

‘Do the little things’

- Saint David

As Saint David suggested, no commitment is too small. All of the little things we do to help tackle invasive species add up but most importantly, make sure you have fun!

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Ymddiriedolaeth Natur
Gogledd Cymru
North Wales
Wildlife Trust

WaREN
Rhwydwaith Ecolegol Gwydn Cymru
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WaREN webpage