Invasive Aliens



THE FAIRFIELD ASSOCIATION (15-05-14)

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English wild flowers can be divided into types according to their origin

Native

Indigenous plants have been around since the last ice-age

Introduced or alien flowers

Archaeophytes - non-native plant species introduced into England prior to 1492 and the discovery of the New World

Neophytes - non-native species introduced after 1492

Some plants introduced prior to 1492 are classed as neophytes because they did not escape into the wild until after that date

Escapes into the wild

Casual – persist weakly, die off in a year or two, do not become naturalised in the wild

Naturalised – persist, multiply and form permanent populations in the wild

Invasive aliens - introduced plants, which escape cultivation and form persistent, spreading and nuisance populations in the wild

This may happen many years after their introduction into the UK

There are 1,402 non-native plants established in the wild in Great Britain, of which 108 (8%) are stated to have a negative impact

The Plant Hunters

Sir Joseph Banks went with Captain Cook to the South Pacific (1768-1771). He became informal director at Kew in 1773 and helped make Kew the foremost botanical garden in the world

Sir Joseph Hooker (1817-1911) collected c.700 species in India and Nepal and added 25 new rhododendrons to the 50 already known, helping to create a rhododendron craze amongst British gardeners

In the 20th century, Kew used its own botanists to obtain plants from around the world, and free-lance plant collectors also sent in plants

Frank Kingdon-Ward (1885-1958), the last of the great plant collectors, sent 120 plants to Kew

The plant hunters were adventurers and have had a good press, at least until now.

They brought back the biggest, the showiest and the most colourful plants; mainly for botanical gardens and the great estates and gardens.

Now, some of their introductions have escaped, taken over habitats and become a nuisance



Giant Hogweed by the River Brit, Dorset Heracleum mantegazzianum



Size is everything!



Leaves, up to a metre across, are said to deprive native species of light



It was introduced from the Caucuses and planted in gardens and estates in the 1820s and has continued to escape ever since. Large stands occur in waste-land and beside streams and rivers



Hogweed asymmetric flowers



Each plant can produce 5000 seeds. Dispersal is helped when they grow near waterways. Some Victorians practiced guerrilla gardening



Furocoumarins in the bristles and sap cause photodermatitis



Hollow stem of Giant Hogweed in winter – 10cm⁺ across



Triffid from behind the Iron Curtain

Became infamous in 1970s when children developed blisters from using stems as blow-pipes and telescopes.

Workmen clearing Giant Hogweed stands were also affected

Caused by furocoumarins in the bristles and sap which react with sunlight to cause photodermatitis

The same toxins are found in Hogweed and Wild Parsnip

How often does it happen?

Because Giant Hogweed causes skin irritation it is classed as a poisonous plant

Giant Hogweed is listed under Schedule 9 to the Wildlife and Countryside Act 1981 with respect to England, Wales and Scotland

It is an offence to plant of otherwise cause Giant Hogweed to grow in the wild

Under the Environmental Protection Act 1990, Giant Hogweed is classified as controlled waste

Times 03-09-2013

Man in Whitley Bay suffered severe agonising blisters after his wife asked him to investigate a big plant she wanted for her garden.

Has been told not to expose his leg to sunlight for 7 years



Himalayan Balsam, *Impatiens glandulifera*, beside the River Ribble, Lancashire



Introduced from Himalayas in 1839 and was widely naturalised in West Country by 1900 Now spread throughout UK and dominates river banks and damp areas





Poor-man's Orchid?



Capsules can be eaten. May prevent scurvy when diet otherwise consists of tinned food





Popping of the capsule helps to spread the seeds According to R. Mabey in Weeds and in Flora Britannica, the record distance is 12 yards



Seedlings smother most opposition



As do leaves



and stems

A lot of people like them but conservation groups have Balsam Bashing Parties



Small Balsam, *Impatiens parviflora*, Hampstead Heath, London Introduced from Russia in 1850s, can form large colonies even in established woodland





Explosive dispersal in Himalayan Balsam, Small Balsam and Busy Lizzies



Waterway at West Bay, Dorset, clogged with Creeping Water Primrose



Creeping Water Primrose Ludwigia peploides





The river Lez, Montpelier, France
Water Primrose deliberately introduced into the Camargue

This is a species alert issued as part of the GB rapid response protocol:

An invasive non-native plant from South America, which has become a serious pest in other countries, including France, where it smothers water bodies reduces the numbers of native species and increases the risk of flooding.

Water Primrose has been found in some parts of England and Wales. If you think you've seen it, check with our <u>Identification sheet</u>. Sightings should be reported:

- •through our website <u>Ludwigia grandiflora recording page</u>
- •by email alert nonnative@ceh.ac.uk

Further information

- Wanted poster
- Identification sheet
- More images
- Risk assessment
- Invasive Species Action Plan
- NNSIP pages not yet available



Have you seen this plant?

WATER PRIMROSE

Ludwigia grandiflora & Ludwigia peploides

What is it?

An invasive non-native plant from South America. It has become a serious pest in other countries, including France, where it smothers water bodies reducing the numbers of native species and potentially increasing the risk of flooding.



Where might I see it?

A recent invader which has been spreading rapidly and may be found across Great Britain in ponds, lakes and slow flowing water. May be present in gardens (in which it was originally planted).

How do you distinguish it from other plants?

- > Grows upright (image a and d) as well as a spreading form in water (image c).
- > Leaves dark green with lighter central vein, shape varies from long and thin to oval (image c, d and e).
- > Bright yellow flowers with 5 petals present July to August (image b).
- Characteristic fruits which contain seeds (image f).

for more ID go to www.nonnativespecies.org/02 Identification%20Sheets.cfm



If you find this plant in the wild, in a garden or on sale, please contact:

01208 265033

trevor.renals@environment-agency.gov.uk

Control and management of invasive alien (nonnative) plants is under the auspices of a Defra (Department of **Environment, Food and Rural Affairs**) committee - NSSS (GB **Non-native Species** Secretariat)



Japanese knotweed (Fallopia japonica) forms dense stands and squeezes out other plant species and outcompetes native plants, resulting in a botanical "monoculture"



It can reach 4m in height and can grow up to 30cm in a day Young shoots eaten by Japanese



It is attractive to insects in high summer

Alien species, such as, Japanese knotweed (Fallopia japonica) may affect ecosystem services, which in turn can have an impact on human well-being

Its powerful root system can reach depths of 3m into the soil and spread up to 20 m, making it almost impossible to eradicate once it becomes established

The rhizome system of Japanese knotweeds can seriously damage infrastructure, such as buildings, river bank stabilisations and water channels, railway tracks and roads, and construction land

By disrupting the integrity of flood defence structures, the risk of flooding is increased

European Environment Agency (EEA)



Aftermath of spraying Japanese Knotweed by the River Lune, Lancaster, in preparation for building work (2005)

Eradicating
Japanese
Knotweed
costs Defra
£5.7 million a
year

Clearing the Olympic site of Japanese Knotweed cost £70 million



In 2010 Defra started a trial using a phloem-feeding psyllid, Aphalara itadori, as a biological control

From the horses mouth

Yes, I did have a problem selling a property because there had been a small infestation of Knotweed that I had had treated for 3 years with glyphosate as it emerged.

There was no evidence of it when I offered the property for sale, but I did declare it to the purchaser.

Quotes for removal were about £45,000, and this was the reduction I had to make in the sale price.

The quote was to remove the soil to a depth of 4m and a diameter of 8m around the infestation, a barrier was then constructed around the perimeter of the excavation.

I think that was to satisfy local authority building regulations

Fear of weeds drove man to kill his wife

A man bludgeoned his wife to death before killing himself over fears that their home was blighted by Japanese knotweed, an inquest was told.

Kenneth McRae, 52, a lab technician, battered his wife, Jane, 55, with a bottle of perfume as she lay in bed at their house in Rowley Regis, West Midlands, causing fatal head injuries.

In a suicide note, he wrote: "I believe I was not an evil man, until the balance of my mind was disturbed by the fact there is a patch of Japanese knotweed which has been growing over our boundary fence on the Rowley Regis Golf Course."

He claimed that the managers of the golf course had been made aware of the problem of the invasive plant but that nothing had been done. The risk of structural damage and legal battles led to his "growing madness", he said.

The inquest at Smethwick Council House ruled that Dr McRae, who was found with neck and wrist injuries, unlawfully killed his wife before committing suicide.

Robin Balmain, the Black Country Coroner, said it appeared that he had suffered from paranoia over the knotweed, which was not found on their property although a patch had been discovered near by. "It is difficult to understand what was going on in Dr McRae's mind," he added.



Rhododendron ponticum was introduced from Spain in the 1760s, escaped into the wild by the 1890s and spread widely in the 20th century







It cost £11 million to clear *R*.

ponticum from a welsh national park and £25 million to clear it from the Loch Lomond and Trossachs national park









Rock Cotoneaster Cotoneaster integrifolius

Cotoneasters

Dorset Wildlife Trust is working to eradicate cotoneasters from quarries on Portland Several species are causing problems:

Hollyberry Cotoneaster - *C. bullatus*, Wall Cotoneaster - *C. horizontalis*, Small leaved Cotoneasters - *C. microphyllus* agg. and Himalayan Cotoneaster - *C. Simonsii*.









Rock Cotoneaster Cotoneaster integrifolius

EU Directive April 2014

Commission proposal for EU legislation to address invasive alien species and protect biodiversity

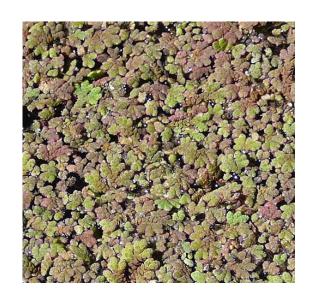
The European Commission has published a proposal for a Regulation on the prevention and management of the introduction and spread of invasive alien species.

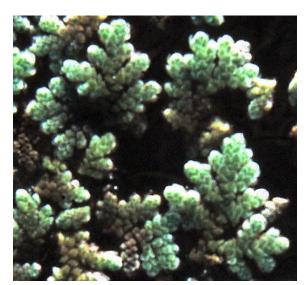
The proposal seeks to address the problem of invasive alien species in a comprehensive manner so as to protect native biodiversity and ecosystem services, as well as to minimize and mitigate the human health or economic impacts that these species can have.

The proposal is for three types of interventions; prevention, early warning and rapid response, and management.

A list of invasive alien species of Union concern will be drawn up with Member States using risk assessments and scientific evidence.

The proposed Regulation will now be examined by the Council and the Parliament.







These plants are banned from sale from April 2014:

water fern
parrot's feather
floating pennywort
water primrose
Australian swamp stonecrop







Exploitation of new environment

Until the 1980s Danish Scurvygrass, *Cochlearia danica*, was found on coastal cliffs, sand dunes and sea-walls.

Since then, it has become established on the central reservation of motorways, dual carriageways and verges adjacent to trunk roads.

It is a native, mat-forming herb with a requirement for salt - hence its migration from the coast to salt-treated roads.



M6 Lancaster



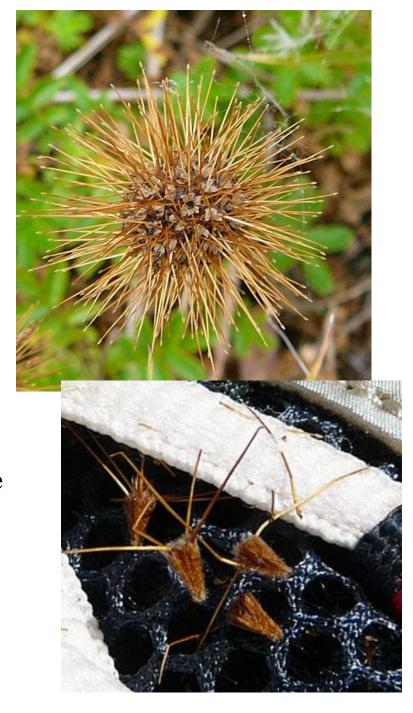
Contaminated imported materials

Pirri-pirri bur, Acaena novae-zelandiae, Holy Island, Northumberland



Pirri-pirri-bur is a contaminant of imported wool shoddy and known in the wild since the early 1900s when it colonised dunes and dune slacks

The burrs attach to clothes, trainers and pets and are transported elsewhere - hence this warning notice





Caution - Pirri-pirri bur



Pirri-pirri bur grows throughout the dunes. It is very likely to become matted in clothing and fur, especially between July and October.

Pirri-pirri bur is a non-native plant introduced from New Zealand which has become established here. It rapidly spreads and has a negative impact on our native wildlife.

Please ensure that it is not spread to other sites by checking your clothing and pets and removing any burrs before you leave Lindisfarne.

Thank you for your cooperation.

For further information contact the Site Manager on 01289 381470.

The seedheads of Pirri-pirri bur are covered in hooked red spines which catch on clothes and animal fur.







Escape from Agriculture

Oil-seed Rape, *Brassica napus* subsp. Oleifera, has been known in the wild since the 1600s

Cultivation of Oil-seed Rape took off in the 1980s due to EU agricultural policies

It is now spreading along roads and motorways





Increased Range

Montbretia, *Crocosmia aurea x C. pottsii (C. x crocosmiiflora)*, is the result of a cross between 2 South African species and has been an escape in England since the early 1800s

It forms patches by roads and in woods, hedge banks and waste ground It has recently been increasing its range



Rapid extension of range since 1990s

Alexanders, *Smyrnium olusatrum*, grows by roads and paths, on cliffs and wasteland Alexanders is an archaeophyte brought to England by the Romans for cultivation as a food crop and a medical herb. It was replaced by celery in the Middle Ages Becoming a nuisance, especially in the Southwest





Damage to walls

Red Valerian, *Centranthus ruber*, was introduced from the Mediterranean region in the 1590s and recognised as a naturalised escape in the 1760s It grows on walls, sea-cliffs and rocks, especially near the coast The sawn-off section of the stem is 10cm across and has forced sections of the wall apart





Buddleia (Butterfly-bush) and Himalayan Honeysuckle (Pheasant Berry) colonise waste land and cracks in walls, pavements and chimneys – both are on the increase





Bird sown

Thorn-apple, *Datura stramonium*, suddenly appears in gardens and is either bird-sown or from bird seed

(Seeds are long lasting and lie dormant for long periods, only germinating when ground is disturbed)

It has been grown in England since the late 1500s, when it was used for the production of alkaloids. It has been recognised as a naturalised, poisonous escape since the 1770s





Bird sown

Apple-of-Peru (Shoo-fly), *Nicandra physalodes*, was introduced from South America in the late 1750s and known in the wild since the 1860s

- •It grows in gardens as a bird-sown alien
- •It is classed as an invasive alien in the USA
- •It is poisonous and has insecticidal properties



Quinoa

Chenopodium quinoa

The United Nations General Assembly declared 2013 as the "International Year of Quinoa".

The Portland Bird Observatory on Portland Bill grow a range of seed-producing crops, which they leave as food for the large numbers of indigenous and migrant birds visiting the area



Rosy Garlic, *Allium roseum*, grows on waste ground, hedge banks and by roads, often on the coast. It is a neophyte, grown in England since the 1750s, and known in the wild since the 1830s. It is on the increase in the Southwest





Honey Garlic, *Nectaroscordum siculum*, is a neophyte, grown in gardens since the 1830s, and recognised in the wild since the early 1900s.

Naturalized in woods and waste ground (often a garden escape or discard?). Often bird-sown, it is increasing its range



Above **Chesil** beach - Abbotbury

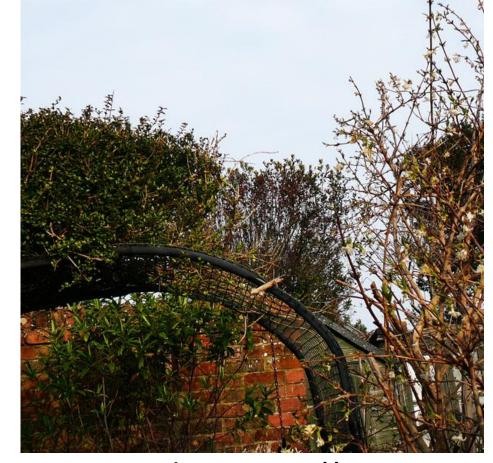
In the middle of Dawlish Warren Nature reserve

Daffodils are everywhere in the wild

Perhaps people cannot bring themselves to destroy surplus bulbs and so throw them away in the countryside where they can still live?







Lonicera fragrantissima

Winter Honeysuckle

It grows (grew) in my garden and killed an adjacent pear tree, caused die-back in a nearby Buddleja and inhibited a neighbouring arch-forming Wilson's Honeysuckle. I suspected allelopathetic effects and, indeed, the USDA states that Winter Honeysuckle is an invasive alien and produces allelopathetic chemicals, which inhibit other plants.

Australia is very active in exterminating invasive aliens. The wine growing areas around Adelaide have problems with Olive, Artichoke. Fennel and Bamboo

Sources of invasive aliens

- 1. Deliberately brought in as a food plant or as an ornamental garden plant
- 2. Accidently brought in by wind or birds
- 3. Accidently as a contaminant of imported crops or goods

Once in the UK, they escape:

- a. Relic gardens, brown field sites
- b. Throw outs
- c. Windblown seed
- d. Guerrilla gardening
- e. Botanical gardens and garden centres

Recent scientific reports have shown

- Approximately 60% of invasive plants come from horticulture (source- Royal Horticultural Society)
- 19 of the 34 most invasive plant species are thought to have escaped from Botanical Gardens
- That invasive species radiate out from garden centres



Escape from Botanical Gardens and exploiting walls and railways

In the 1700s, Oxford ragwort, Senecio squalidus, escaped from Oxford Botanical Garden into local gardens and walls and then throughout the UK via the railways



Purple Dewplant and Hottentot Fig at the Lizard in September

Purple Dewplant – *Disphyma crassifolium*



Hottentot Fig patch on Bryher, Isles of Scilly







Hottentot Fig - Carpobrotus edulis





Tree Echium or Giant Viper's-bugloss

Echium pininana

Bryher, Isles of Silly



Shrub Goldilocks - Chrysocoma coma aurea - invading sandy beach grassland, Tresco, Isles of Scilly



Report on Invasive non-native species – updated October 28 2013

Pirri-pirri Bur, Few-flowered Leek, Three-cornered Garlic, Cape Pondweed, Water Fern, Fanwort, Australian Stonecrop, Montbretia, Purple Dewplant, Hottentot Fig, several Cotoneasters, Gunnera, Sea Buckthorn, Spanish Bluebell, Elodea (pondweeds), Floating Pennywort, Water Hyacynth, Giant Hogweed, Himalayan Balsam, Yellow Variegated Archangel, Japanese Honeysuckle, Japanese Knotweeds, Water Primroses, Parrot's Feather, Fringed Waterlily, Water Lettuce, Virginia Creepers, Rhododendron ponticum, Japanese Rose, Duck Potato, Giant Salvia, Water Soldier



3-cornered Leek

Gunnera





Sea Buckthorn





Yellow Variegated Archangel

Fringed
Waterlily









Japanese Rose

At last! A use for Mobile Phones

Dec. 17, 2012 — Mobile phone users are being urged to help fight the spread of invasive plants across the UK -- by downloading PlantTracker. The new app has already attracted 7,000 downloads and alerted ecologists to 2,500 sites where key invasive species have been spotted

Tracking and mapping invasive alien plants using mobile phone APPs has been a huge success for Citizen Science http://planttracker.naturelocator.org



After clearing, stinging nettles and brambles take over

Is this better?



2010 Before



2012 After



Verdict on Invasive Aliens

Against

- •Expensive to eradicate- presently costing £1.7 billion a year in the UK
- Damage to walls, chimneys and flood defences
- Disrupt native species diversity

For

- Much more colourful and showy than native species
- Cover waste ground and brownfield sites
- Provide cover and food for birds and insects



Jonathan Leake **Environment Editor**

DENERS and wildlife ps should drop their tance to alien invasive species and instead welcoming the way "enrich" our native a leading botanist will

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wildlife. His suggestions, though, are likely to prove controversial.

Wildlife groups have long been infuriated at the way Britain's native trees and shrubs are being pushed out by foreign invaders, and have campaigned for such imports to be banned.

They point to the way exotic plants such as rhododendron have taken over swathes of Britain's uplands, while cotoneaster is invading

many Welsh sea cliffs. In his lecture on Thursday,

and suggest that most of the plants that have escaped from British farms and gardens have enriched the countryside.

"There is a conservation establishment out there who have decided that what we should conserve is a landscape that would have been familiar to Jane Austen. The general belief is that native plants are good and alien ones

are bad. "This, however, is just a The reality is that Britain has last Ice Age ended about

flora - the woods of Germany and France are far richer than

"My message for the RHS is that we should keep letting more plants come in. The key idea is that diversity is good for wildlife."

The sheer scale of plant "immigration" is illustrated by the New Atlas of British and Irish Flora, which records 1,646 trees, shrubs, herbs and other plants native to Britain - meaning that they have subjective value judgment. been here since soon after the

nearly half our flora are "foreigners".

Many are harmless but Plantlife, the environmental group that campaigns to preserve native species, has drawn up a hitlist of 66 exotic species that it considers to be lethal to Britain's native

"The last thing most gardeners want is to damage the environment," said Trevor Dines of Plantlife. "However, organisations like us and the National Trust are having to spend many mil-

plants is Rhododendron superponticum - created by plant breeders crossing a European species with an imported American one - whose bright pink flowers infest mountainsides and woodlands all over western

Britain. Another is the cotoneaster family whose 77 species now

blanket many cliffs. Botanists have also warned of a new threat from giant rhubarb, a species imported from South America whose 10ft wide leaves, set on an coastlines and river valley in the wild areas of Devor Cornwall, Scotland an elsewhere.

Other pests include th notorious japanese knot weed, a plant whose power t penetrate concrete ca destroy property values.

Thompson accepts that minority of imported plant are damaging but point out that many of ou favourite "English garden plants were once considere aliens - including buddleia which came from China bu

Sunday Times 17 November 2013

Pushy foreigners brighten up Britain

GARDENERS and wildlife groups should drop their resistance to alien invasive plant species and instead start welcoming the way they "enrich" our native flora, a leading botanist will suggest this week. In a lecture backed by the Royal Horticultural Society (RHS), Ken Thompson will suggest that the hundreds of invasive plant species imported for Britain's gardens which have spread into the wild have had huge benefits, making the countryside "more interesting" and providing food and shelter for wildlife.

His suggestions, though, are likely to prove controversial.

Wildlife groups have long been infuriated at the way Britain's native trees and shrubs are being pushed out by foreign invaders, and have campaigned for such imports to be banned.

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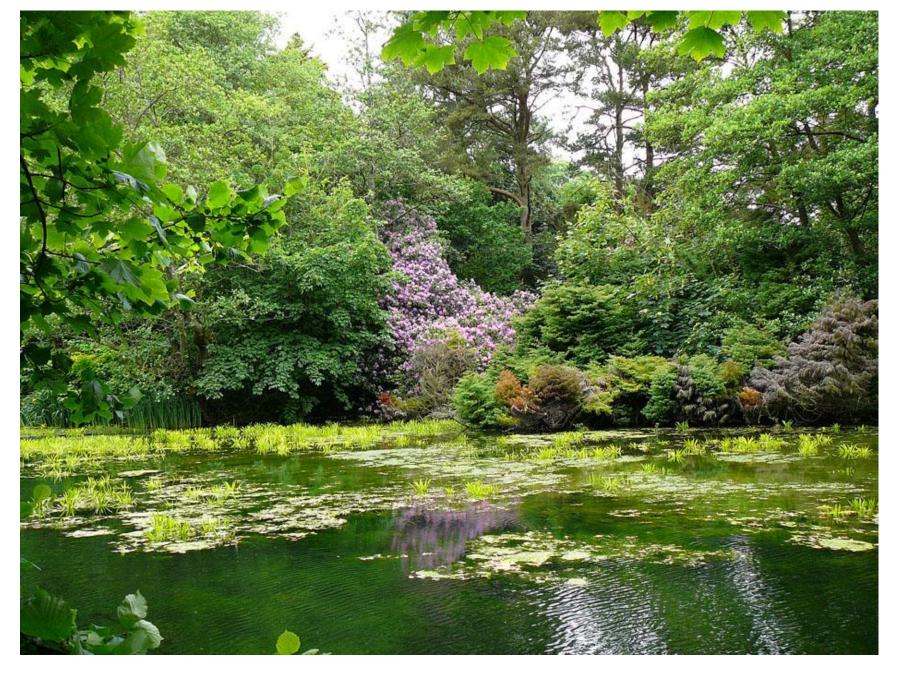
Alien invaders

Sir, Our society holds comprehensive data on all the wild plants of Britain and Ireland, native or alien. In representations to the Commons Environmental Audit Commission (report, Apr 16), we agreed that some (very few) alien plants were a nuisance and often made a bad situation worse. This, however, is truly minor compared with invasions by native plants (brambles, bracken, gorse, reeds, nettles and others), often resulting from changes in land use over the past 50 years, such as undergrazing or the lack of traditional woodland management. This, and the nitrogen pumped out by modern transport, has a far greater impact on biodiversity than any alien ever will. Our members know this well, but emotional headlines about "foreign" invaders win the research funding. DAVID PEARMAN Past president, Botanical Society of Britain and Ireland

Letter in The Times 19-04-2014 after reports from the EU and the RHS on problems associated with the spread of invasive alien plants and arguments that alien plants are better at providing pollen and nectar than native plants

In April this year I noticed the biggest Docks I have ever seen in a scrub area adjacent to the where the M1/A1 joins the North Circular Road.

I put this down to combined nitrogen from road vehicles



Harmony between native and alien invaders at Wayford woods







Dr. Keith Jones

Email: keith@seasonalwildflowers.com

Pictures and identifications from:

http://seasonalwildflowers.com/







Invasive non-native plants

Many of the plants now considered invasive have been growing in the UK for over 100 years and for much of that time showed no sign of becoming a problem

They threaten native species and their habitats, and seriously damage economic interests - such as forestry, agriculture and fisheries

It is not an offence to have these plants growing on your land or in your garden, and you are not required by law to control them

It is a criminal offence to plant them in the wild or cause them to grow there, and you must report invasive plants