

Recent Changes in the Flora of County Durham 2013



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There have been a large number of quite remarkable changes in the distribution of plants in the county in recent years. This account covers several types of changes for elements of the county flora. I've used 1986, the year of publication of Gordon Graham's Flora as a reference point, but most of these changes are mainly between 1995 and 2013.

Global Warming Winners

Southern species have benefited from warmer weather, spreading northwards and increasing in numbers. The best example is the Bee Orchid, *Ophrys apifera*, which was a rare species of a few magnesian limestone sites at the time of Gordon Graham's Flora of County Durham. (up to 1986). Since then, it has spread north, crossing the Tyne into Northumberland, and west to Bishop Auckland and the Metrocentre. A large proportion of its sites are now urban brownfield areas with calcareous substrates. Pyramidal Orchid *Anacamptis pyramidalis*, Blue Fleabane *Erigeron acris*, Tor Grass *Brachypodium pinnatum* and Yellow-wort *Blackstonia perfoliata* have been spreading in a similar manner.

Horse Chestnut *Aesculus hippocastanum*, Sweet Chestnut *Castanacea sativa* and Hornbeam *Carpinus betulus*, which rarely produced viable seedlings in the county, are now regenerating freely. Beech *Fagus sylvatica*, which previously regenerated only occasionally, is now producing many seedlings and saplings. These locally non-native species will change the future composition of the county's woodlands.

In the shrub layer, cotoneasters of several species are becoming "Occasional" to "Frequent" in almost all woodlands, becoming a significant proportion of the shrub layer in places, to the benefit of the birds that eat the berries and spread the seeds. Tree Cotoneasters such as *Cotoneaster frigidus* and Wayfaring Trees *Viburnum lantana*, though, have become a serious problem where they are invading magnesian limestone grasslands, occasionally producing impenetrable thickets.

The ground flora of our woodlands is increasing contaminated/enriched by garden throw-outs-Spanish Bluebell *Hyacinthoides hispanica*, variegated forms of Yellow Archangel *Lamiastrum galeobdolon* and Few-flowered Garlic *Allium paradoxum* are the main species that are spreading.

Emorsgate Exotics

Grassland habitats and species have benefited from the vogue for sowing “Wildflower Mixes”. Several cornfield weeds which had disappeared from the county have been given a new lease of life, at least on a temporary basis. They tend to reduce in numbers quite quickly, only persisting if there is disturbance. Cornflower *Centaurea cyanus* and Corncockle *Agrostemma githago* are the most obvious species. Some of the cheaper mixes (not Emorsgate !) bring in never-native forms, such as a rayed form of Hardheads *Centaurea nigra* and the upright, agricultural fodder form of Bird’s Foot Trefoil, *Lotus corniculatus sativa*.



Cornfield Seed Mix

On the Road

Halophytes, salt-loving species, have spread from the coast along most of our main roads, aided by the salting of roads in the winter. The overall winner is Danish Scurvy Grass, *Cochlearia danica*, once an extinct coastal plant in County Durham, which suddenly spread very quickly to whiten the verges of the A19, A1(M) and other main roads. Less noticeable, particularly from a car, Salt Marsh Grass *Puccinellia maritima*, Sea Spurrey *Spergularia marina* and Grass-leaved Orache *Atriplex littoralis* have also spread widely, and a few other species including Sea Aster *Aster tripolium* can be found occasionally.

These new plant communities are slightly frustrating, as they are hard to survey. The actual colonising plants usually originate from the road system outside of the county, rather than from our own coast.

Recent cut-backs in local government spending have led to less salting of the roads, and a probable reduction in these species.

Invasive Aliens

While new non-native species are colonising almost every habitat, it is river and stream banks and ponds that seem most affected. Most of these are alien garden plants that have seeded or been deliberately transplanted/thrown out from gardens.

Himalayan Balsam *Impatiens glandulifera* has been the most successful, recorded from 220 tetrads (2 kilometre squares) in 1986 and increasing to 260 in 2013. (The county has 700 tetrads). It has now spread upstream as far as Stanhope on the Wear and Langdon Beck on the Tees.

Despite there being virtually no scientific evidence that it does any harm to species, habitats or riverbank stability, it has gained the status of a "Scapegoat Species", supposedly doing much more damage to ecology than we do ourselves. A lot of unproductive and expensive effort has been put into trying to eliminate it, usually by organisations that have meagre and hard-pressed budgets for nature conservation. In rare situations, such as the small and isolated catchment and rich flush habitats at Hawthorn Dene SSSI, it makes sense to attempt the achievable objective of reducing or eliminating it. In other areas, in large catchments where adjacent landowners are not following the same policy (that is, almost everywhere), it seems fairly pointless and results in summer disturbance to birds, Water Voles and Otters.

A bit of a rant, there !

In contrast, Giant Hogweed *Heracleum mantegazzianum* out-shades riverbank flora, obstructs riverbank footpaths and can cause skin irritation in humans on sunny days. It has increased from 45 tetrads in 1986 to 53 in 2013. Most of its change has been an increase in density on the 1986 sites. Since 1986 it has become densely established on the River Wear between Durham City and Washington. On the Tees, it is well established between Darlington and Stockton, and has spread upstream to Barnard Castle. On the Tyne, it is well-established at the tidal point at Wylam (where the species may be *H. lehmannianum*), and also on the Don estuary. Brownfield sites on Tyneside and the verges of the A1(M) and A1 are also being colonised. The River Team could easily be colonised from these roads. Fortunately, there are as yet no plants along the River Derwent.

The Japanese Knotweeds haven't spread geographically, but each colony tends to spread and to become more dense. They do shade out other species, so there is an effect on the local ecology. Most colonies are on riverbanks, where this effect is felt more strongly and on railway embankments, where there may be a shelter benefit for birds and mammals. A large area of Seaham Hall Dene is badly overgrown with the giant species *Fallopia sachalinensis*.

Ponds seem particularly vulnerable to invasive species. Currently the most successful are the North American Least Duckweed *Lemna minuta* and New Zealand Pigmy Weed *Crassula helmsii*. Least Duckweed can cover large ponds with millions of tiny plants very quickly in a couple of seasons, eliminating sub-aquatic plants by shading and other floating plants by competition. This species usually persists as a dominant for several years, but then the population may crash, presumably for nutrient reasons. Shibdon Pond SSSI, Axwell Park Lake and Ryton Willows SSSI have been affected by this tiny duckweed, which now has 16 tetrad records.

New Zealand Pigmy Weed has affected more ponds, but has less effect upon the vegetation. Since the first record in 1972, it can now be found in over 40 lowland tetrads, probably in all large ponds east of the A1. Attempts to control it chemically have gone badly wrong at several sites, notably Barmston Pond.

One to watch is the ornamental, striped variety of Reed Canary Grass, *Phalaris arundinacea* var. *picta*, which, unusually, is more invasive than the normal form. It is now found in 20 tetrads.

Several species that were once thought to be a problem in wetlands have turned out to be damp squibs. Water Fern *Azolla filiculoides*, Canadian Pondweed *Elodea Canadensis*, Duckweed *Spirodella polyrhiza* and Parrots Feather *Myriophyllum aquaticum* have all made a good start, but then failed to become both widespread and dominant in the long term.

The conservation vogue for creating new ponds, in which I have played my part, has benefited a large number of plant species. The most extensive is Norfolk Reed *Phragmites australis*, widely and successfully planted for water filtering and to encourage birds such as Reed Warbler, Marsh Harrier, Bearded Reedling and Bittern. A giant variety has been planted at several ponds in Gateshead, and will become a management problem in future years.

More innocuous and sometimes decorative, the formerly rare or absent Flowering Rush *Butomus umbellatus*, Water Soldier *Stratioides aloides*, Purple Loosestrife *Lythrum salicaria*, Great Water Dock *Rumex hydrolapathum*, and Greater Spearwort *Ranunculus lingua* have been widely planted and established, mostly in newly-created ponds.



Giant Hogweed at Jarrow.



Water Fern in South Tyneside

Eastward Ho!

Less easy to explain, a large selection of species has spread out from the Pennine dales eastwards towards the coast. The main group are species of mortared walls, such as ferns, Sedums, Yellow Corydalis *Pseudofumaria lutea*, Ivy-leaved Toadflax *Cymbalaria muralis* and Fairy Foxglove *Erinus alpinus*. Polypody has doubled its range, but the genus *Asplenium* is the front runner, with Wall Rue *A. ruta-muraria*, Maidenhair Spleenwort *A. trichomanes quadrivalens*, Hart's Tongue Fern *A. scolopendrium*, Black Spleenwort *A. adiantum-nigrum* and Rustyback *A. ceterach* expanding their range and numbers eastwards on mortared walls. Black Spleenwort and Rustyback were rare and declining plants in County Durham in 1986, but are now easily off the rare list, with Black Spleenwort having expanded by over 100 times, from about 100 plants to over 10,000. Another member of the genus, Green Spleenwort *A. viride*, is however still declining westwards, and other ferns of similar habitats, such as Brittle Bladder Fern *Cystopteris fragilis* are static.

The flora of some of these walls has become quite interesting, with a second set of colonists originating from gardens. Several Campanulas, Mexican Fleabane *Erigeron karvinskianus* and more traditional garden flowers such as Snapdragons *Antirrhinum majus* and Buddleias have spread onto walls. The classic Tyneside terraced streets with back lanes with high walls are the best sites.

There are several possible explanations for the eastward spread-

- Wetter summers have provided year-round moist habitats.
- Air pollution has been reduced in the urban east of the county.
- A large set of mortared walls has aged to just the right level of crumbliness and/or pH for these plants to become established.

It may be a combination of factors. There may be a clue in the similar species that are not expanding their range. There is a similar trend in south Northumberland and in Middlesbrough, and there may be a national trend going on.



Black Spleenwort in Gateshead

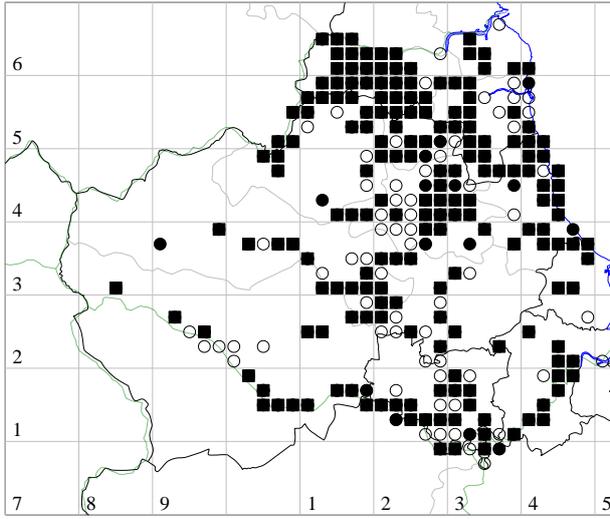
Future trends

- The global warming species are, so far, almost all species that were already present, but formerly rare. We may see previously unrecorded species spreading into the county, particularly calcicoles that can cope with brownfield habitats. It would be nice to see the nationally scarce Perennial Flax increasing. Conifer species may start regenerating from seed.
- Wild flower mixes will continue to be sown, though each individual sowing gradually declines in species richness.
- Halophytes will probably decline on verges, with milder winters and local government cut-backs.
- Invasive aliens will continue to spread. There will probably be new invaders of ponds and riverbanks, that we haven't seen so far. It would be good to see action taken to limit the spread of Giant Hogweed.
- Wall flora may have reached its peak of richness. Many terraced street sites are being modernised, with the tall back lane walls reduced to one meter in height, and many of these old housing areas being demolished and rebuilt as modern housing.

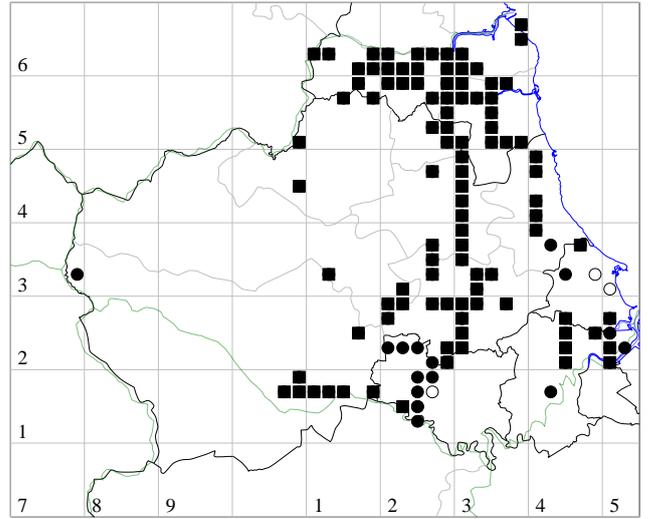


Campanula sp. In Sunderland

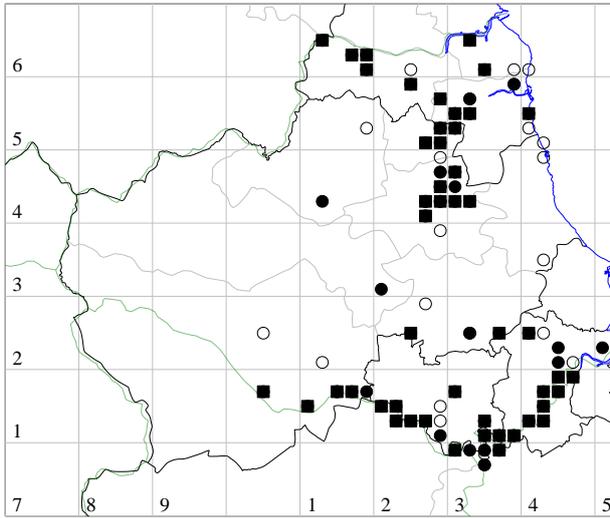
Impatiens glandulifera (Indian Balsam)



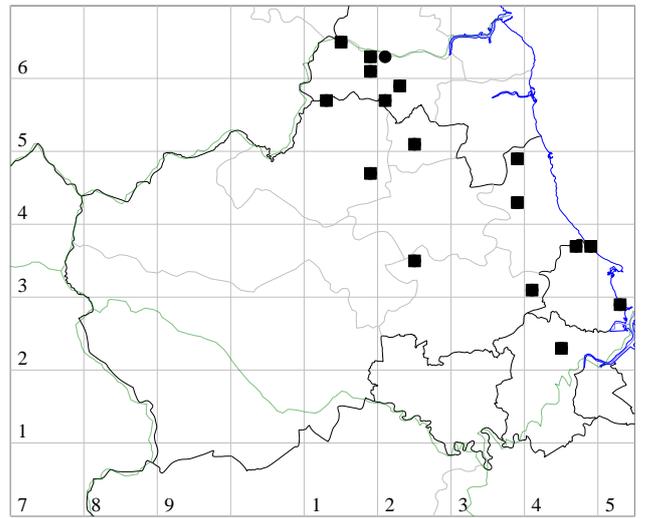
Cochlearia danica (Danish Scurvygrass)



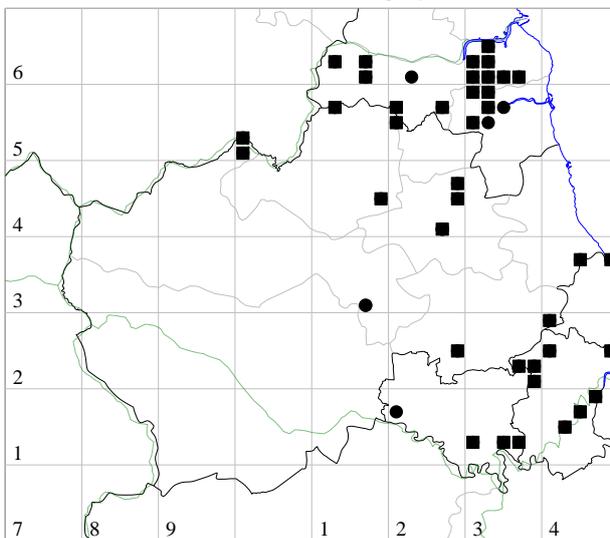
Heracleum mantegazzianum (Giant Hogweed)



Lemna minuta (Least Duckweed)



Crassula helmsii (New Zealand Pigmyweed)



Fallopia japonica (Japanese Knotweed)

