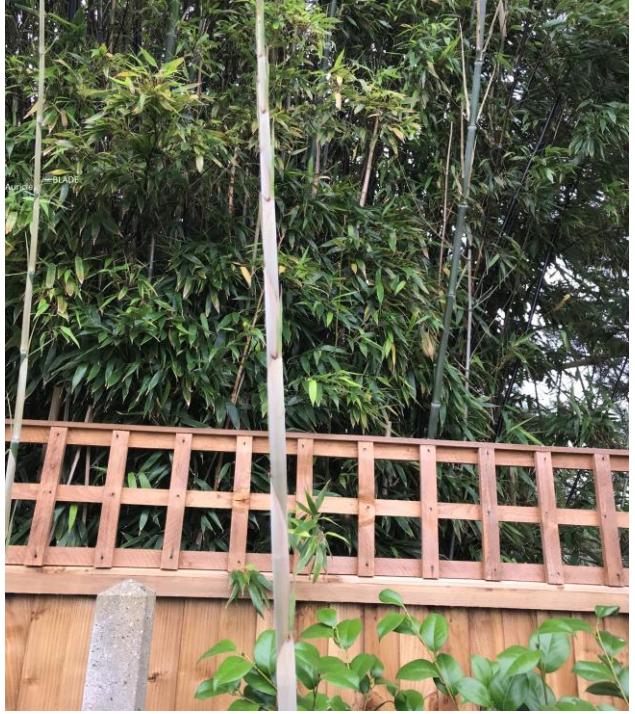
Emerging Weeds

Invasive Trees, shrubs and climbers

Brian Taylor, The Knotweed Company Ltd

Invasive plants and weeds…

- **Japanese knotweed - The poster child of invasive plants…**
- **The Invasive plant that everyone knows about – or thinks they do!**



Bamboo - The new ‘Star’ of invasive plants

- Many different species and genera in UK. Many of which are invasive and easily spread in the wild.
- No legislation or regulation!
- Known to be invasive in similar climates
- No known limit on spread
- Costly to remediate.
-

Invasive Trees, Shrubs and Climbers…

Legislation and Regulation.

The Wildlife and Countryside Act 1981 (Schedule 9)

WANE – Wildlife and Natural Environment Act (Scotland and Northern Ireland)

The Invasive Alien Species (Enforcement and Permitting) Order 2019

Invasive Trees – Tree of Heaven

- Listed in Invasive Alien Species Order
- Spreads by suckering to form large monocultures
- Spreads by wind dispersed seeds
- Environmentally damaging
- Damages hard surfaces, underground structures, roads, railways and other infrastructure

Identification

- Tree of Heaven (*Ailanthus altissima*) is a rapidly growing medium-sized deciduous tree. Up to 20 metres in height. Widely spreading branches from a short straight trunk. Also known as Stinking Sumac.
- First introduced in 1751. first reported in the wild 1935. Origin East Asia.
- Leaves are opposite (or nearly so), pinnate and partially toothed. Usually 5-12 pairs of leaflets, 10-17cm long. Unpleasant smell.
- Flowers small 7-8cm long cream or green white plumes. Male and female flowers borne on different trees. Sometimes unpleasant acrid smell.
- Broken twigs also produce unpleasant smell.
- Fruits are one seeded with two wings. 3-4cm long. Usually borne in dense clusters of ash like keys. Can ripen to bright orange/red in colour by late summer.
- Large leaf scars on twigs in winter.
- Photos: RPS Group

Biology and reproduction

- Reproduces asexually and sexually.
- Spreads freely via suckers. Roots may spread substantial distances (up to 15m) in all directions.
- Seed is produced freely, up to 300,000 seeds per tree in a year. Seeds are highly viable, for first year.
- May also grow from root fragments (e.g. fly tipping) and is commonly available through the nursery trade.
- Seeds dispersed up to 100m by wind.

Ecology and impacts

- Commonly planted and sold through the nursery trade.
- Spreads freely on most soil types.
- Shades out native species, damages roads, hard surfaces and underground structures. Produces toxic chemical to suppress germination of other species.
- Mildly Toxic to humans causing dermatitis.
- Probably covered by WANE (Wildlife and Natural Environment) in Scotland and Northern Ireland.
- Included in Invasive Alien Species Order. The UK government has imposed regulations on the tree of heaven, making it illegal to import, cultivate, or sell it within the UK.
- Typically found in urban areas on roads, railways, wasteland and other managed habitats including Nature Reserves and conservation areas.
- Listed within the top 100 worst invasive plants in Europe… rapidly increasing it's spread and ecological impact.

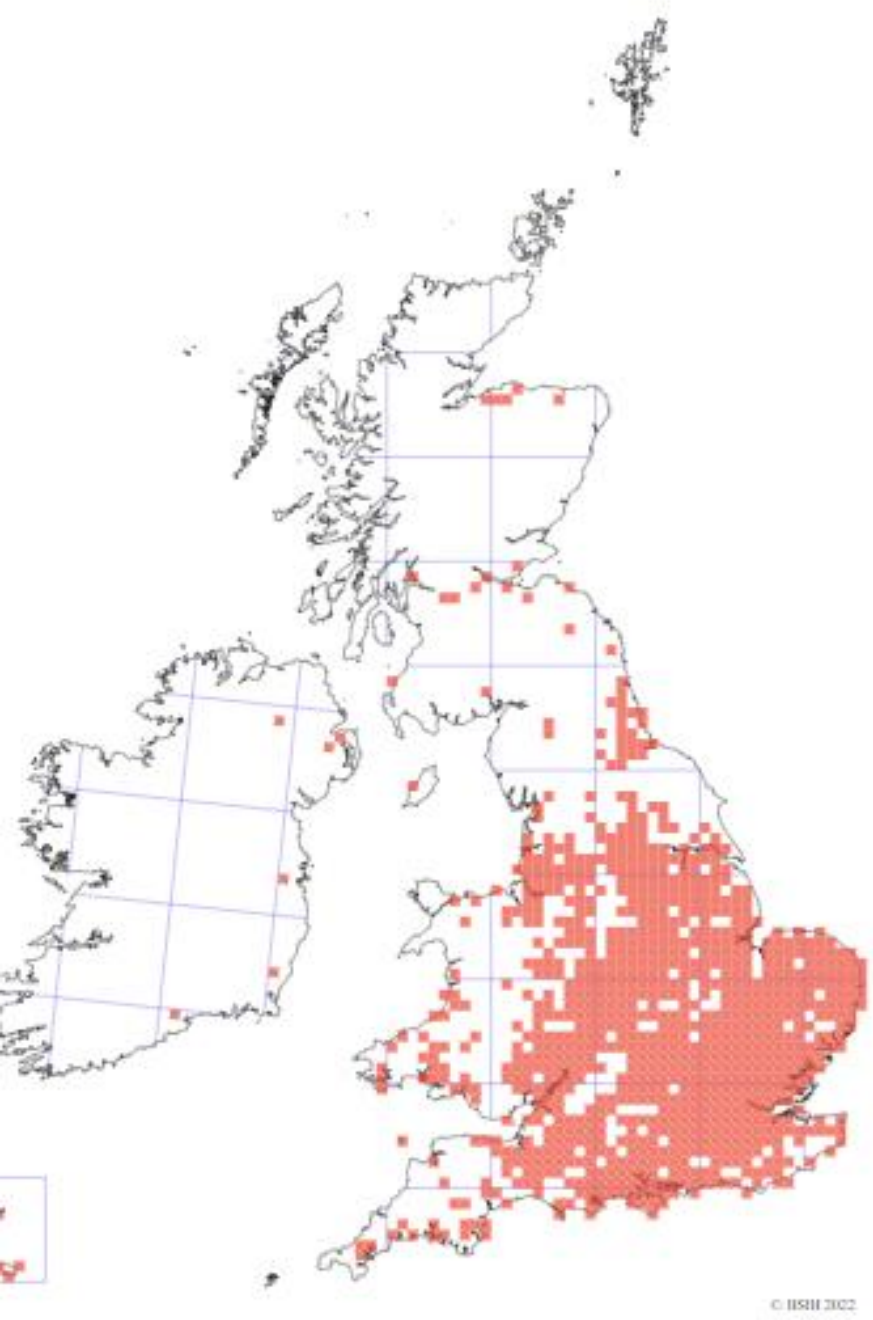
- Map : NBN Atlas

False Acacia - Identification

- False Acacia (*Robinia pseudoacacia*) introduced in 1630s, recorded in the wild in 1888. Native range, Eastern USA. Sometimes called the Black Locust Tree.
- A spiny tree up to 29m-30m in height.
- Pinnate compound leaves, having between 5-11 pairs of leaflets. Smooth leaflet edges (no teeth or serrations). Leaflets are opposite.
- Pendant racemes of fragrant white pea like flowers (usually borne in May/June).
- Seeds are formed in pods after flowering. Seed dispersal occurs between September and April the next year.
- Mature tree trunks are deeply and irregularly fissured.
- Photos: RPS Group

Biology and reproduction

- Reproduces asexually and sexually.
- Main spread is via suckers, which it produces freely. Roots may spread 1-1.5 x the height of the tree from the trunk. So a tree of 20m in height, might have roots spreading 20-30m out in all directions from the main trunk.
- Seed is produced from quite young trees of 3 years old and is dispersed in the area by wind. Germination rate is low.



Ecology and impacts

- Widely spread throughout Southern England and Wales.
- Commonly planted and sold through the nursery trade. Named cultivars are available.
- Spreads freely on most soil types.
- Shades out native species, damages roads, hard surfaces and underground structures.
- Poisonous to horses and humans.
- A single plant can spread by suckering roots, over 0.25 Ha!
- Schedule 9 in Scotland (Wildlife and Countryside Act), probably also covered by WANE (Wildlife and Natural Environment) in Scotland and Northern Ireland.
- No legislation in either England or Wales.
- Typically found in urban areas on roads, railways, wasteland and other managed habitats including Nature Reserves and conservation areas.

- Map : BSBI.

Invasive Trees

- Other invasive trees include:
- Holm Oak – spread by seeds
- Turkey Oak – spread by seeds
- Leyland Cypress – increasingly self-sown in countryside
- Lodgepole Pine – spread by seeds
- Sitka Spruce – spread by seeds
- Laburnum – spread by seeds
- And one to watch…
- 500,000 Redwoods in UK (Coast, Giant and Dawn) – none of which are yet mature enough to seed!

Buddleia - Identification

- Latin: *Buddleja davidii* – also known as Buddlea, Buddleia or the Butterfly Bush.
- Leaves are opposite, dark green, lance shaped, serrated edges. Hairy, paler underside. Partially deciduous.
- Flowers – long tapered clusters – usually purple or lilac in colour, occasionally cream or even red.
- Dead flower heads are often present over winter.
- Shrubby growth usually to a maximum of 2-3 metres, occasionally up to 5m.
- Commonly planted and sold as a garden plant, which may also attract nectar feeders such as bees, butterflies and moths.
- Not included in Schedule 9 or Invasive Alien Species Order. Probably included in WANE in Scotland and Northern Ireland.
- Similar related species include B. globosa, B. alterniflora, & B. x weyeriana.

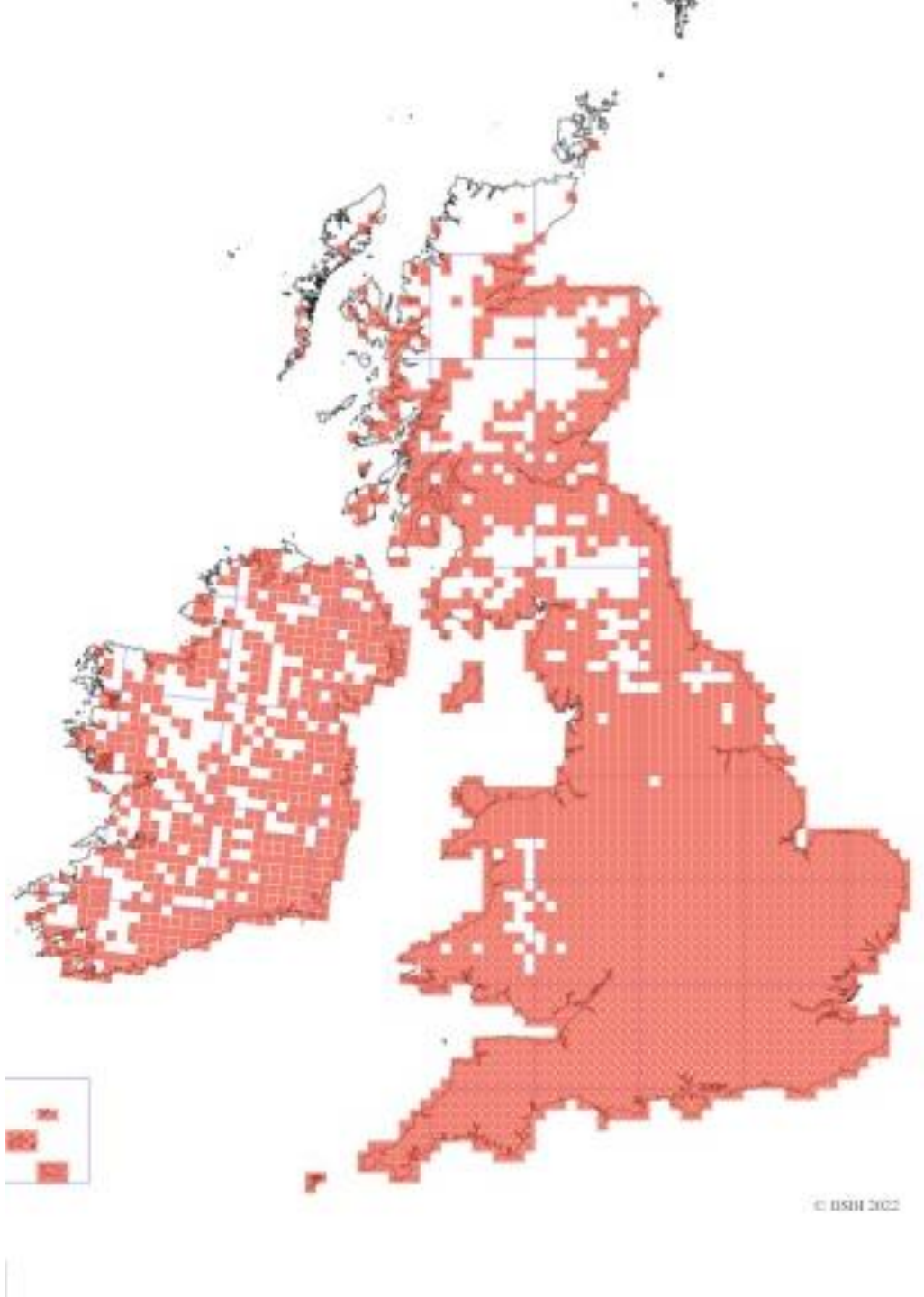
Invasive Shrubs – Buddleia ‘Butterfly Bush’

- Buddleia – mainly a problem in urban areas, brownfield sites, etc. However also a known invader of sand dune habitat.
- A typical mature plant produces over 1 million winged seeds, which are wind dispersed, each year.
- Damages buildings, hard surfaces, walls, etc.
- Control and repair costs run into millions of pounds every year…

Buddleja – ecology and impacts

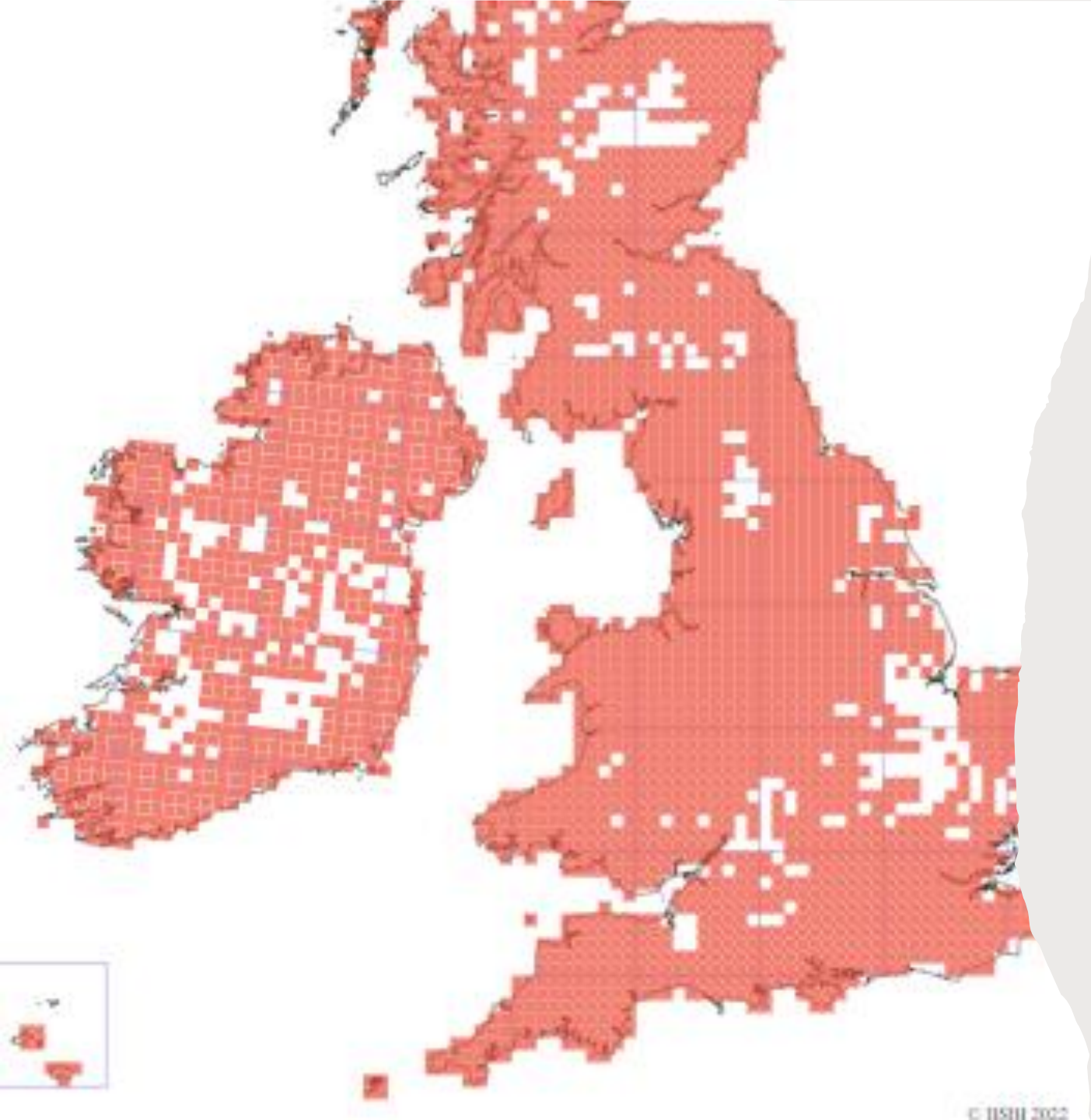
- Range of Buddleja well established. Still expanding.
- Impacts by out competing nature species, forming dense monotypic thickets.
- Nectar source for some animal species, but limited in environmental benefits.
- Costs of dealing with Buddleja damage to structures is substantial. Estimated cost of repairing Buddleja damage to private and old properties in the UK is estimated by NNSS to be £1Million, excluding Network Rail properties…this may however by on the low side as information is not routinely collected about this plant.
- Commonly found in urban areas, waste land, brown field sites, railway properties and other such sites. Less commonly found in the countryside, occasionally invasive in nature reserves such as Merthyr Mawr Nature Reserve (sand dunes).
- Buddleja can grow in apparently soil-less conditions, and is a particular problem in lime mortar structures (e.g. Victorian and pre-Victorian houses, bridges, etc.).

- Map: BSBI.



Invasive Shrubs - Rhododendron

- Perhaps the best known invasive shrub
- Schedule 9.
- *Rhododendron x superponticum*.
- A natural hybrid formed by combining several species – *R. ponticum, R. catawbiense, R. maximum* & (possibly) *R. macrophylum*.
- A large evergreen shrub, with dense branches, usually 3-5m in height. Often forms large clumps of interlinked bushes (colony) through root suckering and branch layering.
- Spreads by seeds which are wind and water dispersed. 3-7,000 seeds are formed per flower and remain viable for some years.
- A large bush can produce several million seeds per year.
- Environmentally devasting in the wild.



Rhododendron spread...

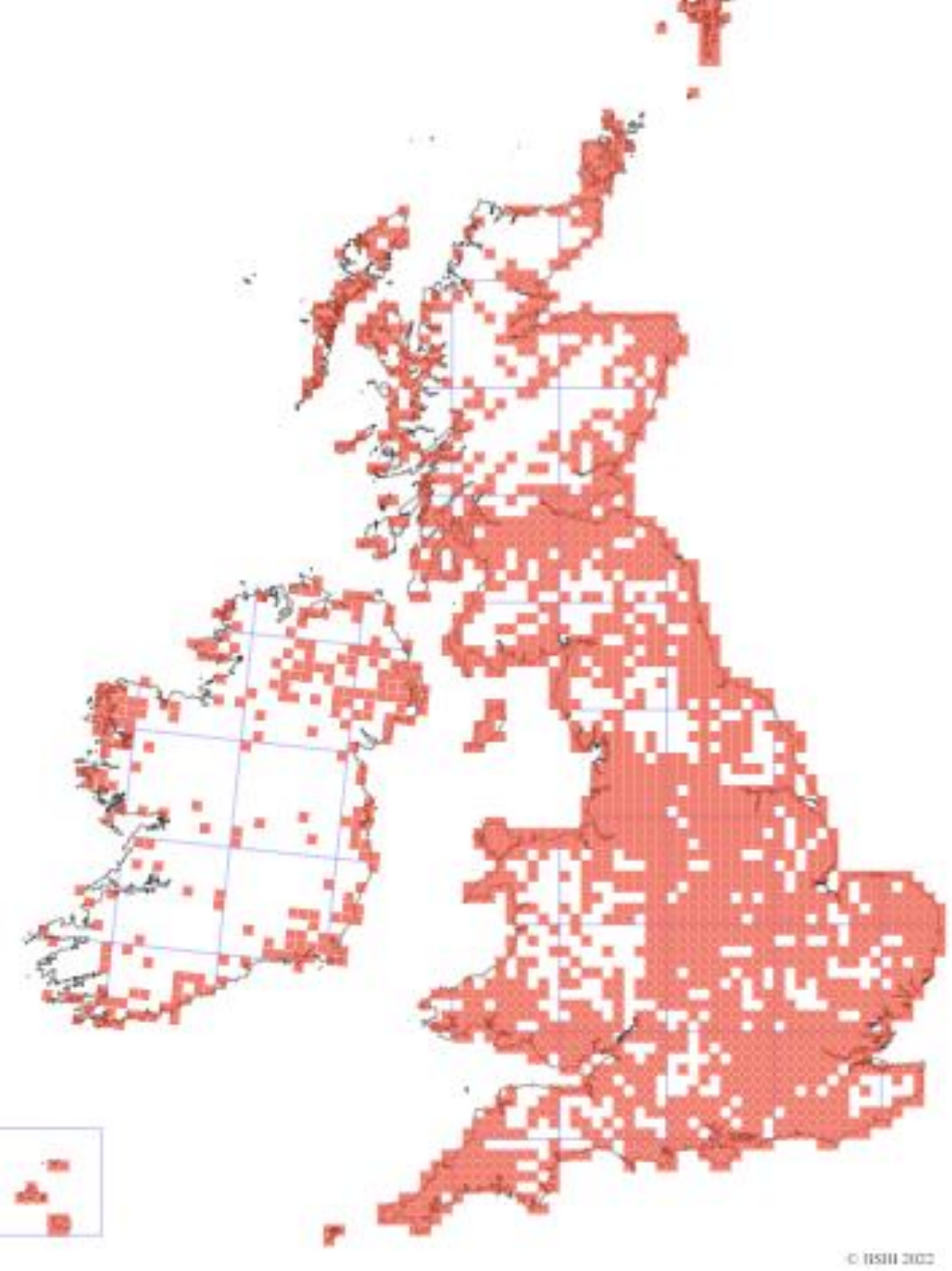
- Still widely sold and planted.
- Allelopathic changes to soil, which may persist for years or even decades...
- Costly to control when established
- Toxic
- Environmentally damaging

Japanese Rose - Identification

- Japanese Rose (Rosa rugosa) is a suckering deciduous perennial shrub. It is mass planted in landscape schemes and also planted in gardens as an ornamental plant. Up to 1.5-2m in height.
- First arrived in British and Irish Isles in 1796, first found in wild in 1927. Native range is East Asia.
- Leaves – alternate, pinnate. Leaflets shiny dark green or yellow-green above, dark grey-green and hairy on underside. Leaflets 5-9.
- Flowers – single bright purplish-pink occasionally white. Flowers June-July. 6-8cm across. 1.8-2cm long, 2-2.5cm wide. Buoyant in water for several weeks.
- Stems – covered with fine straight prickles.
- Fruit – large red hip.
- Photos: RPS Group and Crown NNSS

Biology and reproduction

- Reproduces asexually and sexually.
- Spreads freely via suckers. Roots and rhizomes may spread in all directions. New plants may form a large colony in suitable environments.
- Seed is produced freely, and are viable.
- Plants may be self-fertile or cross pollinate. New hybrids have also been found in the wild.
- May also grow from root or rhizome fragments (e.g. fly tipping) and is commonly available through the nursery trade.
- Seeds dispersed by animals, birds or by water.



Ecology and impacts

-
- Commonly planted and sold through the nursery trade.
- Spreads freely on most soil types. Forms dense thickets, especially on sand dunes and shingle.
- Shades out native species.
- Has potential to alter the physical environment.
- Schedule 9 plant in England and Wales.
- Probably covered by WANE (Wildlife and Natural Environment) in Scotland and Northern Ireland.
- Typically found in urban areas on roads, railways, wasteland, hedgerows and other managed habitats including Nature Reserves and conservation areas. Frequently found by the sea on sand dunes, shingle areas and on cliffs.
- Map : BSBI

Cotoneaster

- Cotoneaster – five species on Schedule 9 list for England and Wales – there are many Cotoneaster species that are not on the list – nearly 100 species are present in the UK.
- Listed species include:
- *Cotoneaster horizontalis* (Wall Cotoneaster)
- *Cotoneaster integrifolius* (Entire-leaved Cotoneaster)
- *Cotoneaster simonsii* (Himalayan Cotoneaster)
- *Cotoneaster bullatus* (Hollyberry Cotoneaster)
- *Cotoneaster microphyllus* (Small-leaved Cotoneaster)

- Photo: Late Cotoneaster – *Cotoneaster lacteus*

Ecology and impacts

- Cotoneaster may spread aggressively onto rocky sites, shrub land, heathland, woodland or semi-natural sites.
- The different species can be prostrate or small trees, which outcompete native flora.

Invasive Shrubs…

- Snowberry
- Cherry Laurel
- Portuguese Laurel
- Shrubby honeysuckle
- And there’s more!

Identification

- Russian vine (*Fallopia baldschuanica)* is a woody deciduous climbing (vining) perennial. Its origins are from Russia and central Asia. Introduced as a garden plant circa 1894, first identified in the wild in 1936.
- Leaves are light green, up to 100mm in length, have petioles of between 10-30mm (stalk that attaches leaf to stem). A number of leaves may be borne at each stem node.
- Stems may be 10 metres in length (possibly more) and are vigorously twining.
- Flowers are individually small – 5mm, borne in clusters. Mainly white in colour, possibly turning pink on fruiting.
- Fruits are small 2mm wide, winged for wind dispersion.

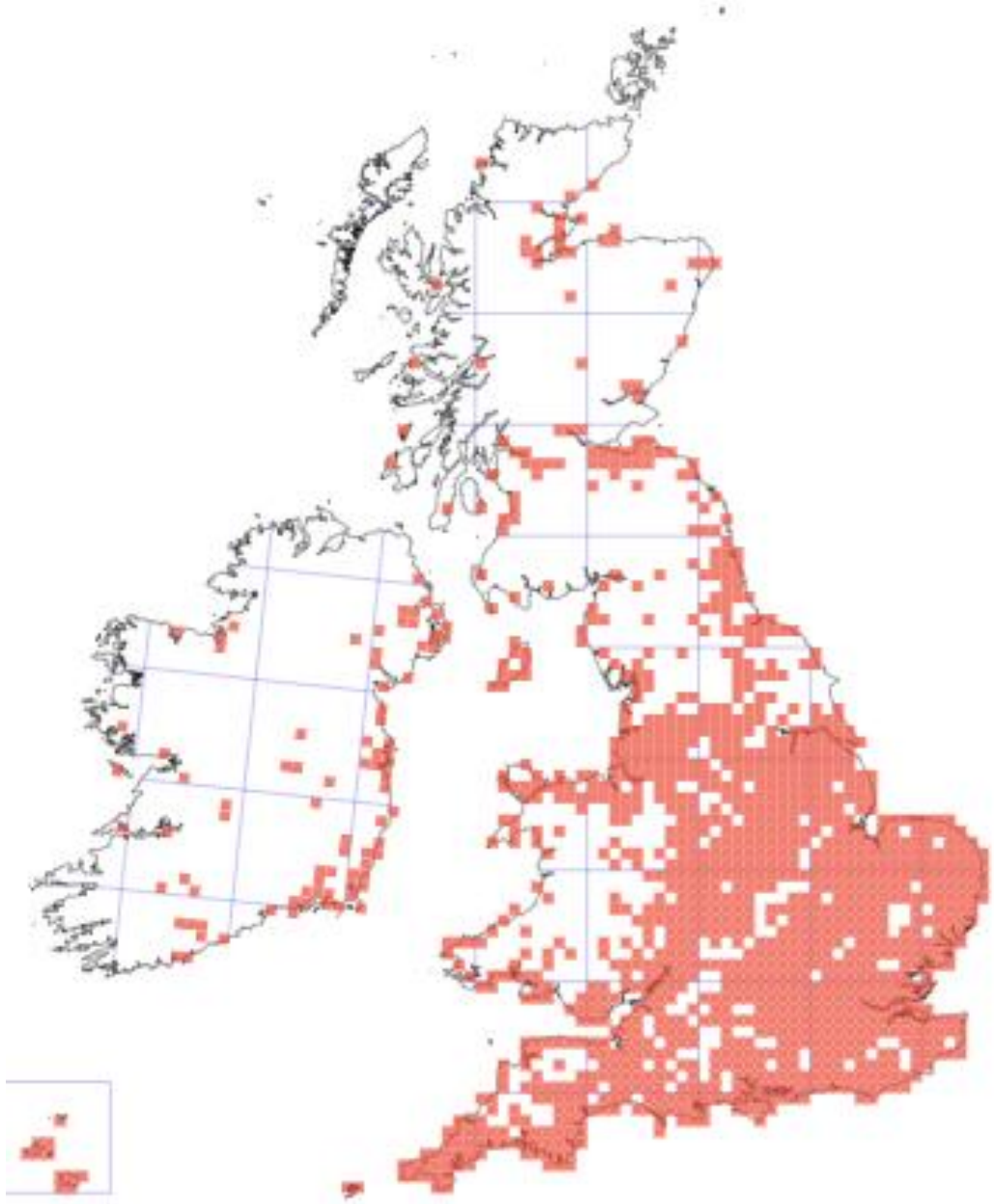
Biology and reproduction

- Russian Vine is a rapid grower, that can out compete most other plants in the vicinity.
- Often found as a result of garden waste being fly tipped.
- Plant fragments can survive and re-establish – especially roots pieces.
- Stems can naturally layer and so spread over a larger area.
- Also can set viable seed and spread via this route is also possible.
- Can climb shrubs, trees, fences, buildings.
- Often overwhelms other plants and kills them.
- Vigorous and rapid growth.
- Commonly available in the nursery trade.

Ecology and impacts

- Overwhelms and kills other vegetation.
- Dominates a garden environment.
- Widely distributed in England and spreading rapidly into Wales and Ireland.
- Typically found in lowland areas near urban and suburban areas.
- No pests or diseases in the British and Irish isles.
- May damage overhead cables.

- Map : BSBI



Oriental Bittersweet/Staff-vine

Widely sold in nursery trade in UK

Already reported in a few locations growing in the wild mainly in Southern and Western England.

Considered to be an invasive species in eastern & North USA.

In the USA naturalises in landscaped areas, roadsides, woodlands, etc. Present across much of the USA.

Climbing vine. Vines up to 40’ (12m), can cover a tree and smother it.

Spreads through seeds.

All parts of the plant are poisonous.

Oriental Bittersweet/Staff-vine

- Available to buy now! No legislation!

Oriental Bittersweet/Staff-vine

Oriental Bittersweet/Staff-vine

On sale in the UK now!

Plants are available for as little as £6.90. See below from Jxxxxxxxx Nurseries.

- “Celastrus orbiculatus (Oriental Bittersweet) are fast growing climbers or erect, arching shrubs that grow on any good soil. The branches grow in zig-zag formations and have pointed edged, broad leaves. The small, green-yellow flowers are borne in panicles. The skin of the attractive, yellow fruit opens up to reveal the orange, fleshed seed coat. These fruits remain on the plant during winter. This plant is part of the dioecious species which means the male and female flowers are on different plants. It is best to order at least 2 plants so that you have a greater chance to get both sexes which will produce berries if planted together. Easy to grow and drought tolerant.
- We have excellent quality, 30-40cm tall plants on offer.”

Summary

- Invasive plants are everywhere.
- New invasive plants are widely available and new invasive plants are introduced regularly.
- Little or no control on introductions or sales.
- The impact upon our built environment is already large
- The impact upon our natural environment is considerable and growing
- The costs of removal/control/remediation is growing.
- Impacts upon woodland, hedgerows, water courses, buildings,
- **A potentially large financial impact on development costs!**