Invasive species and the changing flora of the UK

Conservationists believe that invasive alien plant species are second only to habitat destruction as a cause of species extinction and environmental decline! They are creating an increasingly significant impact on bio-diversity around the world. The flora of the UK faces a challenge from these non-native plants on every side.

What are invasive alien plants?

These are plants that have been introduced relatively recently into an area where their natural predators, competitors and diseases may be absent and there is little to control their growth. Their arrival can cause economic and/or environmental damage and they are sometimes harmful to human health. They can compete with native plants for nutrients, light and space and therefore alter the natural vegetation of a habitat. Not all newly arrived species become invasive, in fact it is only a small percentage, but these few can cause severe problems.

The economic consequences of invasive alien plants can be phenomenal. For example, they can affect water supplies and spoil crops amounting to millions of pounds worth of damage. In the USA the cost per year for control of invasive alien plants is over $120 billion dollars (US Department of the Interior 1999). Predicting which species will become invasive is a priority in the battle to conserve our environment.

Some native species, for example Bracken (*Pteridium aquilinum*), can also be invasive (Emma Holmwood)

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How do they get here?

Invasive alien species can arrive in a new region or country in many ways. Natural boundaries, such as oceans, mountain ranges and deserts, provide no barrier at all in this age of world trade and global travel.

Some arrive hidden on ships, in bales of hay, in packing materials or in crop seed. Others are deliberately brought into the country either as ornamental plants for gardens, or as medicinal or food plants. Given the right conditions they can spread along the same avenues that we use for transportation – roads, railways and canals. Species that become invasive often have high growth rates and produce many seeds, which, if adapted for wind dispersal, can quickly spread over a wide area. They are often also tolerant of certain stressful conditions such as drought, grazing, fire or wind. All of these attributes are an advantage in colonising disturbed soil such as on agricultural or waste land. Colonisation of natural habitats may follow colonisation of these disturbed areas and the invasive alien species then compete with native and naturalised plants.

The landscapes most altered by invasive alien species are tropical oceanic islands such as the Hawaiian Islands, St Helena, and Mauritius. However continental areas also suffer, for example in Australia, America and South Africa.

See links: www.plant-talk.org
www.invasivespecies.gov
www.defra.gov.uk
www.plantlife.org.uk

Above: ***Rhododendron ponticum* is an example of an ornamental plant that has invaded the countryside (Christina Harrison)**

Invasive alien plants and the changing flora

Many of the species in this country have been here since the retreat of the ice following the last Ice Age (13 to 11.5 thousand years ago). Others have colonised the land since that time. However, since mankind has lived here we have had an impact on the composition of the flora through the introduction of plants that we considered useful in some way.

Plants are not as mobile as mammals, birds or insects, but they can still move around according to where the best conditions are for them to live. As the UK becomes warmer and with milder winters, many Mediterranean species are managing to survive in southern England and Wales. At the same time, species which thrive in a colder climate are retreating northwards.

The Botanical Society of the British Isles recently surveyed and counted 2,947 vascular plant species living in this country (not counting gardens), of which 1396 were native, 149 species were archaeophytes or ancient introductions, and 1402 (almost half of the total) were neophytes or recent introductions

ROYAL BOTANIC GARDENS KEW

(i.e. naturalised after 1500 AD). Natives include trees such as birches (*Betula pendula* and *B. pubescens*) and oaks (*Quercus robur* and *Q. petraea*) and the Scots Pine (*Pinus sylvestris*).

Ancient introductions include species such as the Common Poppy (*Papaver rhoeas*) and the Sweet Chestnut (*Castanea sativa*) whilst recent introductions include Japanese Knotweed (*Fallopia japonica*) and Australian Swamp Stonecrop (*Crassula helmsii*).

In general, over the past 40 years, neophyte species including some invasives have increased in frequency, whilst ancient introductions (or 'archaeophytes') have generally declined. As a whole, native species have showed little change (New Atlas of the British and Irish Flora; Preston et al 2002). However, these trends conceal the fact that some natives, such as the Ghost Orchid (*Epipogium aphyllum*), have become extinct in many areas.

Tropical islands suffer from invasive species too such as this Strawberry Guava (*Psidium cattleianum*) on Kauai (Christina Harrison)

Himalayan Balsam (*Impatiens glandulifera*)

Most Wanted!

Some recently introduced species are increasing rapidly in number and pose a threat to native and archaeophyte flora. Here are some selected examples:

1. Japanese Knotweed
(*Fallopia japonica*)
- A tall herbaceous plant in the family Polygonaceae.
- Green bamboo like stems.
- It grows up to 2 to 3 metres high.

2. Giant Hogweed
(*Heracleum mantegazzianum*)
- From the same family as parsley and carrots – the Umbelliferae.
- It reaches up to 4 metres tall.
- Imported into this country as a garden plant in the late 1800s.

3. Australian Swamp Stonecrop
or New Zealand Pigmyweed (*Crassula helmsii*)
- It takes a staggering £3 million a year to control this plant in Britain alone! (Leach and Dawson 1999).
- First grown in English gardens in 1927 it has spread across the country at an alarming rate since the late 1970s.
- It grows in dense stands choking waterways. So far all measures to control this plant have failed and it continues to threaten rare plants such as Starfruit (*Damasonium alisma*).

4. Parrot's Feather
(*Myriophyllum aquaticum*)
- A native of Central America, this species has now colonised over 100 sites in southern England but it remains much less widespread than *Crassula helmsii.*
- It is mostly found in shallow ponds and currently threatens the native plant Brown Gallingale (*Cyperus fuscus*).

Other problem alien invasive species in the UK include Floating Pennywort (*Hydrocotyle ranunculoides*), Himalayan Balsam (*Impatiens glandulifera*), Water Fern (*Azolla filiculoides*) and *Campylopus introflexus*. *C. introflexus* is a moss from the Southern Hemisphere which arrived in 1941 and has spread throughout the country since then vigorously invading heathlands. Invasive species also include much more recognisable species such as *Rhododendron ponticum* and the Butterfly Bush (*Buddleja davidii*).

What can we do?

If you recognise an area of invasive plants such as those listed you should:

- Inform your local council as they may have an eradication program in place for dealing with the plant in question if it is a notifiable weed.
- Contact a national conservation agency that could deal with the problem. At present there is no national co-ordination of eradication measures.
- Do not try to tackle the problem yourself without first seeking specialist advice. In the case of Giant Hogweed this could lead to health problems if you are not properly equipped!
- Do not put known invasive alien plant species on your compost heaps as they may still send out seeds, roots and runners from the remains.

The best policy is always to do something now and save time and money later!

Conservation strategy.

Some of our rarest plants are under direct threat from alien invasive plants, including the Three Lobed Water Crowfoot (*Ranunculus tripartus*) and Starfruit (*Damasonium alisma*). The Wildlife and Countryside Act 1981 restricts the release of non-native plants such as Japanese Knotweed and Giant Hogweed, as well as two aquatic species and some algae, making it an offence to plant them or cause them to grow in the wild.

The Global Invasive Species Programme (GISP) provides a valuable service for conservation managers with its newly developed Global Invasive Species Database, helping people around the world identify the usual suspects!