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RHOSDDU INDUSTRIAL ESTATE

Biosecurity Risk Assessment

for

Azzurri Architects

June 2024

3301/11

RML

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M O O R E H E A D & L A I N G L T D
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CONTENTS

Page no.

1 INTRODUCTION 1

1.1 Scope of commission 1

1.2 Presence of Invasive non-native species and diseases 1

1.3 Potential risks 2

2 LEGISLATION AND PLANNING POLICIES 3

2.1 Relevant legislation 3

2.2 The Invasive Alien Species (Enforcement and Permitting) Order 2019 4

2.3 The Great Britain Invasive Non-Native Species Strategy 2023-2030 4

3 BIOSECURITY MEASURES 5

3.1 Biosecurity best practice 5

4 INNS AND DISEASE IDENTIFIED IN THE PEA AND AS NOTED IN CONDITION 11 6

4.1 Chytridiomycosis (Chytrid) 6

4.2 Japanese knotweed 6

5 RECOMMENDATIONS FOR CONTROL AND MANAGEMENT OF INNS IDENTIFIED IN PEA AND CONDITION 11 8

5.1 Japanese knotweed 8

5.2 Prior to the commencement of works on site 8

5.3 Treatment of Japanese knotweed 9

6 GENERAL INVASIVE SPECES CONTROL AND MANAGEMENT 13

6.1 Control and eradication 13

6.2 Risks - operational 13

6.3 Control methods – construction and site clearance 13

6.4 Control methods – operation 14

6.5 Roles and responsibilities 15

List of Tables

Table 1. Roles and responsibilities 15

Appendices

Appendix A: WCA Schedule 9

Appendix B: ARC Advice Note 4

Appendix C: Japanese Knotweed ID Sheet

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Executive Summary

Richards, Moorehead & Laing Ltd (RML) were commissioned by Azzurri Architects ('the Client') to prepare a Biosecurity Risk Assessment and Method Statement to discharge a Condition set in planning permission obtained from Wrexham Conty Borough Council (WCBC), planning reference GWE P/2023/0400.

The proposals for the site are for the development to provide industrial units and associate parking at the Rhosddu Industrial Estate.

Surveys conducted at the site in support of the planning submission did not identify any Invasive Non-Native Species (INNS) onsite but did identify Japanese Knotweed *Reynoutria japonica* growing in a line of trees adjacent to the Rhosddu Insdustrial Estate. There are no ponds on site and the closest was highlighted as being 130m to the northwest.

This Biosecurity Risk Assessment and Method Statement has been produced to consider the invasive non-native species and specific diseases (e.g Chytrid) which could or do occur on or adjacent to the site and the measures to be adopted to prevent their introduction or being spread from the site during site clearance and construction.

The potential risk of the spread of amphibian disease (Chytrid) to or from the site is considered be very low, to absent, though precautionary measures are provided.

Japanese knotweed has not been recorded within the site but has been noted within a tree line approximately 270 m from the site.

1 INTRODUCTION

1.1 Scope of commission

1.1.1 Richards, Moorehead & Laing Ltd (RML) were commissioned by Azzurri Architects ('the Client') to prepare a Biosecurity Risk Assessment and Method Statement to discharge a Condition set in planning permission obtained from Wrexham Conty Borough Council (WCBC), planning reference GWE P/2023/0400.

1.1.2 Condition 11 of the aforementioned planning permission states:

> *'No development, including site clearance, shall commence until a Biosecurity Risk Assessment, and Method Statement that considers invasive non-native species and specific disease (e.g. Chytrid) has been submitted to an approved in writing by the LPA'*.

1.2 Presence of Invasive non-native species and diseases

1.2.1 The site is located within an existing industrial estate in Gwersyllt, Wrexham, LL11 4YL.

1.2.2 The site has been subject to a Preliminary Ecological Appraisal (PEA) in November 2023 (by Arbtech Consulting Ltd)[1]. The PEA did not find any Invasive Non-Native Species (INNS) onsite but did identify Japanese Knotweed *Reynoutria japonica* growing in a line of trees located off site, adjacent to the Rhosddu Insdustrial Estate at SJ 32593 52528. When input into grid reference finder, this is circa 275m from the site.

1.2.3 The PEA also identified that there are no ponds on site and the closest was highlighted as being 130m to the northwest. This pond was subject to a Habitat Suitability Index (HSI) with a score of 0.46 indicating 'Poor' suitability for Great Crested Newt (GCN). A Great Crested Newt Non-Licence Mitigation Plan has been

[1] Sibley, J (06/12/2023) Preliminary Ecological Appraisal Rhosddu Industrial Estate, Main Rd, Old Rhosrobin, Gwersyllt, Wrexham, LL11 4YL LVW Group

developed for the site (Arbtech Consulting Ltd)[2], though there is no method of the risk, or the potential risk of the spread of amphibian disease (Chytrid) to or from the site is considered to be very low, to absent.

1.3 Potential risks

1.3.1 The potential risks to the associated scheme, but not limited to, are:

- disturbance of made ground that may contain dormant rhizome
- import of contaminated material
- subsequent spreading/disposal of contaminated material
- cost of treatment and residual effects, and
- spread of disease into the site

[2] MacKenzie, R, (29/02/2024) Great Crested Newt Non-Licence Mitigation Plan Rhosddu Industrial Estate, Main Rd, Old Rhosrobin, Gwersyllt, Wrexham, LL11 4YL LVW Group

2 LEGISLATION AND PLANNING POLICIES

2.1 Relevant legislation

2.1.1 Certain habitats and species are subject to protection as laid out in the Wildlife and Countryside Act 1981 (as amended)[3] and/or the Conservation of Habitat and Species Regulations 2017 (the 2017 Regulations)[4] as amended or by their own separate protection, for example, the Badgers Act 1991[5] .

2.1.2 Schedule 9 of the Wildlife and Countryside Act lists non-native species that are already established in the wild, but which continue to pose a conservation threat to native biodiversity and habitats, such that further releases should be regulated. Section 23 of the Infrastructure Act 2015[6] amended the Wildlife and Countryside Act 1981 by inserting a new Schedule 9A to introduce a statutory regime of species control agreements and orders to ensure that, in appropriate circumstances, landowners take action on invasive non-native species and formerly resident native species or permit others to enter the land and carry out those operations, to prevent their establishment and spread. The environmental authorities with the powers to make species control agreements or orders in Wales are the Welsh Ministers and Natural Resources Wales.

2.1.3 A species is 'non-native' if it is listed in Part 1 or 2 of Schedule 9, of Section 14 of the Wildlife & Countryside Act 1981 (as amended) or, in the case of a species of animal, it is a species whose natural range does not include any part of Great Britain, and which has been introduced into Great Britain or is present in Great Britain because of other human activity. A list of species is included in **Appendix A.**

[3] Accessed at https://www.legislation.gov.uk/ukpga/1981/69
[4] Accessed at https://www.legislation.gov.uk/uksi/2017/1012/contents/made
[5] Accessed at https://www.legislation.gov.uk/ukpga/1991/36/enacted
[6] Accessed at https://www.legislation.gov.uk/ukpga/2015/7/section/24/enacted

2.2 The Invasive Alien Species (Enforcement and Permitting) Order 2019[7]

2.2.1 The Invasive Alien Species (Enforcement and Permitting) Order 2019 came into force on 1st October 2019. This Order allows for the enforcement of Regulation (EU) No. 1143/2014 on the prevention and management of the introduction and spread of invasive alien species in England and Wales including the relevant licences, permits and rules for keeping invasive alien species.

2.3 The Great Britain Invasive Non-Native Species Strategy 2023-2030[8]

2.3.1 The Great Britain (GB) Invasive Non-native Species (INNS) Strategy was first published in 2008 (2008 Strategy) and updated in 2015 (2015 Strategy). This refreshed Strategy sets out an ambitious platform for future work on INNS, taking account of the recommendations of a review undertaken in 2020/21.

2.3.2 The overarching aim of the Strategy is to minimise the risk of introduction and establishment and reduce the negative impacts of INNS in GB, in collaboration with the Statutory Advisors, (NRW in Wales). The Strategy follows an approach, which emphasises prevention, followed by early detection and rapid response, and finally long-term management and control.

[7] Accessed at https://www.legislation.gov.uk/uksi/2019/527/made
[8] Accessed at www.nonnativespecies.org/about/gb-strategy/

3 BIOSECURITY MEASURES

3.1 Biosecurity best practice

3.1.1 Biosecurity measures are the practical steps designed to minimise the risk of introducing or spreading invasive non-native species (INNS), pests and diseases when entering and leaving sites, in particular green areas and agricultural land.

3.1.2 Best practice dictates that disinfectant should be used when working in or near water to prevent the spread of aquatic INNS or diseases. Although the works on this site does not involve works to water bodies, it is included as a precautionary measure and guide based on the highlighted risk by the LPA of the amphibian disease (Chytrid) also we refer you to guidance on the GB Non-Native Species Secretariat (NNSS) website and the "Check-Clean-Dry"[9] campaign.

3.1.3 Such biosecurity measures include but are not limited to:

- Checking all clothing, footwear, vehicle and equipment for visible debris
- Using a stiff brush and water to remove mud and debris
- Using a brush and water to clean equipment, and a water spray to rinse
- Complying with specific site restrictions in the event of any pathogen outbreak
- Leaving mud, plant and animal debris on site
- Emptying buckets on site in the appropriate location. Cleaning equipment should be rinsed out with clean water
- Allow equipment to dry thoroughly between site visits – use drying facilities where available

[9] Accessed at http://www.nonnativespecies.org/what-can-i-do/check-clean-dry/

4 INNS AND DISEASE IDENTIFIED IN THE PEA AND AS NOTED IN CONDITION 11

4.1 Chytridiomycosis (Chytrid)

4.1.1 As stated previously, in Section 1.2.3, the potential risk of the spread of amphibian disease (Chytrid) to or from the site, is considered to be very low, to absent.

4.1.2 Chytrid is an infectious disease caused by one of two fungi[10]. It appears to be a major factor in dramatic amphibian declines in many parts of the world.

4.1.3 In the UK, toads appear to be more susceptible than other species of amphibians.

4.1.4 General guidance for avoiding the spread of Chytrid can be found in **Appendix B**. The main one is to not transfer animals or plants from one pond to another, which will not occur during any site clearance or construction work in relation to the development of this site. No waterbodies or watercourses would be disturbed.

4.2 Japanese knotweed

4.2.1 Japanese knotweed is a vigorous colonist, which unless kept in check spreads rapidly and is extremely difficult to eradicate once established. In the United Kingdom, there is no record to date of viable seeds of Japanese Knotweed; therefore re-generation is by vegetative means, not only via the extensive and rapidly growing rhizome system, but also from fresh stem material. However, with hybridisation between related species of Japanese Knotweed, the probability of viable seeds being produced increases.

4.2.2 The plant produces small white flowers; male and female flowers are found on separate plants (dioecious); they are arranged as elongated clusters, and bloom in late summer. In the United Kingdom only female plants have so far been recorded - female flowers droop, male flowers are erect.

[10] More information here www.gardenwildlifehealth.org/portfolio/amphibian-chytridiomycosis/

4.2.3 The rhizomes (underground stems) have a dark brown 'knotty' appearance and are bright orange inside. The buds, which are formed in autumn, produce rapid growth in the spring this can be up to 1.5m in 3 - 4 weeks, late April, or early May.

4.2.4 The rhizome system may reach a depth of 2 metres (6 feet) and extend up to 7m (23 feet) away from a parent plant. The actual roots are fine, white and thread-like. The dense cover foliage prevents light reaching species trying to survive below the canopy. As the dead stems and old leaves decompose, they form a thick layer of organic material that acts like a mulch and prevents native seeds from germinating.

4.2.5 The GBNNSS provides an ID guide which can be found in **Appendix C**

5 RECOMMENDATIONS FOR CONTROL AND MANAGEMENT OF INNS IDENTIFIED IN PEA AND CONDITION 11

5.1 Japanese knotweed

5.1.1 As stated previously, in Section 1.2.2, this species has not been recorded within the site but has been noted within a tree line approximately 270 m from the site. These measures are provided as a guide. Should the works effect this species, it is advised that consultation is sought with an approved contractor for its removal, who follow the recommended Codes of Practice and are registered with the Invasive Non-Native Specialists Association (INNSA)[11].

5.2 Prior to the commencement of works on site

5.2.1 Contractors would conduct a check prior to site set up to see if Japanese knotweed has colonised the site, if it has, the following measures should be taken:

- Appropriate demarcation and exclusion zones should be set up to ensure that INNS are not inadvertently spread during site clearance and construction. These should be installed with signed 'NO ENTRY'. Entry to these areas shall be restricted to authorised personnel only.
- Establish clean and dirty areas around the identified INNS areas, so that all personnel and equipment can be de-contaminated prior to leaving a dirty area and entering a clean area.
- An induction / toolbox talk should be provided to site personnel with specific reference to the INNS occurring on site.

[11] Home - INNSA

5.3 Treatment of Japanese knotweed

Herbicidal treatment

5.3.1 Herbicidal treatment is widely regarded as the most effective treatment, provided there is green growth on the plant. Herbicide treatment late in the season can be very effective as the plant is at the weakest point in its life cycle and is pulling nutrients back into the rhizome system. Treatment with a herbicide such as Glyphosate based products can be particularly successful as the herbicide is drawn in with the nutrients and is therefore more available to attack the plants rhizome and root system.

5.3.2 Herbicidal treatment is most effective when conducted when the plant is approximately 1m tall and again in September immediately following flowering.

5.3.3 Herbicide can be applied via either foliar sprays, stem injection or through 'weed wiping' where the herbicide mixture is painted onto the plants' leaves. If foliar spraying is used it is important that both sides of the leaves are treated.

5.3.4 Only personnel with a recognised National Proficiency Test Council Certificate of Competence (NPTC). Under the Food and Environment Protection Act (FEPA) 1985, Control of Pesticides Regulations should be allowed to handle and use herbicides and all herbicides should be stored and mixed in a secure contained location.

5.3.5 Herbicidal treatment should continue until the plant has been eradicated, with no new growth evident. It usually takes at least 3 years to treat Japanese knotweed, as such, the area would need to be demarcated, treated and no works in the area could commence until the area is declared free of INNS.

5.3.6 If herbicide is to be used within 5m of a watercourse, an agreement with Natural Resources Wales (NRW) would be required. NRW offer two types of agreement, low risk and higher risk. https://naturalresources.wales/permits-and-permissions/water-discharges-and-septic-tanks/using-herbicides/.

Excavation and on-site burial

5.3.7 Following application of herbicide and sufficient time being allowed for the glyphosate to be transferred into the plant's root system (evident by a yellowing and withering of the plant) active plant growth can be flattened onto a contaminated area.

5.3.8 Prior to the removal of other vegetation, the extents of the Japanese knotweed growth should be fenced and signed.

5.3.9 Care should be taken during the removal of other vegetation to ensure that no active Japanese knotweed growth is removed.

5.3.10 The contaminated material should be excavated to a radius of 5-7m from the outermost plants in the stand and placed into sealed transport vehicles. Care should be taken not to overfill these vehicles and the surface of the materials within the vehicle shall be smoothed flat using the back of the excavator bucket. If vehicles are to travel outside of the confines of the site area, they should be sheeted to prevent contaminated material being windblown.

5.3.11 If it is required to store excavated contaminated materials prior to burial they should be set down on either high-density polyethylene sheeting or onto a geotextile to ensure that no Japanese knotweed rhizomes are transferred into clean material.

5.3.12 All plant and personnel should be cleared of all Japanese knotweed contaminated material by dry brushing, prior to leaving the contaminated area. All contaminated material dragged from the contaminated area should be placed back onto the area.

5.3.13 If it is possible to bury the material on site, and this is considered to be feasible option by an approved contractor, an area should be identified. This area must allow for sufficient burial depth of approximately 2m depth above the buried material (dependent on what is to be planted above). Consider that the geotextile will prevent Japanese knotweed from growing up but will also prevent the roots of other plants

growing down so where areas are to be planted up, this option is unlikely to be feasible.

5.3.14 An area should be excavated of sufficient size to accommodate the excavated material. Bontex SNW70 geotextile should be placed around the edges of the excavation (not the base) with a sufficient overlap to cover the Japanese knotweed contaminated material to be buried.

5.3.15 Once the contaminated material has been placed into the receptor excavation and compacted, a slow-release non-residual granular herbicide can be sprinkled on top. The geotextile should then be wrapped to cover the contaminated material and the excavation backfilled.

5.3.16 The location of the excavation should be surveyed and identified on any drawings for future monitoring.

In-situ encapsulation

5.3.17 This option can be used if excavation is not required at the contaminated area.

5.3.18 The top 150mm of contaminated material is removed using the excavation procedure set out above. This material would contain any bulk of the plant's rhizomes and roots.

5.3.19 The extents of the Japanese knotweed growth should be identified on site and a trench approximately 0.5m wide by 1m deep should be excavated around the area.

5.3.20 The contaminated area should then be covered with Bontex SNW70 geotextile with a 1m return pushed down into the trench.

5.3.21 Once the geotextile has been placed it should be covered with 300mm of graded granular material to prevent the geotextile being punctured.

5.3.22 The material removed from the surface of the area can be shallow buried as set out above or stockpiled outside of the works area and treated with herbicide until the Japanese knotweed has been eradicated.

Observation

5.3.23 This option should be used for areas which are outside the site boundary but poses a risk to spreading into the site, which could be relevant to this site.

5.3.24 Potential areas should be identified, and regularly inspected by an appointed Ecological Clerk of Works (ECoW) or Environmental advisor.

5.3.25 Any spread of Japanese knotweed into the site will be identified, and a treatment plan agreed with an approved contractor and in consultation with NRW.

Removal off site

5.3.26 Any soil that is contaminated by Japanese Knotweed is classed as 'controlled waste' under the Environmental Protection Act 1990. If Japanese knotweed is to be removed off site this material would need to be identified, tested and the results from the waste characterisation shared with the proposed disposal site. The disposal site would need to be made aware that the waste contains Japanese knotweed.

5.3.27 The physical removal of Japanese knotweed rhizome refers to the manual or mechanical separation of Japanese knotweed rhizome from the growing medium for disposal off-site. This method aims to significantly reduce the amount of material taken off site. This system may be suitable for sites which do not have time for longer-term solutions and/or where space is at a premium. This system often utilises bespoke machinery specifically designed for the processing of materials into two or more fractions.

5.3.28 Any waste taken off site would need to be transported by a Registered Waste Carrier. Any vehicles used for transporting Japanese knotweed would need to be thoroughly washed down to clear any debr

6 GENERAL INVASIVE SPECIES CONTROL AND MANAGEMENT

6.1 Control and eradication

6.1.1 This section of the report details general best practice methodologies for the control of INNS.

6.1.2 **Risks – construction and site clearance**

6.1.3 The main potential pathway during construction is from site clearance and the introduction from materials and equipment brought to site.

6.1.4 The control methods are set out in Section 6.3 and 6.4. It applies to all movement of plant, equipment and materials to ensure that the works do not introduce or spread invasive species (non-native or otherwise).

6.2 Risks - operational

6.2.1 In terms of the operation of the site, the only potential pathway is from landscape planting.

6.2.2 Any required control methods are set out in Section 6.4.

6.3 Control methods – construction and site clearance

6.3.1 Before works commence, the contractor's personnel will be provided with a Toolbox Talk on the identification of non-native invasive species. This information will be retained on site notice boards and welfare areas.

6.3.2 The INNS will be demarcated on site by a competent person (e.g. Ecologist) and measures agreed.

6.3.3 The contractor shall inspect all vehicles entering the site to ensure that no rhizomes or other fragments of plant material are adhering. All plant and vehicles previously used in contact with soil shall be washed at the point of last use to remove any plant fragments that may be present.

6.3.4 The contractor shall inspect all plant and vehicles leaving the site to ensure that they are free from soil and rhizomes or fragments of plant material.

6.3.5 The contractor shall ensure that all imported materials shall be free from soil and fine material which could include seeds, and free from unwanted plant species.

6.3.6 All contractors to ensure that boots are kept clean and boot washes are utilised, especially if moving from site to site.

6.3.7 If any soils which are contaminated by invasive non-native plant species do require excavation and disposal, this should be under direction of an ecological watching brief. The material may need to be classified as 'controlled waste' under the Environmental Protection Act 1990 (England, Wales & Scotland)[12], and must be disposed of accordingly. Landfill operators will be contacted before dispatch to ensure that the disposal site is licenced to accept INNS-contaminated soils.

6.4 Control methods – operation

6.4.1 No species listed on Schedule 9 of the Wildlife and Countryside Act (1981) as amended or species listed on the Invasive Alien Species of concern (EU Regulation 1143/2014 on invasive alien species) would be included in the future landscaping of the site. For species listed under the EU Regulations refer to the following link: https://ec.europa.eu/environment/nature/invasivealien/docs/R_2016_1141_Union-list-2019-consolidation.pdf**.**

6.4.2 Any future landscaping will follow the Horticultural Code of Practice available on the GB non-native species secretariat website: https://secure.fera.defra.gov.uk/nonnativespecies/index.cfm?pageid=299

[12] http://www.legislation.gov.uk/ukpga/1990/43/contents

6.5 Roles and responsibilities

6.5.1 Each action in **Table 1** has one named party who is responsible for ensuring that the action is implemented. It is the Contractor's responsibility for ensuring the recommendations and commitments are delivered during construction. Whilst it is the site owner's responsibility for ensuring the recommendations and commitments are delivered during the operation of the site.

Table 1. Roles and responsibilities

Ref No.	Control	Responsibility
1	Toolbox Talk	Contractor/Site Manager/Ecologist
2	Demarcation of INNS on site if any discovered	Contractor/Site Manager/Ecologist
3	Work within site boundary	All site staff
4	Inspection of vehicles entering site	Contractor/Site Manager
5	Inspection of vehicles leaving site	Contractor/Site Manager
6	Inspection of imported materials	Contractor/Site Manager
7	Appropriate excavation and disposal of INNS if discovered on site	Contractor/Site Manager
8	Additional landscaping to not include INNS and to be in accordance with approved planting scheme	Landscape contractors/Site owners
9	Follow Horticulture Code of Practice	Landscape contractors/Site owners

APPENDIX A: WCA SCHEDULE 9

Schedule 9 of the Wildlife and Countryside Act 1981.

Animals and plants to which section 14 applies

Part I
Animals which are established in the wild

Native and former native species are listed at the end of the table.

Common name	Scientific name	England & Wales	Scotland
Bass, Large mouthed Black	*Micropterus salmoides*	✓	✓
Bass, Rock	*Ambloplites rupestris*	✓	✓
Bitterling	*Rhodeus sericeus*	✓	✓
Budgerigar	*Melopsittacus undulatus*		✓
Coypu	*Myocastor coypus*		✓
Crab, Chinese Mitten	*Eriocheir sinensis*	✓	
Crayfish, Noble	*Astacus astacus*	✓	✓
Crayfish, Red Swamp	*Procambarus clarkii*	✓	
Crayfish, Signal	*Pacifastacus leniusculus*	✓	✓
Crayfish, Spiny-cheek	*Orconectes limosus*	✓	
Crayfish, Turkish	*Astacus leptodactylus*	✓	✓
Deer, Chinese Water	*Hydropotes inermis*	✓	
Deer, Mutjac	*Muntiacus reevesi*	✓	✓
Deer, Sika	*Cervus nippon*	✓	✓
Deer, any hybrid of Sika	*Any hybrid of Cervus nippon, Cervus and any hybrid of the genus Cervus*	✓	✓
Dormouse, Fat	*Glis glis*	✓	✓
Duck, Carolina Wood	*Aix sponsa*	✓	✓
Duck, Mandarin	*Aix galericulata*	✓	✓
Duck, Ruddy	*Oxyura jamaicensis*	✓	✓
Flatworm	*Kontikia andersoni*	✓	
Flatworm	*Kontikia ventrolineata*	✓	
Flatworm, Australian	*Australoplana sanguinea*	✓	
Flatworm, New Zealand	*Artiposthia triangulata*	✓	✓
Frog, Edible	*Rana esculenta*	✓	✓
Frog, European Tree (or Common Tree Frog)	*Hyla arborea*	✓	✓
Frog, Marsh	*Rana ridibunda*	✓	✓
Gerbil, Mongolian	*Meriones unguiculatus*		✓
Goose, Bar-headed	*Anser indicus*	✓	
Goose, Barnacle	*Branta leucopsis*	✓	
Goose, Canada	*Branta canadensis*	✓	✓
Goose, Egyptian	*Alopochen aegyptiacus*	✓	✓
Goose, Emperor	*Anser canagicus*	✓	
Goose, Snow	*Anser caerulescens*	✓	
Heron, Night	*Nycticorax nycticorax*	✓	✓

Limpet, Slipper	*Crepidula fornicata*	✓	
Lizard, Common Wall	*Podarcis muralis*	✓	✓
Marmot, Prairie (or Prairie dog)	*Cynomys*	✓	✓
Mink, American	*Mustela vison*	✓	✓
Newt, Alpine	*Triturus alpestris*	✓	✓
Newt, Italian Crested	*Triturus carnifex*	✓	✓
Owl, Eagle	*Bubo bubo*	✓	
Oyster Drill, American	*Urosalpinx cinerea*	✓	
Parakeet, Monk	*Myiopsitta monachus*	✓	
Parakeet, Ring-necked	*Psittacula krameri*	✓	✓
Partridge, Chukar	*Alectoris chukar*	✓	✓
Partridge, Rock	*Alectoris graeca*	✓	✓
Pheasant, Golden	*Chrysolophus pictus*	✓	✓
Pheasant, Lady Amherst's	*Chrysolophus amherstiae*	✓	✓
Pheasant, Reeves'	*Syrmaticus reevesii*	✓	✓
Pheasant, Silver	*Lophura nycthemera*	✓	✓
Pochard, Red-crested	*Netta rufina*	✓	
Porcupine, Crested	*Hystrix cristata*		✓
Porcupine, Himalayan	*Hystrix hodgsonii*		✓
Pumpkinseed (or Sun-fish or Pond-perch)	*Lepomis gibbosus*	✓	✓
Quail, Bobwhite	*Colinus virginianus*		✓
Rat, Black	*Rattus rattus*	✓	✓
Shelduck, Ruddy	*Tadorna ferruginea*	✓	
Snake, Aesculapian	*Elaphe longissima*	✓	✓
Squirrel, Grey	*Sciurus carolinensis*	✓	✓
Swan, Black	*Cygnus atratus*	✓	
Terrapin, European Pond	*Emys orbicularis*	✓	✓
Toad, African Clawed	*Xenopus laevis*	✓	✓
Toad, Midwife	*Alytes obstetricans*	✓	✓
Toad, Yellow-bellied	*Bombina variegata*	✓	✓
Wallaby, Red-necked	*Macropus rufogriseus*	✓	✓
Wels (or European catfish)	*Silurus glanis*	✓	✓
Zander	*Stizostedion lucioperca*	✓	✓

Native and former native species.

Common name	**Scientific name**	**England & Wales**	**Scotland**
Boar, Wild	*Sus scrofa*	✓	
Capercaillie	*Tetrao urogallus*	✓	✓
Chough	*Pyrrhocorax pyrrhocorax*	✓	
Corncrake	*Crex crex*	✓	
Crane, Common	*Grus grus*	✓	
Eagle, White-tailed	*Haliaetus albicilla*	✓	✓
Goshawk	*Accipiter gentilis*	✓	
Kite, Red	*Milvus milvus*	✓	
Owl, Barn	*Tyto alba*	✓	✓

28/06/2010

Part II
Plants

Common name	Scientific name	England & Wales	Scotland
Alexanders, Perfoliate	*Smyrnium perfoliatum*	✓	
Algae, Red	*Grateloupia luxurians*	✓	
Archangel, Variegated Yellow	*Lamiastrum galeobdolon subsp. argentatum*	✓	
Azalea, Yellow	*Rhododendron luteum*	✓	
Balsam, Himalayan	*Impatiens glandulifera*	✓	
Cotoneaster	*Cotoneaster horizontalis*	✓	
Cotoneaster, Entire-leaved	*Cotoneaster integrifolius*	✓	
Cotoneaster, Himalayan	*Cotoneaster simonsii*	✓	
Cotoneaster, Hollyberry	*Cotoneaster bullatus*	✓	
Cotoneaster, Small-leaved	*Cotoneaster microphyllus*	✓	
Creeper, False Virginia	*Parthenocissus inserta*	✓	
Creeper, Virginia	*Parthenocissus quinquefolia*	✓	
Dewplant, Purple	*Disphyma crassifolium*	✓	
False-acacia	*Robinia pseudoacacia*		✓
Fanwort (or Carolina Water-Shield)	*Cabomba caroliniana*	✓	✓
Fern, Water	*Azolla filiculoides*	✓	✓
Fig, Hottentot	*Carpobrotus edulis*	✓	✓
Garlic, Three-cornered	*Allium triquetrum*	✓	
Hogweed, Giant	*Heracleum mantegazzianum*	✓	✓
Hyacinth, Water	*Eichhornia crassipes*	✓	✓
Kelp, Giant	*Macrocystis angustifolia*	✓	✓
Kelp, Giant	*Macrocystis integrifolia*	✓	✓
Kelp, Giant	*Macrocystis laevis*	✓	✓
Kelp, Giant	*Macrocystis pyrifera*	✓	✓
Kelp, Japanese	*Laminaria japonica*	✓	✓
Knotweed, Giant	*Fallopia sachalinensis*	✓	
Knotweed, Hybrid	*Fallopia japonica x Fallopia sachalinensis*	✓	
Knotweed, Japanese	*Fallopia japonica*	✓	
Knotweed, Japanese	*Polygonum cuspidatum*		✓
Leek, Few-flowered	*Allium paradoxum*	✓	✓
Lettuce, water	*Pistia stratiotes*	✓	✓
Montbretia	*Crocosmia x crocosmiiflora*	✓	
Parrot's Feather	*Myriophyllum aquaticum*	✓	
Pennywort, Floating	*Hydrocotyle ranunculoides*	✓	
Potato, Duck	*Sagittaria latifolia*	✓	
Primrose, Floating Water	*Ludwigia peploides*	✓	
Primrose, Water	*Ludwigia grandiflora*	✓	
Primrose, Water	*Ludwigia uruguayensis*	✓	
Rhododendron	*Rhododendron ponticum*	✓	
Rhododendron	*Rhododendron ponticum x*	✓	

	Rhododendron maximum		
Rhubarb, Giant	*Gunnera tinctoria*	✓	
Rose, Japanese	*Rosa rugosa*	✓	
Salvinia, Giant	*Salvinia molesta*	✓	✓
Seafingers, Green	*Codium fragile*	✓	
Seafingers, Green	*Codium fragile tomentosoides*		✓
Seaweed, Californian Red	*Pikea californica*	✓	✓
Seaweed, Hooked Asparagus	*Asparagopsis armata*	✓	✓
Seaweed, Japanese	*Sargassum muticum*	✓	✓
Seaweeds, Laver (except native species	*Porphyra spp (except P. amethystea, P. leucosticte, P. linearis, P. miniata, P. purpurea & P. umbilicalis)*	✓	✓
Shallon	*Gaultheria shallon*		✓
Stonecrop, Australian Swamp (or New Zealand Pigmyweed)	*Crassula helmsii*	✓	✓
Wakame	*Undaria pinnatifida*	✓	✓
Waterweed, Curly	*Lagarosiphon major*	✓	✓
Waterweeds	*All species of the genus Elodea.*	✓	

APPENDIX B: ARC ADVICE NOTE 4

ARG UK
amphibian and reptile conservation
ZSL INSTITUTE OF ZOOLOGY

Amphibian and Reptile Groups of the United Kingdom

www.arc-trust.org **Advice Note 4** www.arguk.org

Amphibian Disease Precautions: A Guide for UK Fieldworkers

Version 2, revised March 2017

Background

Amphibians are one of the most rapidly declining groups of animals globally, and infectious disease is a major cause of these declines in some areas. Fieldworkers have a key role to play in combating this; they can help detect disease, and through good practice they can reduce the risk of introducing and spreading disease.

This note advises field workers and others who may come into contact with amphibians (through ecological survey and monitoring, training, research or education activities) on simple procedures to substantially reduce the risk of introducing and spreading amphibian pathogens. The advice is based on the latest available evidence relating to fungal and viral pathogens, but this should also be effective for many other types of pathogen and may also help reduce the spread of invasive animals and plants.

Three key findings from research underpin the advice in this note: (1) amphibian diseases are frequently found to be spread by human activity, and amphibian fieldworkers therefore have a particular responsibility; (2) amphibian disease emergence is commonly associated with the introduction of non-native species; and (3) signs of infection are not necessarily evident on visual inspection.

Given the alarming situation regarding amphibian diseases overseas, and the poor understanding of disease impacts in the UK, this advice note advocates a precautionary approach to minimise the chance of introducing and spreading amphibian pathogens. Controlling disease outbreaks in the wild is practically impossible except under very particular circumstances, and so prevention is the best strategy. Alongside prevention, this note highlights the importance of reporting signs of infection, so that we can learn more about diseases and their effects and develop an early warning system for detection of novel threats.

Growing numbers of amphibian diseases have been described in recent years. The most notable of these are chytridiomycosis and ranavirus. Chytridiomycosis is caused by two species of microscopic fungi *Batrachochytrium dendrobatidis* ("Bd") and *B. salamandrivorans* ("Bsal"), which are often simply referred to as "chytrid". Chytrid infection has been responsible for mass mortalities of amphibians with declines and extinctions in some species on six continents, including Europe. Ranavirus (ranaviral disease), caused by infection with one of many types of ranavirus, also has a wide global distribution, though it appears to cause population declines less frequently than chytridiomycosis. Other infectious agents, about which much less is known, include herpesvirus and the parasitic infections *Amphibiocystidium* and *Ribeiroia*. It is likely that additional, currently undescribed diseases will emerge in the future.

In the UK, a number of pathogens and infected amphibians have been detected, yet the implications for conservation remain largely unclear. Perhaps the most obvious concern relates to ranavirus. This is now commonly reported from parts of England, and infection can lead to local population declines of 80% in common frogs. Whilst Bd is now known to be widespread in Great Britain, it does not appear to have caused the types of mass die-offs reported overseas. However, the lack of evidence for mass mortalities should not lead to complacency; such events can be difficult to detect even when they are occurring, and in any case it can take many years for the full effects of disease introduction to manifest. Whilst Bsal is known to be present in captive amphibians in the UK, it has not yet been detected in the wild. However, it is believed to be a major potential

threat to newt health should it become established, particularly the great crested newt which is known to be highly susceptible.

General guidance is given here, followed by recommendations for specific activities. The advice may be revised in future in the light of further research findings. Presently there is no evidence to suggest that amphibian diseases found in the UK present a hazard to human health.

General guidance

- Handle amphibians only when necessary.
- If handling amphibians, or if contact with pond water is necessary, wear powder-free disposable vinyl gloves which you rinse before contact with the amphibians. Use vinyl rather than latex or nitrile because the latter two may be harmful to amphibians.
- Use a fresh pair of gloves for each site[1] visited. For higher risk activities, it may be appropriate to change gloves between handling individual amphibians, even within the same site (see below).
- Disinfect survey equipment or containers used to hold amphibians between each site[1] visited (see disinfection procedures below).
- If entering the water, footwear should be washed and disinfected (see disinfection procedures below) immediately after the site visit. If you do not enter the water, there is no need to disinfect footwear unless visiting a high risk site (see guidance on specific activities below).
- Wash all clothing on a 40°C cycle with biological detergent, after exposure to amphibians or pond water. If visiting several sites bring a change of clothes. Use a lower temperature wash if care instructions indicate this may be harmful to your clothing, and take additional precautions such as washing twice or spraying with disinfectant before next use.
- Do not release amphibians anywhere except at the place of capture.
- If travelling by vehicle, park on hard standing (rather than vegetated areas) and walk to the pond.
- Treat dead or sick amphibians as a high infection risk and do not handle unless necessary.

Guidance on specific activities

In addition to the general guidance given above, the following additional precautions are recommended for specific activities, which may carry a higher risk of introducing or spreading disease:

Activity	Additional precautions
Monitoring an amphibian population.	At a site where amphibians are monitored from one year to the next: • Ensure that all surveyors are aware of disease issues and precautions. • Use survey equipment and footwear dedicated solely to the target site. • Store field equipment on site where possible. • Some sites may already have risk assessments in place so it is important to check for these before commencing field work.
Amphibian survey work at several sites. This is most common among ecological consultants surveying sites to inform the planning process.	• Ensure that all field workers are aware of disease issues and precautions. • Disinfect field equipment between sites. • Consider allocating a set of field equipment and footwear to each site within a season, rather than using the same equipment at different sites. • Consider having two sets of field gear, so that one can be in the disinfection and drying process while the other is in use.

[1] Ponds within 1km of each other and not separated by major barriers to dispersal can be considered as a single site. This working guide is equivalent to the distance over which amphibians may disperse and spread pathogens in a single generation.

Translocating (moving) amphibians. This should be avoided where possible, but occasionally it is desirable for conservation, research or mitigation purposes.	In general translocation of amphibians should be avoided. It may be acceptable if: • There is a strong case for the benefits of the translocation; and • There is no satisfactory alternative; and • Rigorous efforts to analyse and minimise disease risks are taken and independently assessed, and any residual risk is outweighed by the benefit of translocation.
Training courses or educational dip-netting for amphibians.	Training and educational work is important and disease risks should not prevent these activities occurring if simple precautionary measures are taken. The following points should be observed: • For training courses, ensure that all participants are aware of disease issues and precautions. • Ensure that all participants thoroughly scrub and disinfect footwear before going on site. • Use equipment (nets, trays and tanks) dedicated to the site only. • Where training or educational work is undertaken at several sites within a season, and the equipment cannot be assigned to a specific site, ensure all equipment is thoroughly disinfected and allowed to dry between sites. • Disposable gloves should be worn by the instructor. • Allow trainees to view amphibians but try to minimise handling as far as possible (realistically, it is impossible to prevent all handling). • Ensure that all participants wash hands thoroughly with soap or hand sanitising gel and water after the visit.[2] Use the event to discourage movements of all life stages of amphibians including spawn, whilst still giving positive messages (e.g. the value of garden ponds).
Fieldwork at infected sites.	Restrict fieldwork to essential activities only (e.g. research to track the progress of infection or to assess amphibian population status). • Use field equipment dedicated to the target site only. • Store field equipment on site where possible. • Keep the number of survey visits to the minimum necessary. • Minimise the number of field workers, and visit no more than one site per day. • Disinfect equipment between individual ponds within the site. • Use a fresh pair of gloves for each amphibian handled (or if that is not feasible, at least every 2-5 individuals), to minimise the chance of amplifying infection levels.
Fieldwork at other high risk sites. These include sites near to an area where disease has been detected or where non-native amphibian species are present.	• Use field equipment dedicated to the target site only. • Store field equipment on site where possible. • Keep the number of survey visits to the minimum necessary. • Minimise the number of field workers, and visit no more than one site per day.

[2] This is also good practice to prevent infection with disease agents that are pathogenic to humans including Weil's disease and tetanus

Fieldwork by persons who keep non-native amphibian species in captivity.	• Implement rigorous barrier methods (gloves, minimal handling, disinfection, change of clothes and footwear, etc.) to minimise the risk of transmitting pathogens from captive stock to wild sites. • Regularly screen captive stock to detect infection. • Do not bring native amphibians into captivity, or release animals that have been in captivity back into the field. • Consider curtailing fieldwork that involves handling amphibians at sites supporting important native populations. • Do not use any equipment in the field that has been previously used in captive facilities, even if it has been cleaned. • If the above points are not feasible, then such persons should consider refraining from undertaking fieldwork at amphibian sites.

Disinfection procedures

Disinfect all field equipment that has come into contact with amphibians or pond water. This includes footwear (boots or waders), pond nets and aquatic trapping equipment such as bottle-traps and canes or the box section of Dewsbury traps. Note: water may be drawn up into canes, and so we recommend that the whole cane is soaked in a disinfectant solution.

To disinfect equipment in the field the following will be required:

- a bucket or washing up bowl
- a brush
- disinfectant (bleach[3] or Virkon[4])
- disposable or washing up gloves (to wear while disinfecting)
- a source, or container, of clean water
- bin bags for waste and wrapping field equipment.

Disinfection solutions

Bleach (diluted with water to produce a 4% solution).
Virkon (10mg/ml, as per supplier's instructions).

Virkon-S (licensed for veterinary/animal livestock applications but not human use) can also be purchased in tablet form. One 5mg tablet can be dissolved in 500ml of water.

Pond water can be used to make up solutions so long as it contains little or no organic matter (as this reduces disinfectant efficacy).

1. Use brush to scrub off any debris, plant fragments, mud etc.
2. Rinse with water (pond water will suffice).
3. Soak in bleach solution for at least 5 minutes, or Virkon for at least one minute (5 minutes where Bsal is suspected).
4. Rinse with clean water.
5. If possible, allow to dry for before next use.
6. Keep field equipment inside plastic bags during transit and storage (after thorough drying) to reduce the chance of transmitting pathogens.

Dispose of disinfectant solutions following the supplier's instructions. Unless otherwise stated, it is recommended that used disinfectant solutions should be poured directly into a drain connected to the sewerage system[5] and flushed with clean water (note that not all drains are connected to sewerage systems), or disposed of as hazardous waste. Used gloves should be disposed of as domestic rubbish. Fabrics including clothes worn while

[3] Sodium hypochlorite is the active ingredient in household bleach, and concentrations vary between brands typically from 8-15%. It is important you check the concentration of the brand you are using, and adjust your dilution rate to arrive at 4%.

[4] Virkon is a disinfectant sold as a powder or in tablet form and used in large animal husbandry (readily available online and at farm supply stores or outlets aimed at horse owners).

[5] Surface water drains, including road and car park drains, often discharge into rivers or the sea without treatment, so only dispose of disinfectant in this way if you are sure the drain is connected to the foul sewer. The sewerage undertaker – usually the water company – maintains a map of public sewers.

doing amphibian fieldwork can be washed on a 40°C cycle with biological detergent (see comments above regarding clothing requiring colder washes).

Investigating dead amphibians

The *Garden Wildlife Health* project has been established to investigate disease in a range of native wildlife species in Great Britain, and in some cases the project vets, based at the Wildlife Epidemiology Unit at the Institute of Zoology, may be able to carry out post mortem examinations on dead amphibians.

Reports of sick and dead amphibians are valuable to help gather information about the diseases that affect native species and to monitor their impact. Photographs of affected animals and the site in which they are found can be very helpful, along with information on the potential disease symptoms observed. Reports of amphibian ill health from all sites are welcome, and are not limited to gardens. Please report sightings via the project web portal www.gardenwildlifehealth.org.

When freshly dead amphibian carcasses in a good state of preservation are available, it may be possible to test them for disease. Where appropriate, arrangements for submission are made with the GWH veterinary surgeons and all costs covered by the project. If you are concerned about a sick or injured amphibian, please contact your local veterinary surgeon, or experienced wildlife rescue centre for guidance. Disease factsheets on the common conditions affecting British amphibians are available at www.gardenwildlifehealth.org.

Further information

Amphibian Ark www.amphibianark.org/the-crisis/chytrid-fungus.

Amphibian and Reptile Conservation, www.arc-trust.org/habitat-management-handbooks

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Zoological Society of London (Garden Wildlife Health project) www.gardenwildlifehealth.org

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Publication date: March 2017.

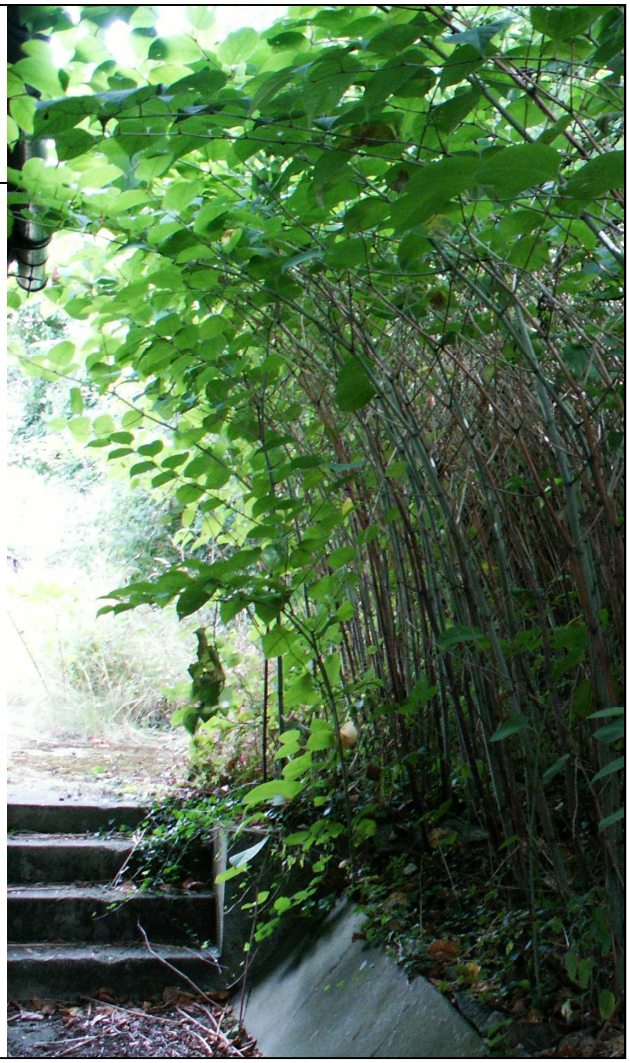
Amphibian and Reptile Groups of UK (ARG UK) is a registered charity (number 1165504) committed to the conservation of native amphibians and reptiles and their natural environment by supporting the network of independent volunteer amphibian and reptile groups (ARGs).

APPENDIX C: JAPANESE KNOTWEED ID SHEET

www.nonnativespecies.org

Produced by Olaf Booy, Max Wade and Vicky White of RPS

Japanese Knotweed



Species Description

Scientific name: *Fallopia japonica*
AKA: Japanese Bamboo, Pysen saethwr (Welsh), *Polygonum cuspidatum*, *Reynoutria japonica*
Native to: Japan, Taiwan, northern China
Habitat: Common in urban areas, particularly on waste land, railways, road sides and river banks

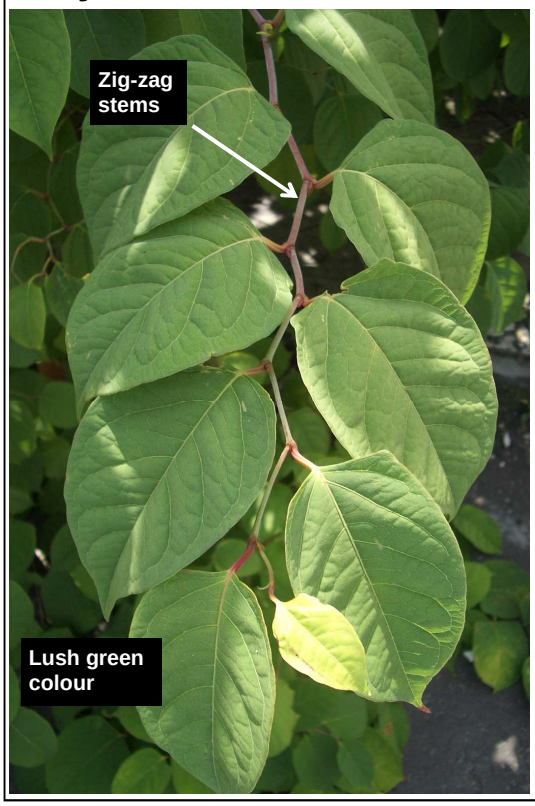
Tall herbaceous perennial with bamboo like stems. Often grows into dense thickets. Characteristic leaves and stems, persistence of last year's dead canes and distinctive rhizome (underground root-like stems) enables year round identification.

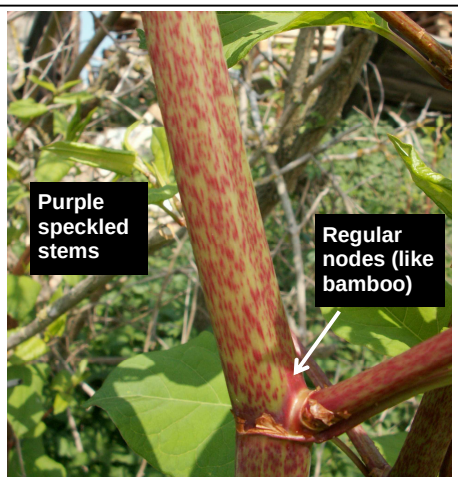
Introduced in the early 19th century as an ornamental plant. Now common and wide-spread across the UK. Spreads rapidly in the wild by natural means and as a result of spread by humans. Spread is solely by vegetative means, either fragments of rhizome or stem. Does not produce seed in the UK. Negative impacts include outcompeting native flora, contributing to river bank erosion and increasing the likelihood of flooding. Can also cause significant delays and cost to development as well as structural damage (it can grow through asphalt and some other surfaces).

Japanese Knotweed is listed under Schedule 9 to the Wildlife and Countryside Act 1981 with respect to England, Wales and Scotland. As such it is an offence to plant of other-wise cause Japanese knotweed to grow in the wild. Under the Environmental Protection Act 1990, Japanese Knotweed is classified as controlled waste.

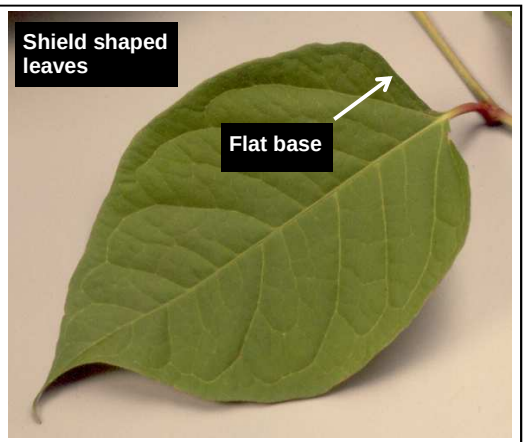
For details of legislation go to www.nonnativespecies.org/legislation.

Key ID Features





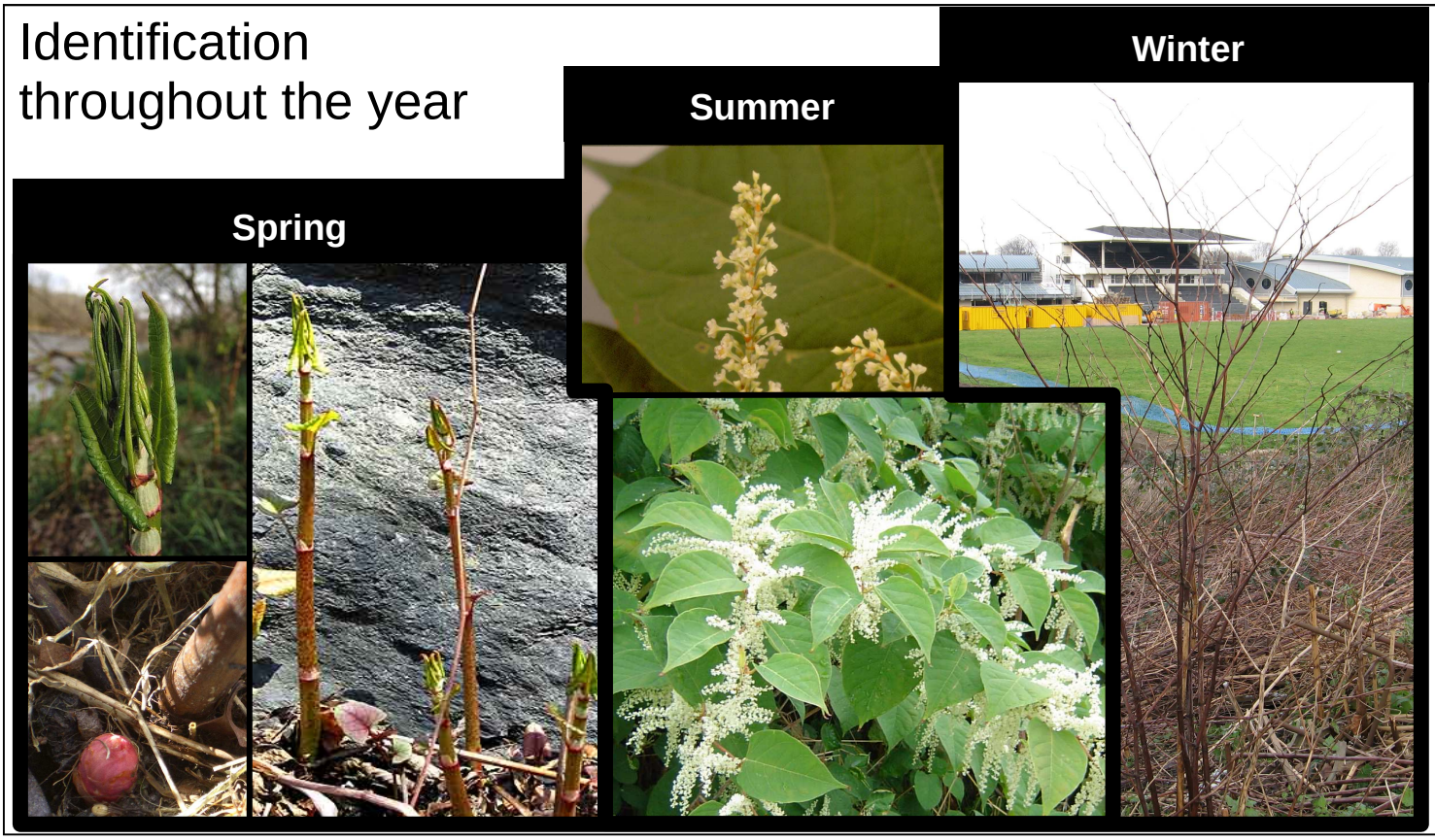






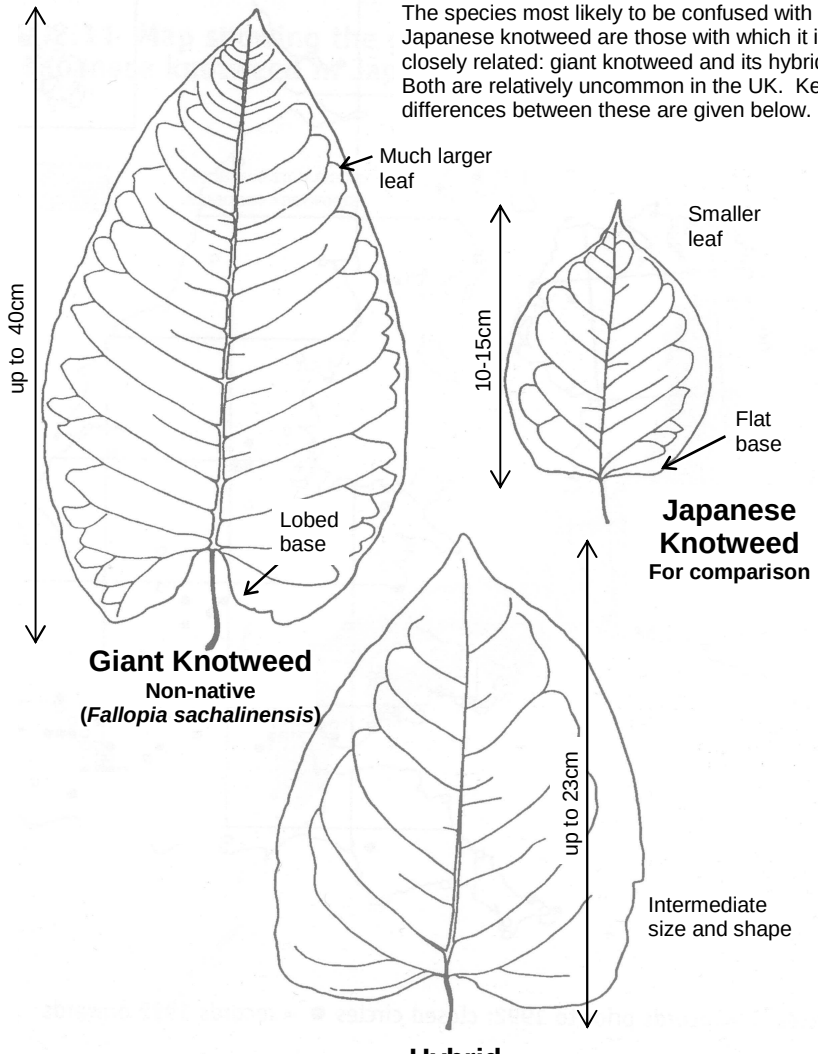


Identification throughout the year



Similar Species

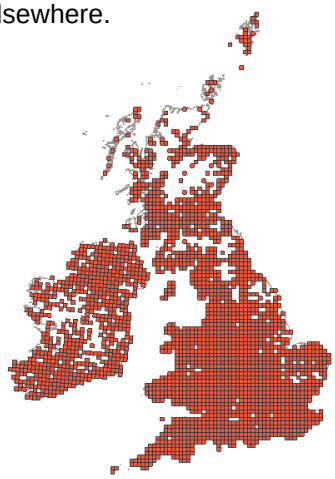
The species most likely to be confused with Japanese knotweed are those with which it is closely related: giant knotweed and its hybrid. Both are relatively uncommon in the UK. Key differences between these are given below.



Source: Child and Wade (2000). The Japanese Knotweed Manual

Distribution

Widespread and common across the UK. Notably extensive infestations are found in the south-west of England, south Wales and Greater London, however similarly extensive populations can also be found elsewhere.



Source: NBN Gateway. Check website for current distribution

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Photos from: Olaf Booy, Helen Parish, Max Wade, Vicky White