

# Ireland's Changing Flora

A Summary of the  
Results of *Plant Atlas*  
2020

# Flóra na hÉireann ag Athrú

Achoimre ar thorthaí  
*Atlas na bPlandaí*,  
2020



## Summary

The Botanical Society of Britain and Ireland (BSBI) has completed its third Atlas of the distribution of wild plants – Plant Atlas 2020. The full Atlas, with many interactive facilities, has been published on line at [plantatlas2020.org](http://plantatlas2020.org). This digital format is entirely new and opens up many avenues of enquiry to the viewer. A two-volume book *Plant Atlas 2020* is also being published. In this summary report, we outline some of the data that are available in the full Atlas, how they can be presented, and what they can tell us about the Irish flora.

- *Plant Atlas 2020* is the outcome of 20 years of field work. In Ireland alone, 2,500 people made 2.85 million plant records. The number of species recorded was 1939, of which just under half were native. As a result, we have a much more complete picture of Irish plant biodiversity. We know more about what plants grow where and comparison with earlier surveys shows how their distributions have changed.
- Introduced non-native species such as American Willow-herb show the most marked increases. Native woodland plants, e.g. Bluebell, are holding their own or gaining slightly.
- Many other Irish native species have suffered a significant decline in range or frequency. Plants of grassland, e.g. Field Gentian, have suffered the most; plants of fen and marsh habitats, e.g. Marsh Lousewort, have also decreased. There are signs of continued disruption and loss in aquatic plant communities.
- Habitat loss and degradation continue to be the main causes of biodiversity loss overall. Climate change has, as yet, had only minor effects.
- The Atlas contains a wealth of data and information to support conservation and research in coming years. A more systematic approach to future data collection will enable change to be evaluated more effectively.

Hebridean Spotted Orchid *Dactylorhiza fuchsii*  
*ssp. hebridensis*, Cruit Is., Co. Donegal.

Nuacht Bhallach Inse Ghall *Dactylorhiza fuchsii*  
*ssp. hebridensis*, an Chruit, Co. Dhún na nGall.

*Robert Thompson*

## Achoimre

Tá Cumann Luibheolaíochta na Breataine agus na hÉireann (BSBI) tar éis an tríú Atlas dá chuid ar dháileadh plandaí fiáine a chur i dtoll a chéile – Atlas na bPlandaí, 2020. Tá an tAtlas ina iomláine, agus go leor áiseanna idirghníomhacha, foilsithe ar líne ag [plantatlas2020.org](http://plantatlas2020.org). Cur chuige úrnua í an fhormáid dhigiteach sin agus is iomaí bealach fiosrúcháin a thugann sí don úsáideoir. Tá *Atlas na bPlandaí, 2020* le foilsiú mar dhá imleabhar chomh maith. Sa tuarascáil achomair seo, tugtar cuntas ar chuid de na sonraí atá ar fáil san Atlas iomlán, ar an gcaoi ar féidir iad a chur i láthair, agus ar a n-insíonn siad dúinn faoi fhlóra na hÉireann.

- Toradh 20 bliain d'obair allamuigh is ea *Atlas na bPlandaí, 2020*. Éacht nár bheag é go ndearna 2,500 duine 2.85 milliún taifead planda in Éirinn amháin. Ba é 1,939 líon na speiceas a taifeadh, agus bhí beagán faoi bhun leath díobh sin ina speicis dhúchasacha. Mar thoradh air sin, tá léargas i bhfad níos iomláine againn ar bhithéagsúlacht plandaí na hÉireann. Tá níos mó ar eolas againn anois faoi na plandaí a fhásann agus na háiteanna a bhfásann siad, agus cuirtear an t-eolas sin i gcomparáid le suirbhéanna eile a rinneadh roimhe seo d'fhonn tuiscint a fháil ar na hathruithe atá tagtha ar a ndáileadh.
- Bhain na méaduithe ba mhó a chonacthas le speicis neamhdhúchasacha a tugadh isteach, ar nós an tSaileacháin Sráide. Tá plandaí dúchasacha coillearnaí, ar nós na gCoinnle Corra, ag seasamh an fhóid nó ag déanamh beagán dul chun cinn.
- Tá laghdú suntasach tagtha ar chuid mhaith speicis dhúchasacha Éireannacha eile, ámh, ó thaobh fairsinge nó minicíochta de. Is iad plandaí an fhéaraigh is mó atá thíos, m.sh. Lus an Chrúbáin; tá laghdú tagtha ar phlandaí an eanaigh agus an réisc chomh maith, m.sh. an Milseán Móna. Tá comharthaí ann go bhfuiltear ag cur isteach ar phobail plandaí uisceacha go fóill agus go bhfuil meath ag teacht orthu dá bharr.
- Tá an cailteanas agus an díghrádú gnáthóg fós ar na príomhchúiseanna le cailteanas na bithéagsúlachta ar an iomlán. Is ar éigean atá an t-athrú aeráide tar éis dul i bhfeidhm ar an scéal go fóill.
- Tá cuimse sonraí agus eolas san Atlas le tacú le caomhnú agus taighde as seo go ceann na mblianta. Ós rud é go mbeidh cur chuige níos córasaí á ghlacadh anois i leith bailiú sonraí, beifear in ann athruithe a mheas ar bhealach níos éifeachtaí amach anseo.



# 1 Introduction

Plants are all around us. They give Ireland its green mantle and its national colour. Seen from the air, the country is dominated by plants except in the most urban of settings. They provide us with the food we eat, and the oxygen we breathe. The fuels we burn to keep us warm and drive our economy come from plants, and our single largest industry – agriculture – is based on plants (even when we call it ‘livestock’ farming!). Plants are truly the foundation of life on earth.

People encounter plants more than any other living things: in gardens, in parks, in fields, in woods, in lakes and everywhere we go, there are plants. They clothe our landscapes, adorn our lives, and inspire us with the beauty of their flowers and their diversity of colour and form. Yet most of the time we take them for granted. We treat them as the background, and what we notice most are things that break the continuity of that background: people, animals, structures, and other artefacts.

It was not always so. Our ancestors depended on their knowledge of their surroundings and what grew where for their food, fuel, medicines, and forage for livestock. As a society, we no longer have that urgent incentive, and as a result we are rapidly losing our connection with the natural world as a whole. Our dependence on nature, however, is not diminished. It just works differently through the myriads of amazingly complex and subtle relationships between human activity, plants, and the rest of the natural world.

The decline in awareness of plants has occurred when plants need our attention the most. Globally we know that 40% of plant species are threatened with extinction. Many insects and other forms of life depend on specific plants, so the extinction of plants leads in turn to the extinction of many other things. In the Ireland Red List, 18% of plant species are in one of the threat categories and a further 9% are on a waiting list because of insufficient data. Time is not on our side.

Cooke’s Lough, Aughrim, Galway.  
Loch Cooke, Eachroim, Gaillimh.

*Micheline Sheehy Skeffington*

# 1 Réamhrá

Tá plandaí i ngach áit timpeall orainn. Faoina mbrat glas atá an chuid is mó den tír agus ní haon ionadh gurb iadsan ba bhun leis an dath náisiúnta. Ag breathnú síos ar an tír ón aer, is léir go bhfuil an lámh in uachtar ag na plandaí ó cheann ceann na tíre ach amháin na háiteanna is uirbí dá bhfuil ann. Tugann siad dúinn an bia a ithimid agus an ocsaigin a anáilimid. Ó phlandaí a thagann na breoslaí a dhóimid le muid féin a choinneáil te agus lenár ngeilleagar a bhrú chun chinn. An tionscal is mó atá againn – an talmhaíocht – is ar phlandaí atá sí sin bunaithe freisin (fiú nuair a thugaimid feirmeoireacht ‘beostoic’ air!). Is é firinne an scéil gurb iad plandaí bun agus barr an tsaoil.

Is iad plandaí an rud beo is minice a dtagann daoine air: i ngairdíní, i bpáirceanna, i ngarraithe, i gcoillte, i lochanna – cibé áit a mbíonn ár dtriail, bíonn plandaí ann. Clúdaíonn siad ár dtírdhreacha, cuireann barr maise ar ár saol, agus tugann áilleacht a mbláthanna agus éagsúlacht a ndathanna agus a bhfoirmeacha inspioráid dúinn. Ach an chuid is mó den am, ní hiontach linn iad. Níl iontu ach cúlra, agus is iad na rudaí is mó a tharraingíonn iúl an tslua ná bearnaí i leanúnachas an chúlra sin: daoine, ainmhithe, struchtúir agus déantáin eile.

Ní mar sin a bhí sé i gcónaí. Bhraitheadh ár sinsir ar a gcuid eolais ar a dtimpeallacht, ar na plandaí d’fhásadh agus ar an áit a bhfásadh siad le haghaidh bia, breosla, cógas agus foráiste do bheostoc. Mar shocháí, níl an spreagadh práinneach sin againn a thuilleadh agus, mar sin, táimid ag cailleadh ár naisc leis an nádúr trí chéile go gasta. Ní hé sin le rá nach bhfuilimid chomh spleách céanna ar an nádúr. Tá, ach oibríonn an spleáchas sin tríd an iliomad caidreamh iontach casta, caolchúiseach idir gníomhaíocht an duine, plandaí, agus an chuid eile den nádúr.

Tá an meath tagtha ar an bhfeasacht ar phlandaí tráth a bhfuil ár n-aird ag teastáil uathu níos mó ná riamh. Is eol dúinn go bhfuil 40% de na speicis plandaí ar fud an domhain i mbaol a ndíothaithe. Braitheann go leor leor feithidí agus beathachruthanna eile ar phlandaí ar leith agus, mar sin, bíonn díothú planda amháin ina chúis le díothú roinnt mhaith rudaí eile. Ar Liosta Dearg na hÉireann, tá 18% de na speicis plandaí faoi bhagairt agus tá 9% eile ar an liosta feithimh toisc nach leor na sonraí atá againn maidir leo. Tá an t-am ag éirí gearreireaballach.



## 2 Plant recording before 2000

We have a tradition of recording wild plants stretching back at least to the unpublished notes of Richard Heaton in the 17th century, followed by the Irish Floras of Caleb Threlkeld (*Synopsis Stirpium Hibernicarum*, 1727) and J T McKay (*Flora Hibernica*, 1836). By the end of the nineteenth century, R L Praeger brought in a system of vice-counties. Many of these equated to counties, but the larger ones were subdivided, so that Ireland has 40 vice-counties in all, covering 32 counties. The occurrence of a plant throughout Ireland could in principle be described, even mapped, by the vice-counties in which it was found.

Since that time, botanists have been documenting the locations of wild plants more systematically, typically within a county, but sometimes in smaller local areas as diverse as Inner Dublin, Lough Neagh and the islands of Bantry Bay. Since the mid-twentieth century, plant records have been co-ordinated by the Botanical Society of Britain and Ireland (BSBI). The Society is an independent scientific member organisation, with a voluntary co-ordinator for every vice-county, known as the vice-county recorder. The second half of the 20th century saw a gradual increase of interest in recording Irish wild plants, paralleling the growth of prosperity, leisure, urban living, and environmental concerns. BSBI provided scientific support, but the groundwork was generally done by small groups of botanists, often members of local societies, pre-eminent among them the Field Naturalists' Clubs of Dublin and Belfast.

In its first Atlas, published in 1962, BSBI pioneered the use of large numbers of volunteers to record in Ordnance Survey 10x10 km grid squares – known as hectads – as the basis for mapping where plants grow in wild situations. Volunteers were mobilised to undertake the massive task of recording in hectads; there are just over 1,000 of them in Ireland. If a species was found in a hectad, its distribution map showed a dot in that hectad. The Atlas was a big advance and is now seen as a landmark publication. It showed many aspects of plant distribution in Britain and Ireland in a visually appealing and accessible form. The stage was set for grid-based atlases to start appearing for a wide range of living organisms including birds and many groups of insects.



## 2 Taifeadadh plandaí roimh 2000

Tá traidisiún taifeadta plandaí fiáine againn a théann siar go dtí nótaí neamhfhoilsithe Richard Heaton sa 17ú haois, agus ina dhiaidh sin Flóraí na hÉireann le Caleb Threlkeld (*Synopsis Stirpium Hibernicarum*, 1727) agus J T McKay (*Flora Hibernica*, 1836). Faoi dheireadh an naoú haois déag, bhí córas na leas-chontaetha tugtha isteach ag R L Praeger. B'ionann go leor acu sin agus contaetha an lae inniu, ach bhí na contaetha ba mhó roinnte ina gcodanna, rud a d'fhág go raibh 40 leas-chontae in Éirinn ach 32 contae. I bprionsabal, d'fhéadfaí cur síos, nó léarscáiliú fiú, a dhéanamh ar mhínicíocht planda ar fud na hÉireann trí thagairt do na leas-chontaetha ar aimsíodh é iontu.

Ó shin i leith, tá luibheolaithe ag déanamh doiciméadú níos córasaí ar na háiteanna a n-aimsítear plandaí fiáine, de réir contae de ghnáth, ach uaireanta de réir ceantar áitiúil amhail Lár Chathair Bhaile Átha Cliath, Loch nEathach agus oileáin Bhá Bheanntaí. Tá Cumann Luibheolaíoch na Breataine agus na hÉireann (BSBI) ag comhordú na dtaifead ar phlandaí ó bhí lár an fichiú haois ann. Balleagraíocht neamhspleách eolaíochta is ea an Cumann, ag a bhfuil comhordaitheoir deonach i ngach leas-chontae. Tugtar an taifeadóir leas-chontae ar an duine sin. Tháinig méadú de réir a chéile sa dara leath den 20ú haois ar an méid spéise a léiríodh i bplandaí fiáine na hÉireann a thaifeadadh, méadú a bhí ag teacht a bheag nó a mhór leis an méadú a tháinig ar rathúnas, am saor, pobail uirbeacha, agus nithe ab údar imní maidir leis an gcomhshaol. Chuir an Cumann tacaíocht eolaíoch ar fáil gan amhras, ach is é fírinne an scéil gurb iad grúpaí beaga luibheolaithe a rinne an chuid ba mhó den obair chrua. I gcuid mhaith cásanna bhí na luibheolaithe sin páirteach i gcumainn áitiúla, cumainn mór le rá ar nós Chumann Allamuigh Nádúraithe Bhaile Átha Cliath agus Chumann Allamuigh Nádúraithe Bhéal Feirste ina measc.

Sa chéad Atlas, a foilsíodh siar sa bhliain 1962, bhí Cumann Luibheolaíoch na Breataine agus na hÉireann ar thús cadhnaíochta ó thaobh úsáid a bhaint as líon mór oibrithe deonacha le sonraí a thaifeadadh i gcearnóga eangaí 10x10 km na Suirbhéireachta Ordanáis, sonraí a úsáideadh ansin le bonn eolais a chur faoi léarscáiliú na n-áiteanna a raibh plandaí ag fás go fiáin. Cuireadh na hoibrithe deonacha ag obair le sonraí a thaifeadadh maidir leis na cearnóga, tasc nár bheag óir go bhfuil beagán os cionn 1,000 cearnóg dá leithéid in Éirinn. Más rud é gur aimsíodh speiceas i gcearnóg, bhí ponc le feiceáil sa chearnóg sin ar an léarscáil dáileacháin. Ba mhór an dul chun cinn an tAtlas agus tuigtear anois a thábhachtaí a bhí sé mar fhoilseachán. Léiríodh go leor gnéithe de dháileadh na bplandaí sa Bhreatain agus in Éirinn ann agus bhí leagan amach tarraingteach, éasca le tuiscint air chomh maith. Leis sin, bhí an bealach réitithe d'atlais ghreille-bhunaithe maidir le raon leathan orgánach beo, lena n-áirítear éin agus go leor grúpaí feithidí.

A selection of some of the Irish county and regional floras. Rogha leabhar maidir leis an bhflóra i gcontae nó réigiún ar leith in Éirinn.

Micheline Sheehy Skeffington

### 3 Recorders and their records today

BSBI's most recent Atlas – *Plant Atlas 2020* – is its third. Based on fieldwork between 2000 and 2019, it is the focus of this report. As in previous atlases, all species of vascular plant growing in wild situations were eligible to be recorded. Essentially, this means they had to be outside formal gardens and cropped fields, unless they were obviously growing as weeds. Vascular plants include ferns and conifers and flowering plants. As well as plants with conspicuous flowers, the latter encompass grasses, sedges, rushes and broad-leaved trees. For the first time, stoneworts (charophytes) have been included in the Atlas. Stoneworts are not vascular plants, but a group of larger algae that have traditionally been within the scope of BSBI. They are found mainly in fresh water and are valuable as ecological indicators. Plant groups not covered in the Atlas are mosses, liverworts, lichens, and algae other than stoneworts.

The mainstay of the Irish data in *Plant Atlas 2020* is the records of vice-county recorders themselves, who often worked on their own or in small groups with family, friends, or fellow botanists. Other sources include ordinary members of BSBI, other naturalists, and surveys commissioned by the National Parks and Wildlife Service or Northern Ireland Environment Agency. Records have also been sourced through the National Biodiversity Data Centre (Waterford) and the Centre for Environmental Data and Recording (Belfast). Adding all the sources together, the number of contributors in Ireland was around 2,500. During the final years of the recording period, the BSBI Committee for Ireland kept a comprehensive list and map of recording intensity across the whole of Ireland. By keeping these regularly

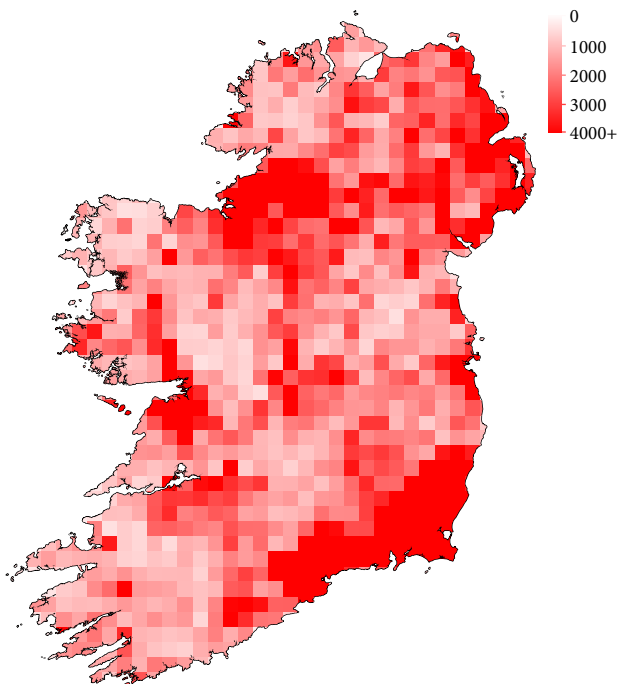


Figure 1. Map showing the number of plant records (not species) from each hectad in Ireland made during 2000–2019.

Fíor 1. Léarscáil ar a dtaispeántar líon na dtaifead plandaí (ní speicis) ó gach cearnóg in Éirinn a rinneadh le linn 2000–2019.

### 3 Taifeadóirí agus a dtaifid sa lá atá inniu ann

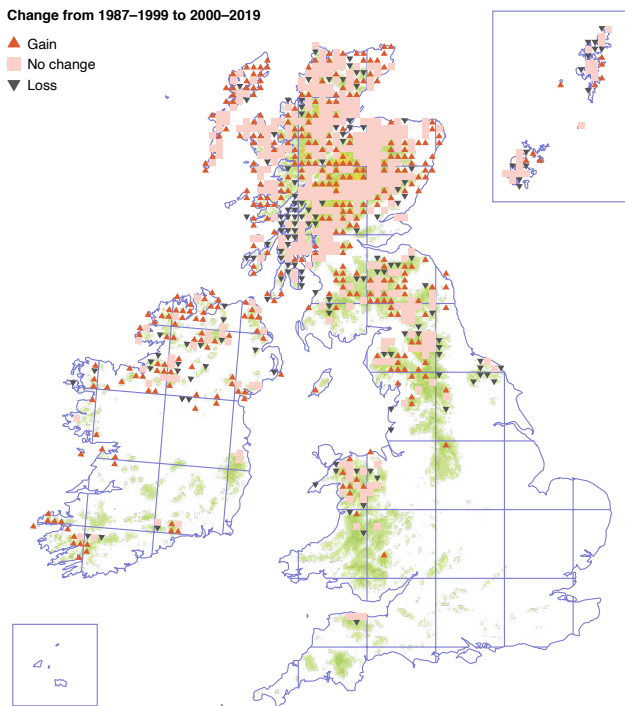
An tAtlas is déanaí de chuid Chumann Luibheolaíoch na Breataine agus na hÉireann – *Atlas na bPlandaí, 2020* – is é an tríú atlas dá leithéid é. Bunaithe ar obair allamuigh a rinneadh idir 2000 agus 2019, is é an tAtlas sin atá faoi chaibidil sa tuarascáil seo. Mar a bhí sna hatlais roimhe seo, bhí gach speiceas de phlanda soithíoch a bhí ag fás go fiáin incháilithe lena thaifeadadh. Go bunúsach, ciallaíonn sé sin go gcaithfeadh sé a bheith lasmuigh de ghairdíní foirmiúla agus páirceanna bearrtha, ach amháin má bhí sé ríshoiléir go raibh siad ag fás mar fhiailí. Áirítear le plandaí soithíocha raithneach, buaircínigh agus plandaí bláthanna. Chomh maith le plandaí a bhfuil bláthanna feiceálacha acu, áirítear le plandaí bláthanna plandaí féir, cíbe agus luachra, mar aon le crainn leathanduilleacha. Tá aol-lusanna (caraifítí) curtha san áireamh san Atlas den chéad uair. Ní plandaí soithíocha iad aol-lusanna, ach grúpa algaí móra a bhfuil suim ag an gCumann iontu go traidisiúnta. In uisce úr a aimsítear den chuid is mó iad agus tá siad luachmhar mar tháscairí éiceolaíochta. Ar na grúpaí plandaí nach bhfuil clúdaithe san Atlas tá caonaigh, aelusanna, léicín, agus algaí seachas aol-lusanna.

Tá na sonraí a bhaineann le hÉirinn in *Atlas na bPlandaí, 2020* bunaithe go príomha ar thaifid na dtaifeadóirí leas-chontae féin, a d'oibrigh leo féin go minic nó i ngrúpaí beaga le daoine muinteartha, cairde, nó luibheolaithe eile. I measc na bhfoinsí eile tá gnáthbhaill an Chumainn, nádúraithe eile, agus suirbhéanna arna gcoimisiúnú ag an tSeirbhís Páirceanna Náisiúnta agus Fiadhúlra nó ag Gníomhaireacht Comhshaoil Thuaisceart Éireann. Fuarthas taifid freisin tríd an Ionad Náisiúnta le Sonraí Bithéagsúlachta (Port Láirge) agus tríd an Ionad um Shonraí Comhshaoil agus Taifeadadh



Plant recording, The Mash, Co. Laois.  
Taifeadadh plandaí, an Mhais, Co. Laoise.

Fiona MacGowan



**Figure 2.** Map from *Plant Atlas 2020* showing change in the recorded distribution of Lesser Twayblade between 1987–1999 and 2000–2019.

Grey triangles indicate 10 km squares where it was found in the first period only, orange triangles where it was found in the second period only, and the shading where it was found in both periods.

**Fíor 2.** Léarscáil ó *Atlas na bPlandaí, 2020* ar a dtaispeántar athrú ar dháileadh taifeadta na Dédhuilleoige Bige idir 1987–1999 agus 2000–2019.

Léirítear leis na triantáin liatha cearnóga 10 km na háiteanna ar aimsíodh sa chéad tréimhse amháin é, leis na triantáin oráiste na háiteanna ar aimsíodh sa dara tréimhse amháin é, agus leis an scáthú na háiteanna ar aimsíodh sa dá thréimhse é.



Lesser Twayblade *Neottia cordata*, spruce forest, Moneygorm North, Co. Waterford.

Dédhuilleog Bheag *Neottia cordata*, foraois sprús, an Muine Gorm Thuaidh, Co. Phort Láirge.

*Andrew Malcolm*

updated and making them widely available, vice-county recorders were enabled to direct their attention to under-recorded hectads (Fig. 1). Roving recorders also helped to fill in any gaps. With the help of funding from the Wildflower Society, an experienced recorder surveyed many hectads in the west where recording would otherwise have been deficient. The total number of Irish plant records assembled for the Atlas was 2.85 million.

We can never hope to record all the species present in every hectad and therefore new species continue to turn up on a regular basis. Even some scarce species, such as Lesser Twayblade *Neottia cordata*, are now known to be more widespread than when they were last mapped in 2000 (Fig. 2). There will always be an element of under-recording for species such as Lesser Twayblade that are difficult to find. Lesser Twayblade grows in *Sphagnum* moss under heather and is typically found only by parting the stems of heather, and even then one is often distracted by the very similar looking leaves of Bilberry *Vaccinium myrtillus*.

Plant Atlas 2020 provides updated distribution maps for 3,495 plant species and hybrids found growing in the wild in Ireland and/or Britain. The full survey outcome can be found on a website [plantatlas2020.org](http://plantatlas2020.org), and a summary for 2,861 of these species is being published in a two-volume book. Comparison with the previous surveys reveals substantial

(Béal Feirste). Má chuirtear na foinsí go léir le chéile, bhí thart ar 2,500 duine páirteach san obair in Éirinn. Le linn na mblianta deiridh den tréimhse thaifeadta, choinnigh Coiste an Chumainn in Éirinn liosta cuimsitheach agus léarscáil de dhéine na dtaifead ó cheann ceann na tíre. Toisc gur coinníodh iad sin cothrom le dáta agus gur scaipeadh go forleathan iad, cuireadh ar chumas na dtaifeadóirí leas-chontae díriú ar chearnóga a raibh tearcthaifeadadh déanta orthu (Fíor 1). Rinne taifeadóirí taistil a gcuid féin le bearnaí a líonadh, leis. Le cúnamh airgid ó Chumann na mBláthanna Fiáine, rinne taifeadóir a raibh taithí aige suirbhe ar chuid mhaith cearnóg san iarthar, áit a mbeadh na taifid easnamhach murach sin. Ba é 2.85 milliún líon iomlán na dtaifead plandaí in Éirinn a cuireadh le chéile don Atlas.

Níl seans ar bith againn na speicis ar fad i ngach cearnóg a thaifeadadh ná baol air, agus tagann speicis nua chun cinn go rialta dá bharr sin. Is eol anois go bhfuil roinnt speicis neamhchoitianta, amhail an Dédhuilleog Bheag *Neottia cordata*, níos coitianta anois ná mar a bhí nuair a rinneadh léarscáiliú orthu an uair dheireanach in 2000 (Fíor 2). Déanta na fírinne, beidh tearcthaifeadadh i gceist i gcónaí le speicis atá deacair le haimsíú, ar nós na Dédhuilleoige Bige. Fásann an Dédhuilleog Bheag i súsán *Sphagnum* faoi bhun fraoigh agus is iondúil nach féidir í a aimsíú ach gais an fhraoigh a oscailt. Fiú má dhéantar an méid sin ar fad, is minic a leagann daoine a súile ar Fhraochán *Vaccinium myrtillus* seachas

changes in the distribution of many plant species. Some of the key findings for Ireland are presented here in this summary report; a separate summary report has been produced for Britain. We also outline here some of the changes that have taken place in the flora since the 1950s and put forward some suggestions about what needs to be done to maintain or restore it.

## 4 Ireland's flora

Ireland has a modest flora by global standards, albeit one that includes some species of exceptional interest, like St Dabeoc's Heath *Daboecia cantabrica* which is locally common in Connemara. Many native species would have migrated here after the end of the last glaciation about 12,000 years ago, before connections with Britain and continental Europe were impeded by rising and widening seas. Others would include species that evolved here, or colonised across longer distances. Since then, people have transformed the natural vegetation of Ireland by cutting down forests, by farming activities, by building houses and infrastructure and by importing species from all over the world, either deliberately through trade or accidentally within imported materials.



Dédhuilleog Bheag de bharr go bhfuil a nduilleoga an-chosúil le chéile.

Tugtar in Atlas na bPlandaí, 2020 léarscáileanna dáileacháin cothrom le dáta le haghaidh 3,495 speiceas agus hibrid plandaí a aimsíodh ag fás go fiáin in Éirinn agus/nó sa Bhreatain. Is féidir toradh iomlán an tsuirbhé a fháil ar an láithreán gréasáin [plantatlas2020.org](http://plantatlas2020.org) agus tá achoimre ar 2,861 ceann de na speicis sin le foilsiú mar dhá imleabhar chomh maith. Nuair a chuirtear é i gcomparáid le suirbhéanna a rinneadh roimhe seo, is léir go bhfuil athruithe suntasacha tagtha ar dháileadh cuid mhaith speicis plandaí. Cuirtear i láthair sa tuarascáil achomair seo cuid de na príomhthorthaí a bhaineann le hÉirinn; tá tuarascáil achomair ar leith ann a bhaineann leis an mBreatain. Tugaimid breac-chuntas anseo freisin ar chuid de na hathruithe atá tarlaithe ar an bhflóra ó na 1950idí agus déanaimid roinnt moltaí faoi na rudaí is gá a dhéanamh le hé a choinneáil nó a athbhunú.

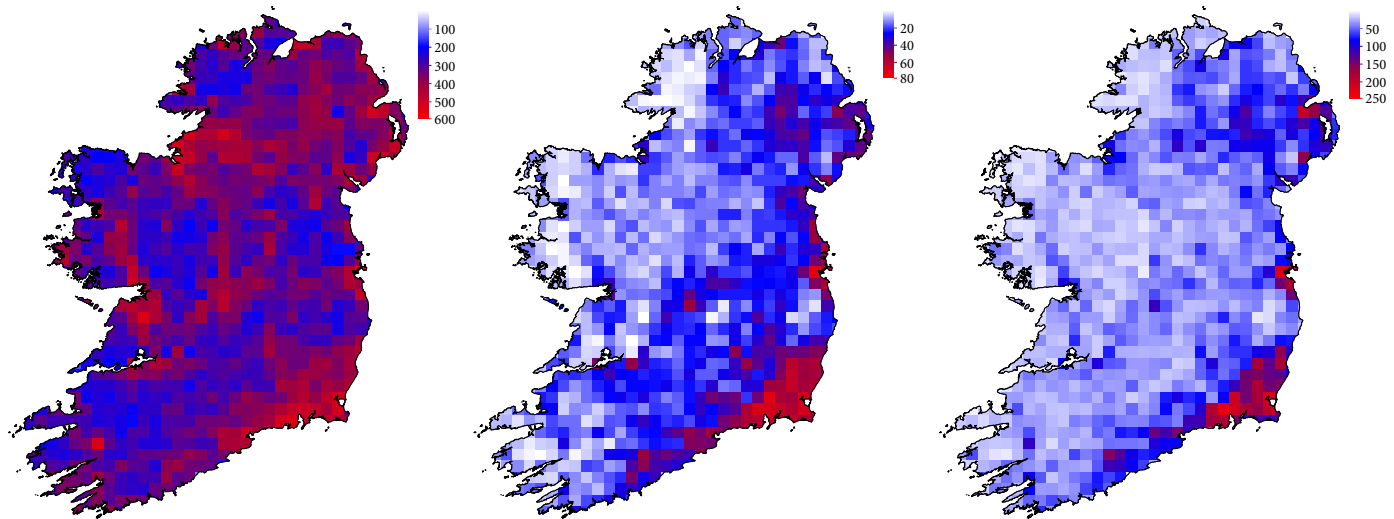
## 4 Flóra na hÉireann

Tá flóra na hÉireann measartha teoranta i gcomparáid le háiteanna eile ar domhan, ach tá roinnt speicis is díol eisceachtúil spéise ann mar sin féin, amhail Fraoch na hAon Choise *Daboecia cantabrica*, atá coitianta go háitiúil i gConamara. Rinne go leor speicis dhúchasacha imirce anseo tar éis dheireadh na hoighearthrémhse deiridh thart ar 12,000 bliain ó shin, sular chuir farragí a bhí ag ardú agus ag leathnú bac ar naisc leis an mBreatain agus le mór-roinn na hEorpa. Roinnt eile, is speicis iad a d'éabhlóidigh anseo, nó a choilínigh anseo ó áiteanna i gcéin. Ó shin, tá fása nádúrtha na hÉireann athraithe ó bhonn ag an duine daonna trí fhoraoisí a leagan, trí ghníomhaíochtaí feirmeoireachta, trí thithe agus bonneagar a thógáil agus trí speicis a iompórtáil ó gach cearn den domhan, cibé acu d'aon ghnó trí thrádáil nó de thaisme in ábhair iompórtáilte. Léiríonn fianaise seandálaíochta gur chuir feirmeoirí neoiliteacha tús leis an bpróiseas seo 5,500 bliain ó shin nuair a thosaigh siad ag tabhairt plandaí nua isteach ón iasacht le haghaidh bia, teicstílí agus cógais, nó mar 'shíobairí' i ngan fhios. An chuid is mó de na speicis seo a tugadh isteach sa seanam, nó 'aircéifítí' mar a thugtar orthu, ní aimsítear iad ach in ithreacha suaite amháin, talamh saothraithe san áireamh, agus mar sin tá siad thuas seal thíos seal le blianta beaga anuas (féach Cuid 6). Na plandaí a tugadh isteach ó thug Eorpaigh aghaidh ar an Domhan Nua ag deireadh an 15ú haois, ámh, tá i bhfad níos mó acu sin ann. Is plandaí ornáideacha iad cuid mhaith de na plandaí seo a tugadh isteach le déanaí, nó 'neofítí' mar a thugtar orthu, ach áirítear leo crainn foraoiseachta agus go leor speicis a tugadh isteach de thaisme le hábhair iompórtáilte nó ar fheithiclí agus ar éadaí. Tá roinnt de na plandaí a tugadh isteach tar éis éirí ionrach le 20 nó 30 bliain anuas, agus iad anois ag cur isteach ar fheidhmiú éiceolaíoch roinnt gnáthóg chun aimhleasa an fhiadhúlra dúchais. Róslabhras *Rhododendron ponticum*,

St Dabeoc's Heath *Daboecia cantabrica*, Casla, South Connemara, Galway.

Fraoch na hAon Choise *Daboecia cantabrica*, Casla, Conamara Theas, Gaillimh.

*Micheline Sheehy Skeffington*



**Figure 3.** Numbers of native species (*left*), archaeophytes (*centre*) and neophytes (*right*) recorded in each hectad in 2000–2019. Archaeophytes are ancient introductions brought to Ireland by human activity before 1500 AD; neophytes are more recent introductions.

**Fíor 3.** Líon na speiceas dúchasach (*ar chlé*), na n-aircéifítí (*sa lár*) agus na neoifítí (*ar dheis*) i ngach cearnóg a taifeadh in 2000–2019.

Is é is aircéifít ann ná planda a tugadh go hÉirinn de bharr gníomhaíocht dhaonna roimh 1500 A.D.; is ina dhiaidh sin a tugadh na neoifítí isteach.

Archaeological evidence shows that neolithic farmers began this process 5,500 years ago by importing new plants for food, textiles, or medicine, or as incidental ‘hitch-hikers’. Most of these ancient introductions or ‘archaeophytes’ are confined to disturbed soils, including cultivated land, and so have had mixed fortunes in recent decades (see Section 6). Far more numerous are plants imported since the exploration of the New World by Europeans at the end of the 15th century. Many of these modern introductions or ‘neophytes’ are ornamental plants, but they also include forestry trees and many species accidentally introduced with imported materials or on vehicles and clothing. A few introductions have become invasive in recent decades, disrupting the ecological functioning of some habitats to the detriment of native wildlife. *Rhododendron ponticum*, for instance, thrives in broad-leaved woodland, suppressing the native ground flora.

In the surveys for Atlas 2020, a total of 1,939 species were recorded in Ireland. Of these, 952 are natives and as a group were distributed more or less evenly across the country. They do appear to be somewhat better represented near the main urban areas than elsewhere, suggesting either that there has been more thorough recording close to where botanists live or that there is a greater range of habitats close to urban areas (Fig. 3). Archaeophytes numbered 97 and were most strongly represented in a broad belt from Belfast to Cork, which approximates to the area where arable farming is common. Of neophytes, there were 890; these show some obvious concentrations in urban areas, a general declining trend from east to west, and also a tendency for some vice-county recorders to be more liberal than others in their interpretation of what garden escapes and planted species should be recorded.

cuir i gcás, planda a mbíonn an-rath air i gcoillearnacha leathanduilleacha agus a chuireann an flóra talún dúchais faoi chois.

Sna suirbhéanna a rinneadh le haghaidh Atlas 2020, rinneadh taifeadh ar 1,939 speiceas san iomlán in Éirinn. As an líon sin, bhí 952 ceann dúchasach agus, mar ghrúpa, bhí siad dáilte go cothrom a bheag nó a mhór ar fud na tíre. Is cosúil gur mhó a aimsíodh in aice leis na príomhcheantair uirbeacha ná in áiteanna eile, rud a thugann le tuiscint go ndearnadh taifeadh ní ba chríochnúla gar don áit a bhfuil cónaí ar na luibheolaithe nó go bhfuil raon níos mó gnáthóg gar do cheantair uirbeacha (Fíor 3). Bhí 97 aircéifít ann agus aimsíodh an chuid ba mhó acu i gcrios leathan ó Bhéal Feirste go Corcaigh, achar arb ionann é a bheag nó a mhór agus an ceantar a bhfuil an fheirmeoireacht arúil coitianta. Maidir le neoifítí, aimsíodh 890 ceann agus ba léir go raibh siad comhchruinnithe thart ar na háiteanna uirbeacha. Bhí treocht ghinearálta anuas le brath ón oirthear go dtí an t-iarthar, chomh maith le claonadh roinnt taifeadóirí leas-chontae le bheith beagán ní ba scaoilte ná taifeadóirí eile ina léamh ar na speicis éalaithe agus churtha ba cheart a thaifeadh.



## 5 Lost and found

Radical changes in land use began many centuries before plant recording, so it is highly likely there have been extinctions of species that we do not know about. Indeed being certain that a species has become extinct is fraught with difficulties. In historic times, however, there is confidence that at least eight native species have disappeared completely from Ireland. The loss of Buxbaum's Sedge *Carex buxbaumii* is well documented. It grew on an island at the north end of Lough Neagh, where it was first found in 1835, and survived at least until 1886, but searches since then have been fruitless. Scrub encroachment, hard grazing, and lowering of the water table have all been implicated in its decline. Descendants of the plant survive in cultivation. Rannoch Rush *Scheuchzeria palustris* disappeared within 8 years of its discovery on a bog in Co. Offaly owing to peat exploitation. Saw-wort *Serratula tinctoria* was known from a rocky river bank in Co. Wexford, where it was first recorded in 1925 and survived until 1952, but has not been seen since.

Five other species believed to be extinct are (with dates when last recorded) Purple Spurge *Euphorbia peplis* 1859, Scaly Buckler-fern *Dryopteris remota* 1900, Holy-grass *Hierochloa odorata* 1985, Sea Knotgrass *Polygonum maritimum* 1978, and Fen Wood-rush *Luzula pallescens* 1970. Oak Fern *Gymnocarpium dryopteris* might also be extinct. It had been seen on widely separated Irish mountains over a hundred-year period, but was last recorded on the Garron Plateau of Co. Antrim in 1979. Another species, Sea Stock *Matthiola sinuata*, had not been seen for 86 years and was thought to be extinct but turned up in Co. Wexford in 2019. Although not covered in the Atlas, there are also some species of Hawkweed *Hieracium* spp. and Dandelion *Taraxacum* spp. that may be extinct.

Since the start of recording for *Plant Atlas 2020*, nine species (Table 1) with potentially native credentials have been found for the first time or confirmed in Ireland. The most remarkable of these is the Kerry Mousetail Fern, a tiny plant of humid rock crevices known from nowhere else closer than the Caribbean. The others all occur in Britain, with the possible exception of the Sharp-toothed Eyebright about which there is some doubt. Four species of Eyebright appear



Early Sand-grass *Mibora minima*, Barley Cove, Mizen Peninsula, Co. Cork.

Féar Gainimh Luath *Mibora minima*, Bá na hEornan, Leithinis Uí Néid, Co. Chorcaí.

Paul Green

## 5 Ar cailleadh agus ar aimsíodh

Thosaigh athruithe ó bhonn ar úsáid talún i bhfad roimh thaifeadadh na bplandaí agus, mar sin, is dóicí ar fad gurb ann do speicis dhíothaithe nach bhfuil ar eolas againn. Mar sin féin, tá sé thar a bheith deacair a bheith cinnte go bhfuil speiceas tar éis a dhíothaithe. Maidir leis an aimsir stairiúil, áfach, tá muintín ann gur cailleadh ocht speiceas dhúchasacha in Éirinn. Tá neart eolais ar fáil maidir le cailleadh na Cíbe Goirme *Carex buxbaumii*. D'fhásadh sé ar oileán ag an taobh thuaidh de Loch nEathach, áit ar aimsíodh den chéad uair í sa bhliain 1835. Mhair sé go dtí 1886 ar a laghad, ach ní raibh aon mhaith ar iarrachtaí le teacht uirthi ó shin. Tá cúngach scrobarnaí, dian-innilt, agus íslíú an mhaoschláir luaite mar chúis leis an meath. Maireann sliochtaigh shaothraithe an phlanda. D'imigh Luachair an Phollaigh *Scheuchzeria palustris* laistigh de 8 mbliana tar éis a haimsithe ar phortach i gCo. Uíbh Fhailí de dheasca saothrú móna. D'aimsítí Sábhlus *Serratula tinctoria* ar bhruach creagach abhann i gCo. Loch Garman, áit ar taifeadadh den chéad uair é in 1925. Mhair sé go dtí 1952, ach níl tásca ná tuairisc air ó shin.

Ar chúig speiceas eile a chreidtear atá díothaithe (agus an dáta ar taifeadadh go deireanach iad) tá Spuirse Dhearg *Euphorbia peplis* 1859, Raithneach Ghainneach *Dryopteris remota* 1900, Féar Muire *Hierochloa odorata* 1985, Glúineach Mhara *Polygonum maritimum* 1978, agus Giúnach Eanaigh *Luzula pallescens* 1970. Tá seans ann go bhfuil an Raithneach Dharach *Gymnocarpium dryopteris* díothaithe chomh maith. Ní fhacthas é ach ar shléibhte Éireannacha a bhí i bhfad ó chéile le himeacht tréimhse céad bliain, ach taifeadadh é go deireanach ar Ardchlár an Ghearráin, Co. Aontroma siar in 1979. Ní raibh speiceas eile, Tonóg Chladaigh *Matthiola sinuata*, feicthe le 86 bliain agus measadh go raibh sé díothaithe ach thángthas air arís i gCo. Loch Garman in 2019. Cé nach bhfuil siad clúdaithe san Atlas, tá roinnt speicis de Lus na Seabhac *Hieracium* spp. agus den Chaisearbhán *Taraxacum* spp. a d'fhéadfadh a bheith díothaithe freisin.

Ó cuireadh tús leis an taifeadadh le haghaidh *Atlas na bPlandaí, 2020*, tá naoi speiceas (Tábla 1) a d'fhéadfadh a bheith dúchasach aimsithe den chéad uair nó dearbhaithe in Éirinn. Is é an ceann is suntasaí díobh sin ná Raithneach Luchearrach Chiarraí, planda beag bídeach a aimsítear i scoilteanna taise carraige agus nach bhfuil feicthe áit ar bith níos cóngaraí ná réigiún Mhuir Chairib roimhe seo. Aimsítear na cinn eile ar fad sa Bhreatain chomh maith, cé is moite den Ghlanrosc Géardhéadach, b'fhéidir, ceann a bhfuil amhras ann faoi. Tá ceithre speiceas de Ghlanrosc ar an liosta; is léir gur spreag an taidhde ullmhúcháin ar lámhleabhar de chuid an Chumainn ar Ghlanroisc, agus a fhoilsiú ina dhiaidh sin, spéis sa ghrúpa seo atá deacair le haithint. Ó thángthas air ar thrá scaineagáin ar Dhairbhre, tá an Eilifleog Luath tagtha chun solais i gCuan Mó (Maigh Eo) agus i roinnt áiteanna i Loch Garman chomh maith. Is cosúil go bhfuil an tSnáthluachair seanbhunaithe ar chladach Loch Aillionn. Speiceas cósta is ea an Féar Gainimh Luath a thagann i mbláth go luath san earrach agus atá an-bheag agus neamhfheiceálach. Mar sin, is dócha go mbíodh sé á ligean thart go dtí gur aimsíodh ar dhumhcha gar do Charn Uí Néid í. Bhí amhras ann faoin taifead ar an Líobhógach Ribeach ar an gcéad dul síos, ach deimhníodh in 2022 é nuair a aimsíodh arís é; aimsíodh ag suíomh eile é in 2021 freisin.

on the list; evidently the preparatory research and publication of a BSBI handbook about Eyebrights had stimulated interest in this difficult-to-identify group. Since its discovery on a shingle beach on Valencia Island, Early Orache has appeared in Clew Bay (Mayo) and several sites in Wexford. Thread Rush seems well-established on the shore of Lough Allen. Early Sand-grass is also coastal, flowers in early spring, and is very small and inconspicuous so had almost certainly been overlooked until it was found on dunes near Mizen Head. The record of Hair-like Pondweed was regarded as doubtful at first, but was confirmed in 2022 when it was refound; it was also found at another site in 2021.



Kerry Mousetail Fern *Stenogrammitis myosuroides*,  
Co. Kerry.

Raithneach Luchearrach Chiarraí  
*Stenogrammitis myosuroides*, Co. Chiarraí.

Rory Hodd



Buxbaum's Sedge *Carex buxbaumii* in cultivation.

Cíb Ghorm *Carex buxbaumii* á saothrú.

John Faulkner

Table 1. Nine species newly discovered in Ireland since 2000 that are, or might be, natives.

English name	Scientific name	Where and when found
Hair-like Pondweed	<i>Potamogeton trichoides</i>	Armagh 2004 (introduced from GB?)
Early Sand-grass	<i>Mibora minima</i>	W Cork 2005
Thread Rush	<i>Juncus filiformis</i>	Leitrim 2010
Early Orache	<i>Atriplex praecox</i>	Kerry 2017
Foula Eyebright	<i>Euphrasia foulaensis</i>	W Donegal 2017
Ostenfeld's Eyebright	<i>E. ostensfeldii</i>	Leitrim 2017
Sharp-toothed Eyebright	<i>E. stricta</i>	Wexford 2017
Heslop-Harrison's Eyebright	<i>E. heslop-harrisonii</i>	E Donegal 2019
Kerry Mousetail Fern	<i>Stenogrammitis myosuroides</i>	Kerry 2019

Tábla 1. Naoi speiceas a aimsíodh den chéad uair in Éirinn ó 2000 agus atá ina bplandaí dúchasacha, nó a d'fhéadfadh a bheith.

Ainm i nGaeilge	Ainm eolaíoch	Áit agus bliain a aimsithe
Líobhógach Ribeach	<i>Potamogeton trichoides</i>	Ard Mhacha, 2004 (tugtha isteach ón mBreatain?)
Féar Gainimh Luath	<i>Mibora minima</i>	Iarthar Chorcaí, 2005
Snáthluachair	<i>Juncus filiformis</i>	Liatroim, 2010
Eilifleog Luath	<i>Atriplex praecox</i>	Ciarraí, 2017
Glanros Foula	<i>Euphrasia foulaensis</i>	Iarthar Dhún na nGall, 2017
Glanros Ostenfeld	<i>E. ostensfeldii</i>	Liatroim, 2017
Glanros Géardhéadac	<i>E. stricta</i>	Loch Garman, 2017
Glanros Heslop-Harrison	<i>E. heslop-harrisonii</i>	Oirthear Dhún na nGall, 2019
Raithneach Luchearrach Chiarraí	<i>Stenogrammitis myosuroides</i>	Ciarraí, 2019

## 6 Assessing change over time

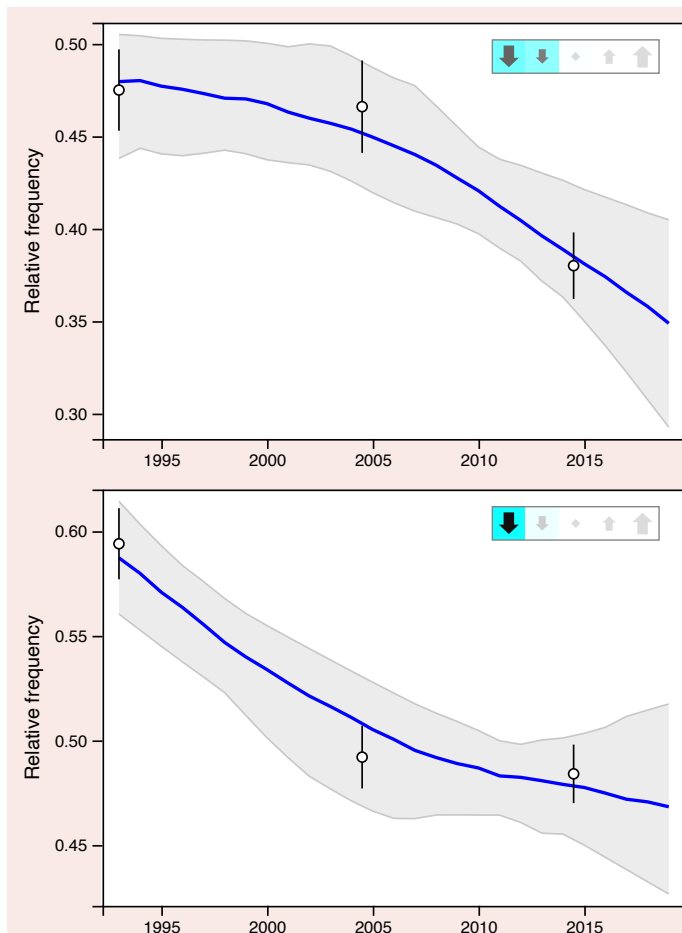
How do we gauge whether a plant species is commoner or scarcer than it used to be, and by how much? A great deal can be gleaned by studying distribution maps for different time periods, but there are complications to be overcome. A dot on a mapped hectad shows that the species was present, but the absence of a dot does not necessarily mean that it was absent: it may simply not have been noticed. When a survey is repeated, but more intensively, the number of dots will tend to be higher because the proportion of occurrences that have been detected will be higher, even if the distribution and range of the species have remained the same. This is what has happened with Atlas 2020 recording in Ireland. Further complications arise when the intensity of recording varies between areas – for example, if there is more recording close to centres of population. In assessing change statistically, it is essential to be aware of these irregularities in the underlying data.

A modelling approach (known as FRESALLO) has been used on the Atlas data. It adjusts for spatial and temporal variation in survey intensity (recording effort) by comparing the observed frequency of each species in different time periods and areas with that of locally common benchmark species. A detailed description of the technique is provided in Chapter 6 of the Atlas book. It calculates trends for almost every species, which can be represented as a plot of frequency against time,

## 6 Measúnú ar na hathruithe le himeacht ama

Cén chaoi ar féidir linn a mheas cibé acu atá speiceas planda níos coitianta nó níos gainne ná mar a bhíodh, agus cén chaoi ar féidir méid an athraithe a dhéanamh amach? Is féidir an-chuid léargais a fháil ach breathnú go mion ar léarscáileanna dáileacháin ó thréimhsí ama éagsúla, ach tá deacrachtaí le sárú mar sin féin. Léiriú é ponc i gcearnóg léarscáilithe go raibh an speiceas i láthair, ach ní gá go gciallódh easpa poinc nach raibh sé ann; seans nach raibh ann ach nach bhfacthas é. Nuair a dhéantar suirbhé arís, ach ar bhealach níos déine, is gnách go mbeidh níos mó poncanna ann toisc go mbeidh cion na dtarluithe a braitheadh níos airde, fiú má d'fhan dáileadh agus raon na speiceas mar an gcéanna i ndáiríre. Is é sin díreach an rud a tharla i gcás na dtaifeadtaí le haghaidh Atlas 2020 in Éirinn. Tagann deacrachtaí eile chun cinn má athraíonn déine na dtaifeadtaí idir ceantair — mar shampla, má tá níos mó taifeadtaí gar d'ionaid daonra. Le measúnú ceart a dhéanamh ar an athrú ó thaobh staitistice de, caithfear a bheith ar an eolas faoi mhíriltachtaí den sórt sin sna sonraí bunaidh.

Baineadh úsáid as cur chuige samhaltaithe (a dtugtar FRESALLO air) ar shonraí an Atlais. Déanann sé coigeartú le héagsúlacht spásúil agus ama ó thaobh dhéine an tsuirbhé (iarracht taifeadta) a chur sa mheá trí chomparáid a dhéanamh



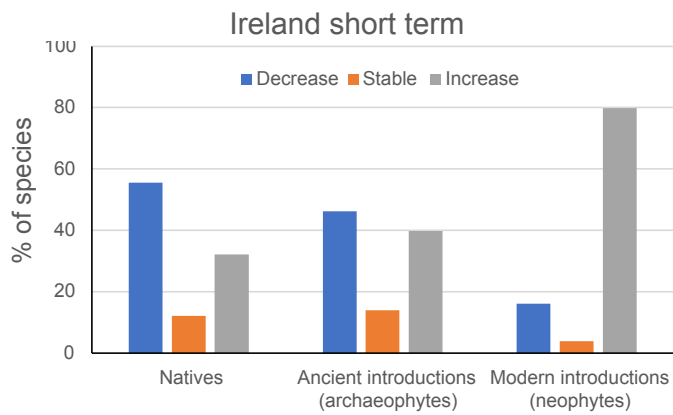
Heath Spotted-orchid *Dactylorhiza maculata*, Claggan Mountain, Co. Mayo.

Na Circíní *Dactylorhiza maculata*, Sliabh an Chloiginn, Co. Mhaigh Eo.

*John Conaghan*

**Figure 4.** Short-term trends in frequency of Heath Spotted-orchid, with inset trend bars, in Ireland (*top*) and Britain (*bottom*). Both graphs show a downward trend in frequency over time. In the trend bars, a down arrow on the far left indicates a strong decrease; a strong increase would have been indicated by an up arrow on the far right.

**Fíor 4.** Treochtaí gearrthéarmacha i minicíocht na gCircíní, le barraí treochta intlise, in Éirinn (*thuas*) agus sa Bhreatain (*thíos*). Léirítear treocht anuas sa dá ghraf sa mhinicíocht le himeacht ama. Sna barraí treochta, léirítear le saighead síos ar chlé ar fad laghdú láidir; léireofaí méadú láidir ag saighead suas ar dheis ar fad.



**Figure 5. Proportions of increasing, stable, or decreasing species in the native, archaeophyte, and neophyte categories.**

More than half of all natives have decreased, whereas the overwhelming majority of neophytes have increased. These figures are based on short term trends, i.e. since 1987.

**Fíor 5. Sciartha de na speicis atá ag méadú, seasmhach, nó ag laghdú sna catagóirí Dúchasach, Aircéifítí, agus Neoifítí.**

Tá laghdú tagtha ar níos mó ná leath de na speicis dhúchasacha, ach tá méadú tagtha ar thromlach mór na neoifítí. Tá na figiúirí sin bunaithe ar threochtaí gearrthéarmacha, i.e. ó 1987 i leith.

or more simply by a diagrammatic ‘trend bar’. Both formats are available in the on-line Atlas. As an example, the short-term trend plots and trend bars for Heath Spotted-orchid *Dactylorhiza maculata* are shown in Fig. 4. They suggest a fairly strong decline in both Ireland and Britain. In the trend bars, the paler shading, spread between two boxes, indicates a wider margin of error in the Irish than in the British data.

While the FRESALLO method accounts for variation in recording effort generally, it is important to understand that it does not allow for systematic biases. These arise if certain species or habitats have received greater attention than others, for example when targeted surveys of particular groups or habitats have been undertaken or when a new field guide is published prompting interest in a group.

By and large, the outputs from the modelling relate well to the impressions of experienced botanists. The margins of uncertainty associated with the Irish trend data were typically wider than with British data. One of the main reasons appears to be the smaller number of Irish records, especially in the early recording periods. Some of the less-credible estimated trends are clearly associated with biases arising from intensive surveys; these are discussed later as they arise. In addition, it is suspected that the assumption of generally well-recorded benchmark species in the early recording periods in Ireland may not have been uniformly valid. For these reasons, the trend summaries have to be seen as guides that must be interpreted carefully.

For the purposes of this summary report, we have used the FRESALLO trend estimates as a starting point in gauging whether a species is stable, increasing or decreasing in Ireland. If there was any reason for concern, the estimates were tested against the expert opinion of a group of experienced Irish field workers, and compared with the equivalent British estimates because of their greater degree of certainty. If neither of these tests suggested a significant discrepancy, the estimates were accepted as a valid indication of change. If there did appear to be a discrepancy, the underlying data were examined to see if there was a discernible explanation of how it had arisen.

A point to bear in mind in interpreting maps based on records of a species’ presence in a hectad is that change in abundance tends to be underestimated. If every population was reduced by 50%, only the very smallest of these populations would be at any risk of extermination. It may take a huge drop in plant numbers to show up as a 50% loss of range. More detailed research would be needed to elucidate what is happening in populations of species that are declining.

idir minicíocht bhreathnaithe gach speicis i dtréimhsí éagsúla ama agus i limistéir éagsúla, agus minicíocht speiceas tagarmhairc atá coitianta go háitiúil. Tá cur síos mionsonraithe ar an teicníc i gCaibidil 6 de leabhar an Atlais. Ríomhann sé treochtaí le haghaidh beagnach gach speiceas agus is féidir na treochtaí sin a léiriú ansin ina léaráidí minicíochta in aghaidh ama nó, níos simplí, ina ‘mbarra treochta’. Tá an dá fhormáid ar fáil san Atlas ar líne. Mar shampla, tá na léaráidí agus na barraí treochta gearrthearmaí maidir leis na Círcíní *Dactylorhiza maculata* léirithe i bhFíor 4. Tugann siad le fios go bhfuil meath measartha láidir ag teacht orthu in Éirinn agus sa Bhreatain araon. Sna barraí treochta, léiríonn an scáthú níos gile atá leata thar dhá bhosca go bhfuil lamháil earráide níos leithne i gcás na sonraí Éireannacha ná na sonraí Briotanacha.

Cé go gcuireann modh FRESALLO éagsúlacht ghinearálta san iarracht taifeadta sa mheá, tá sé tábhachtach a thuiscint nach ndéanann sé lamháil do chlaontaí córasacha. Tagann claontaí dá leithéid chun cinn má thugtar níos mó airde ar speicis nó gnáthóga áirithe ná cinn eile, mar shampla, nuair a dhéantar suirbhéanna spriocdhírthe ar ghrúpaí nó gnáthóga ar leith nó nuair a fhoilsítear treoirleabhar allamuigh nua a spreagann spéis i ngrúpa.

Tríd is tríd, tá aschuir an tsamhaltaithe ag teacht le tuairimí luibheolaithe a bhfuil fios a ngnó acu. Bhí na lamhálacha neamhchinnteachta a bhain leis na sonraí treochta maidir le hÉirinn ní ba leithne ná mar a bhí i gcás na sonraí maidir leis an mBreatain. Is cosúil gurbh é ceann de na príomhchúiseanna leis sin ná gur lú taifid a bhí ann maidir le hÉirinn, go háirithe sna tréimhsí luatha taifeadta. Cuid de na treochtaí measta nach bhfuil chomh hinchreidte sin, is léir go mbaineann siad le claontaí a d’escalair as suirbhéanna dian; déantar plé orthu sin thíos mar a thagann siad chun cinn. Ina theannta sin, creidtear anois go mb’fhéidir nach raibh sé ceart talamh slán a dhéanamh de go raibh na taifid ar na speicis tagarmhairc in Éirinn bailí agus aonfhoirmeach sna tréimhsí luatha taifeadta. Ar na cúiseanna sin ar fad, caithfear breathnú ar na hachóimrít treochta mar threoracha nach mór a léirmhíniú go cúramach.

Sa tuarascáil achomair seo, d’úsáideamar treochtaí measta FRESALLO mar phointe tosaigh lena mheas cibé acu atá speiceas seasmhach, ag méadú nó ag laghdú in Éirinn. Má bhí aon údar imní ann, rinneadh na meastacháin a thástáil i gcoinne tuairim shaineolach grúpa oibrithe allamuigh Éireannacha, agus cuireadh i gcomparáid ansin iad leis na meastacháin choibhéiseacha ón mBreatain óir go raibh níos mó cinnteachta ag baint leo siúd. Más rud é go raibh an dá thástáil sin ag réiteach le chéile a bheag nó a mhór, glacadh leis na meastacháin mar tháscaire bailí ar na hathruithe. Má ba chosúil go raibh neamhréireacht ann, scrúdaíodh na sonraí bunaidh d’fhonn a dhéanamh amach céard ba chúis léi.

Some broad changes in the flora, however, are plain to see by comparing the fortunes since 1987 of native species, archaeophytes and neophytes, as groups. All species, apart from a few with insufficient data, were classified into three categories according to their trend slopes: increasing, stable, and decreasing. A bar chart (Fig. 5) shows the number of native species, archaeophytes, and neophytes in each category. The contrasts are stark: native species have fared badly with 56% of species declining and 32% increasing, whereas neophytes have thrived with 80% of them increasing and only 16% decreasing. Archaeophytes occupied an in-between position, somewhat closer to that of natives than of neophytes.

## 7 What plants have increased?

The majority of increasers were neophytes – recent introductions – and these dominate the list of individual species that have clearly extended their range. The species featured below are a representative selection of those that have comfortably passed the tests described in Section 6. Their increases may have become apparent only in the 2000–2019 period, but in most cases began in an earlier period.

### **American Willow-herb** *Epilobium ciliatum* [WEB](#).

A North American species, first recorded in Ireland in Co. Wicklow in 1958. It was still rare by 1980, but since then has spread explosively. It was common as a weed on waste ground, walls, and in gardens etc. throughout the east by 1999, and its spread has continued such that it is now virtually everywhere in Ireland. In statistical terms, American Willow-herb has the second most certain increase of all Irish species. Its spread has undoubtedly been assisted by two features: the plume of hairs attached to its abundant small seeds which facilitate dispersal by air currents, and the tolerance it shows to herbicide applications.

### **Butterfly Bush** *Buddleja davidii* [WEB](#).

A shrub first sent to Europe from China by the Irish botanist Augustine Henry in the late 19th century as an ornamental. It is now especially valued for the attractiveness of its flowers to nectar-feeding insects. It was first noticed to be invasive when it colonised bomb sites in London in WWII. In Ireland, it has spread steadily since the 1960s, colonising walls, waste ground, derelict building sites and anywhere else it can find a footing, even high up on buildings. While closely associated with habitation, it can now be found throughout Ireland.

Rud ba cheart a choinneáil i gcuimhne agus léarscáileanna á léirmhíniú bunaithe ar thaifid ar na speicis a bhí i láthair i gcearnóg ná go mbíonn claonadh ann athruithe flúirse a mheas faoina luach. Ar thaobh amháin, d'fhéadfadh sé nach léiriú é ponc ach ar phlanda beag amháin in aon áit amháin, nó, ar an taobh eile ar fad, d'fhéadfadh sé gur léiriú é ar na mílte plandaí atá scaipthe ar fud an bhaill. Dá dtiocfadh laghdú 50% ar gach pobal, ní bheadh baol díothaithe ar bith ann ach do na pobail ba lú ar fad. Chaithfeadh titim ollmhór a theacht ar líon na bplandaí le cailíteanas raoin 50% a thaifeadadh. Bheadh gá le taighde ní ba mhionsonraithe le solas a chaitheamh ar a bhfuil ag tarlú i ndáiríre sna pobail speicis atá ag laghdú.

Tá roinnt athruithe leathana atá tagtha ar an bhflóra ríshoiléir, áfach, nuair a dhéantar comparáid idir an chaoi a bhfuil ag éirí le speicis dhúchasacha, le haircéifítí agus le neoifítí, mar ghrúpaí, ó bhí 1987 ann. Rinneadh gach speiceas, seachas cúpla ceann nach bhfuil a ndóthain sonraí ar fáil maidir leo, a rangú i dtrí chatagóir de réir a bhfánaí treochta: ag méadú, seasmhach agus ag laghdú. Léiríonn barrachairt (Fíor 5) líon na speiceas dúchasach, na n-aircéifítí, agus na neoifítí atá i ngach catagóir. Is mór atá eatarthu: rinne na speicis dhúchasacha go holc, 56% acu ag laghdú agus 32% ag méadú, ach d'éirigh go maith leis na neoifítí, 80% acu ag méadú agus gan ach 16% ag laghdú. Bhí aircéifítí idir eatarthu, rud beag ní ba ghaire do na speicis dhúchasacha ná na neoifítí.

## 7 Céard iad na plandaí a bhfuil méadú tagtha orthu?

Ba neoifítí iad an chuid ba mhó de na speicis ar tháinig méadú orthu — i.e. speicis a tugadh isteach le déanaí — agus iad sin is mó atá ar liosta na speiceas atá tar éis cur lena raon go soiléir. Is éard atá thíos ná rogha ionadaíoch de na speicis siúd ar éirigh go compordach leo sna tástálacha a bhfuil cur síos orthu i gCuid 6. B'fhéidir nár léir na méaduithe go dtí an tréimhse 2000–2019, ach thosaigh siad roimhe sin i bhformhór na gcásanna.

### **Saileachán Sráide** *Epilobium ciliatum* [WEB](#).

Speiceas ó Mheiriceá Thuaidh, a taifeadadh den chéad uair in Éirinn i gCo. Chill Mhantáin in 1958. Bhí sé fós neamhchoitianta in 1980, ach tá ag scaipeadh go pléascach ó shin. Bhí sé coitianta mar fhiaile ar thalamh bán, ar bhallaí, agus i ngairdíní, srl., ar fud an oirthir faoi 1999. Lean a leathadh ar aghaidh ina dhiaidh sin agus tá sé i mbeagnach gach áit in Éirinn anois. Ó thaobh na staitistice de, tá an méadú ar an Saileachán Sráide ar an dara ceann is cinnte as na speicis Éireannacha go léir. Níl aon amhras ann ach gur chabhraigh dhá phríomhghné lena scaipeadh: na ribí atá ceangailte lena shíolta beaga, a éascaíonn a scaipeadh ag sruthanna aeir, agus an acmhainn atá aige ar luibhicídí.

### **Tor an Fhéileacáin/Búidlia Chorcra** *Buddleja davidii* [WEB](#).

Tor é seo a chuir na luibheolaí Éireannach Agaistín Henry chun na hEorpa ón tSín ag deireadh an 19ú haois mar thor ornáideach. Tá meas ar leith air anois as a tharraingtí a bhíonn a bhláthanna d'fheithidí a itheann neachtar. Tugadh faoi deara go raibh sé ionrach den chéad uair nuair a choilínigh sé láithreacha buama i Londain le linn an Dara Cogadh Domhanda. In Éirinn, tá sé ag scaipeadh go seasta ó na 1960idí, ag coilíniú ballaí, talamh bán, láithreáin tógála thréigthe agus áit ar bith eile ar féidir leis greim a fháil, fiú

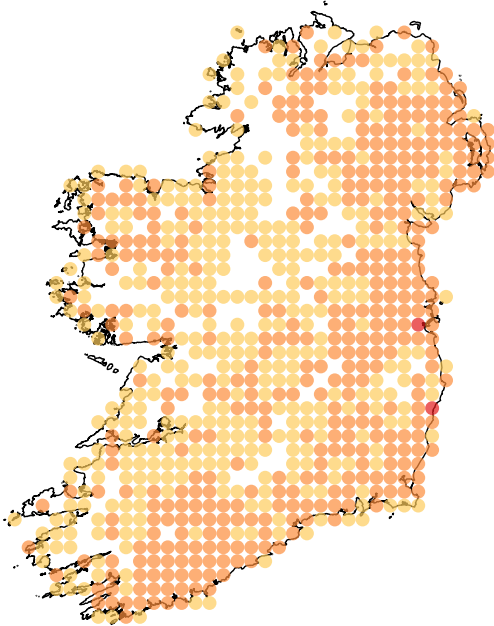
### Himalayan Balsam *Impatiens glandulifera* [WEB](#)

A tall annual of damp soils, Himalayan Balsam was brought from Asia to Europe as an ornamental plant. Its bright pink flowers with a curved spur are attractive to bees, and its fruits are explosive, scattering the ripe seeds up to 4m distant. It is regarded with mixed feelings, being both visually appealing and highly invasive. From multiple introductions, it has colonised the banks of rivers and canals, making large dense stands that shade out other plants. By 1999, it was present throughout the east, but it can now be seen almost everywhere in Ireland.

### Nuttall's Pondweed *Elodea nuttallii* [WEB](#)

A native of North America, Nuttall's Pondweed first appeared in Ireland in the 1980s, in Lough Neagh and the Dublin area. It has now spread through the canal system from Dublin to Lough Erne and Limerick. In Lough Neagh, it was a dominant element of the aquatic flora by 2006 and has now largely displaced its close relative Canadian Pondweed *Elodea canadense*.

● pre-1970  
● 1970 - 1999  
● 2000 - 2019



thuas go hard ar fhoirgnimh. Cé go bhfuil dlúthbhaint leis an áit chónaithe, is féidir teacht air anois fud fad na hÉireann.

### Lus na Pléisce/Balsam Himiléach

#### *Impatiens glandulifera* [WEB](#)

Bliantóg ard ar maith léi ithreacha taise is ea Lus na Pléisce. Tugadh chun na hEorpa ón Áise é mar phlanda ornáideach. Is maith le beacha na bláthanna bándearga a bhfuil spor cuartha acu. Tá a chuid torthaí pléascach agus is é sin a chaoi a scaipeann sé síolta aibí suas le 4 mhéadar amach uaidh féin. Tá an saol idir dhá chomhairle faoi toisc a áille agus a ionraí atá sé. Ó tugadh isteach i roinnt áiteanna éagsúla é, tá coilíniú déanta aige ar bhruacha abhann agus canála, áit a bhfásann sé ina sheastáin dhlútha mhóra a fhágann plandaí eile faoi scáth. Bhí sé scaipthe ar fud an oirthir faoin mbliain 1999, ach tá sé i mbeagnach gach áit in Éirinn na laethanta seo.

#### Tím Uisce Chaol *Elodea nuttallii* [WEB](#)

Is as Meiriceá Thuaidh ó dhúchas í an Tím Uisce Chaol agus chonacthas in Éirinn den chéad uair í siar sna 1980idí thart ar Loch nEathach agus ceantar Bhaile Átha Cliath. Uaidh sin, leath sí amach trí chóras na gcanálacha ó Bhaile Átha Cliath go Loch Éirne agus Luimneach. I Loch nEathach, bhí sé ina ghné cheannasach den fhlóra uisceach faoi 2006 agus tá sé anois tar éis teacht in ionad a gharghaoil, an Tím Uisce *Elodea canadense*, den chuid is mó.

#### Praiseach Thrá *Crambe maritima* [WEB](#)

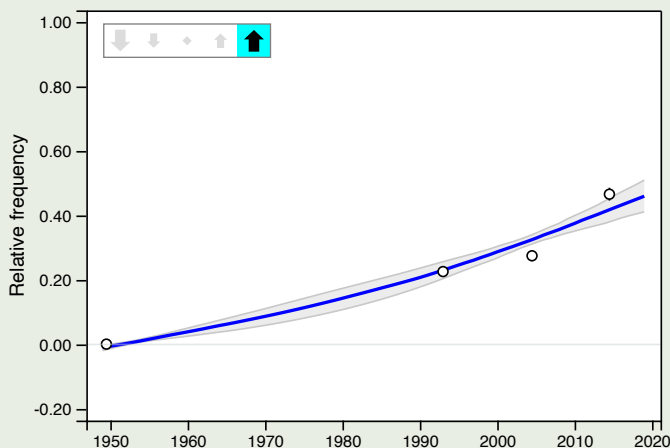
Murab ionann agus aon cheann eile de na speicis atá ag méadú, d'fhéadfadh sé go gcuirfeadh an ceann seo iontas ar roinnt

**Figure 6.** Map showing the spread of American Willow-herb in Ireland.

The darkest shading shows the squares in which it was first found before 1970, the palest shading those in which it was found only after 2000. The usual scale of dot-shading has been reversed to make the earlier records more conspicuous.

#### Fíor 6. Léarscáil ar a dtaispeántar leathadh an tSaileacháin Sráide in Éirinn.

Léirítear leis an scáthú is dorcha na cearnóga inar aimsíodh den chéad uair é roimh 1970, leis an scáthú is gile na cearnóg úd nár aimsíodh é ach i ndiaidh 2000. Tiontaíodh gnáthscála an phoncsáthaithe chun na taifid níos luaithe a dhéanamh níos suaithinsí.



**Figure 7.** The smoothed long-term trend graph with trend bar (inset) for American Willow-herb *Epilobium ciliatum*.

Fíor 7. An graf treochta fadtéarmaí leibhéalta maille le barra treochta (intlise) le haghaidh an tSaileacháin Sráide *Epilobium ciliatum*.



Zoë Devlin

### **Sea Kale** *Crambe maritima* WEB.

Unlike any of the other increasers, this one may surprise some botanists. Sea Kale is a deep-rooted perennial of maritime shingle, with a reputation for small mobile populations. Its curled glaucous leaves and sprays of white flower-buds are edible and it is occasionally cultivated as a vegetable. As a wild plant, it is confined to the sea-shore and has been regarded a rarity, occurring only spasmodically. Since the start of the 21<sup>st</sup> century, it has been recorded in many new sites, and some former ones, such that there are recent records around much of the Irish coast. On the British side of the Irish Sea it has also been recorded from many new sites. It seems improbable that such an obvious plant had been systematically overlooked in earlier surveys. Either a succession of favourable years may have given rise to a temporary spike in numbers, or indeed there may have been a real permanent increase. Sea Kale is listed as Near Threatened in the Ireland Red List for vascular plants and is a priority species for conservation in Northern Ireland.

### **Sitka Spruce** *Picea sitchensis* WEB.

This North American conifer topped the league table of long-term increasers in terms of model-based certainty in Ireland, as it did in Britain. It was introduced to Ireland in 1831 and was initially grown as an ornamental and for shelter. Since the 1950s it has become the most widely planted commercial forestry species, especially on peaty soils in the west. Whilst some of the mapped records would be of planted trees, it regenerates freely from seed, often on heathland and bog some distance away from plantations. Sitka plantations have long been controversial, among other things because they suppress biodiversity and lead to carbon release from peat soils. To those ills, we can now add their invasive tendency.

### **Thale Cress** *Arabidopsis thaliana* WEB.

A slender annual, Thale Cress is valued as a subject for genetic research because of its short life cycle. In Ireland, it was once a scarce native of rocky places with thin soils, but over the last 50 years has spread massively so that it is now an extremely common weed of gardens, wall bases, gateways and other ruderal habitats. It seems to thrive in sites where herbicide is applied regularly but this does not prevent the plant from germinating and setting seed between treatments. It is not known whether the plant that has spread so much came from native or introduced sources.

### **Variegated Yellow Archangel** *Lamium galeobdolon* ssp. *argentatum* WEB.

Yellow Archangel is a creeping plant of woodlands with winter-green leaves and spikes of yellow flowers. There is an indigenous but rare subspecies (ssp. *montanum*) found in the south-east. Variegated Yellow Archangel is similar except for having silvery-white patches on the leaves and slightly larger flower parts. It was introduced in the early 1970s as a ground-cover plant for gardens, where it can be very vigorous, requiring disposal of surplus runners. It is most likely from these that it has become rapidly established throughout much of Ireland. It can spread to form large stands in woodland and along roadside hedges.

luibheolaithe. Ilbhliantúil dhomhain-fhréamhaithe is ea an Phraiseach Thrá, ar maith léi scaineagán muirí agus a bhfuil cáil uirthi as pobail bheaga shoghluaiste. Is féidir a duilleoga cuachta liathghorma agus a craobhóga bachlóg blátha a ithe agus déantar é a shaothrú ó am go chéile mar ghlasra. Mar phlanda fiáin, ní aimsítear í ach ar an gcladach agus cheaptáí gur speiceas neamhchoitianta é nár aimsíodh ach thall is abhus. Ó thús an 21ú haois, ámh, tá sí taifeadta i go leor áiteanna nua, agus i roinnt áiteanna a bhfacthas cheanna í, rud a fhágann go bhfuil taifid anois uirthi ar fud chósta na hÉireann. Sa Bhreatain, tá sí taifeadta i roinnt mhaith áiteanna nua chomh maith. Is deacair a chreidiúint go ndearnadh dearmad córasach ar a leithéid de phlanda i suirbhéanna roimhe seo. B'fhéidir gur tháinig ardú tobann ar an líon mar thoradh ar roinnt blianta maithe as a chéile nó, go deimhin, b'fhéidir gur tháinig fíorardú buan air. Tá an Phraiseach Thrá liostaithe mar 'Gearr go mBeidh faoi Bhagairt' ar Liosta Dearg na hÉireann maidir le Plandaí Soithíocha agus is speiceas tosaíochta le caomhnú í i dTuaisceart Éireann.

### **Sprús Sitceach** *Picea sitchensis* WEB.

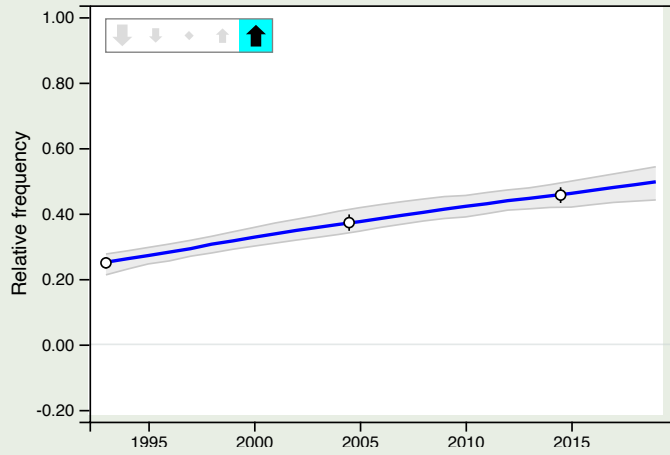
Buaircín ó Mheiriceá Thuaidh is ea é seo, a bhí ar bharr liosta fadtéarmach na speiceas a bhí ag méadú in Éirinn ó thaobh cinnteacht shamhailbhunaithe de. Tugadh isteach in Éirinn sa bhliain 1831 é agus fásadh ar dtús é mar phlanda ornáideach agus mar fhoscadh. Ó na 1950idí, tá sé ar an speiceas is mó a chuirtear san fhoraoiseacht tráchtála, go háirithe in ithreacha móinteacha an iarthair. Cé gur dócha go mbaineann cuid de na taifid léarscáilithe le crainn a cuireadh, athghineann sé go héasca ó shíol, agus is minic a aimsítear é ar thalamh fraoch agus ar phortach atá fada go leor ó phlandálacha. Tá plandálacha Sprús Sitceach conspóideach le fada toisc go gcuireann siad bithéagsúlacht faoi chois agus go mbíonn siad ina gcúis le scaoileadh carbóin ó ithreacha móinteacha, i measc rudaí eile. Níos measa fós, is féidir linn a rá anois go bhfuil claoadh iontu a bheith ionrach freisin.

### **Tailís** *Arabidopsis thaliana* WEB.

Bliantóg chaol is ea an Tailís agus tá tábhacht ag baint léi ó thaobh taighde géiniteach de toisc a saolré a bheith chomh gearr sin. In Éirinn, bhíodh sé neamhchoitianta agus ní fhásadh sí ach in áiteanna creagacha a raibh an ithir tanaí. Le 50 bliain anuas, áfach, tá borradh tagtha uirthi agus is fiaile iontach coitianta anois í a aimsítear i gairdíní, ag bun ballaí, i mbearnaí geata agus i ngnáthóga suaite eile. Tá an chuma ar an scéal go n-éiríonn léi in áiteanna a leatar luibhicíd go rialta, rud nach gcuireann cosc ar an bplanda péacadh agus síolta a chur idir na cóireálacha. Ní fios cibé acu is ó fhoinsí dúchasacha a tháinig an planda atá tar éis scaipeadh go mór, nó ó fhoinsí thar lear.

### **Neantóg Bhreac Mhuire** *Lamium galeobdolon* ssp. *argentatum* WEB.

Planda reatha í Neantóg Mhuire a aimsítear ar thalamh coille. Bíonn duilleoga dúghlasa agus diasa bláthanna buí aici. Is ann d'fhospeiceas dúchasach neamhchoitianta (ssp. *montanum*) chomh maith, a aimsítear san oirdheisceart. Tá Neantóg Bhreac Mhuire cosúil leis sin, ach tá paistí ar dhath an airgid ar na duilleoga agus tá na bláthchodanna beagán níos mó. Tugadh isteach go luath sna 1970idí í mar phlanda clúdaithe talún le haghaidh gairdíní, áit ar féidir léi a bheith an-láidir. Caithfear na reathairí barrachais a dhiúscairt dá bharr sin. Is é is dóichí gurb iad sin a bhí taobh thiar de scaipeadh gasta an phlanda ar fud cuid mhór d'Éirinn. Is féidir léi scaipeadh ina seastáin mhóra i gcoillearnach agus i bhfálta cois bóthair.

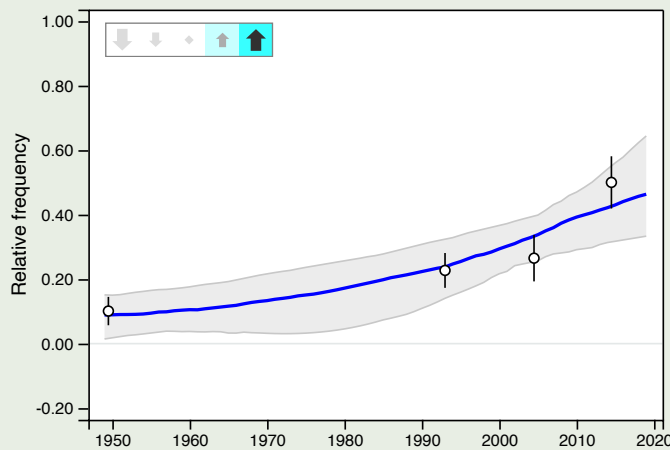


**Figure 8.** The smoothed short-term trend graph and trend bar (*inset*) for Himalayan Balsam *Impatiens glandulifera*.

**Fíor 8.** An graf treochta gearrthéarmaí leibhéalta agus barra treochta (*intlise*) le haghaidh Lus na Pléisce *Impatiens glandulifera*.



*Paul Green*

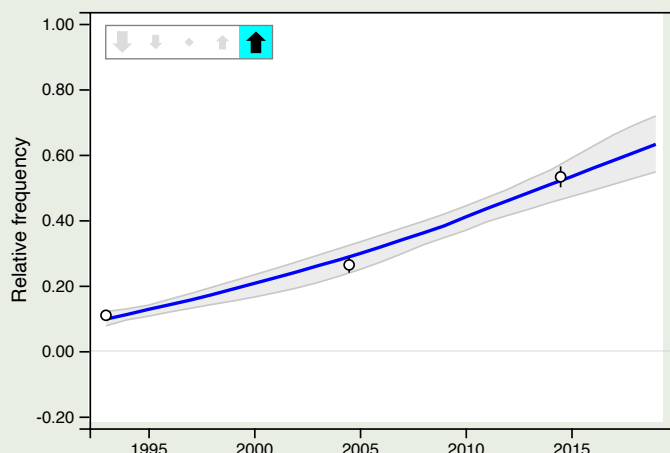


**Figure 9.** The smoothed long-term trend graph and trend bar (*inset*) for Sea Kale *Crambe maritima*.

**Fíor 9.** An graf treochta fadtéarmaí leibhéalta agus barra treochta (*intlise*) le haghaidh Lus na Pléisce *Impatiens glandulifera*.



*Robert Thompson*



**Figure 10.** The smoothed short-term trend graph and trend bar (*inset*) for Variegated Yellow Archangel *Lamium galeobdolon ssp. argenteum*.

**Fíor 10.** An graf treochta gearrthéarmaí leibhéalta agus barra treochta (*intlise*) le haghaidh Neantóg Mhuire Bhreac *Lamium galeobdolon ssp. argenteum*.



*Paul Green*



## 8 What plants have decreased?

Natives show proportionately the greatest tendency to decrease, followed by archaeophytes. In terms of numbers, natives dominate the list of decreaseers because there are so many more of them.

Judging by eye from the distribution map data that a species has decreased is not straightforward, because the general increase in the number of dots from greater recording intensity tends to obscure any decrease in range unless the latter is severe. The modelling that allows for increased recorder effort is therefore very important in assessing decrease. Like the increaseers listed above, those below comprise a representative selection.

### **Agrimony** *Agrimonia eupatoria* [WEB](#)

A native perennial of open neutral to basic grassland and road verges, Agrimony occurs throughout Ireland except in mountainous areas. It has been in long-term decline, with no sign of the decline abating or being confined to particular areas. Indeed, its decline between the second and third Atlas periods shows the greatest statistical certainty of all species. The reasons are likely to include both loss and deterioration of habitat.

### **Corn Marigold** *Glebionis segetum* [WEB](#)

An annual archaeophyte, probably introduced in Neolithic times, it is found in farm crops and occasionally on other disturbed ground such as roadsides and waste ground. It was formerly a serious weed of spring-sown cereal but is now much reduced by improved husbandry, seed cleaning and herbicides. Its showy golden-yellow flowers make it a favourite ingredient of wildflower seed mixtures. As yet, this does not appear to have arrested the decline of the species as a wild Irish plant. It is now uncommon generally, except in coastal arable areas, notably Co. Wexford.

### **Corn Mint** *Mentha arvensis* [WEB](#)

Despite its name, Corn Mint is more often found in Ireland on lake margins and in other damp sites than in arable fields. It is a native rhizomatous perennial, similar in many respects to the Water Mint *Mentha aquatica*, but typically growing in slightly less wet places. Its decline has been a gradual long-term one; it is more marked along the western seaboard

## 8 Céard iad na plandaí a bhfuil laghdú tagtha orthu?

Ag na speicis dhúchasacha is mó atá an claonadh le bheith ag laghdú, agus na haircéifítí ina ndiaidh. Ó thaobh na n-uimhreacha de, is iadsan is mó atá ar liosta na bplandaí a bhfuil laghdú tagtha orthu de bharr go bhfuil i bhfad níos mó acu ann.

Ní haon dóithín é a thomhas leis an tsúil cibé acu atá laghdú tagtha ar speiceas nó nach bhfuil, de bharr gur minic a thagann méadú ginearálta ar líon na bponcanna mar thoradh ar dhéine mhéadaithe thaifeadta, agus go ndéanann an méadú sin doiléir aon laghdú ar an raon, ach amháin más rud é go bhfuil an laghdú sin an-dian. Dá bhri sin, tá an samhaltú a úsáidtear le hiarracht mhéadaithe taifeadóirí a chur san áireamh antábhachtach i dtaobh laghdú a mheas. Amháin an chuid thuas maidir leis na plandaí a bhfuil méadú tagtha orthu, seo thíos rogha ionadaíoch de na cinn a bhfuil laghdú tagtha orthu.

### **Marbhdhraighean/Airgeadán/Méirínín na Má**

#### *Agrimonia eupatoria* [WEB](#)

Ilbhliantóg dhúchasach é an Marbhdhraighean, ar maith leis féarach agus ciumhaiseanna bóthair atá idir neodrach agus bunata. Aimsítear ar fud na hÉireann é, seachas i gceantair shléibhtiúla. Tá sé ag meath le fada an lá, agus ní thugann aon ní le fios go mbeidh maolú ar an meath sin ná go mbeidh sé in áiteanna áirithe amháin. Déanta na fírinne, tá níos mó cinnteacht staitistiúil ag baint le laghdú an speicis seo idir an dara tréimhse agus an tríú tréimhse den Atlas ná aon speiceas eile. Caillteanas agus meathlú gnáthóg is cúis leis, de réir cosúlachta.

#### **Buíán** *Glebionis segetum* [WEB](#)

Aircéifít bhliantúil is ea é seo, is dócha a tugadh isteach san Aois Neoiliteach. Aimsítear i measc barr feirme é agus, in amanna, ar thalamh suaite amháin ciumhaiseanna bóthair agus talamh bán. Bhíodh sé ina fhiaile thromchúiseach do bharr gráin a chuirtear san earrach, ach tá sé sin laghdaithe go mór anois de bharr feabhsuithe ar mhodhanna feirmeoireachta, glanadh síolta agus luibhicídí. Tá a bhláthanna péacacha ar dhath bhuí an óir, rud a fhágann gur minic a fheictear é ina chuid de mheascáin síolta bláthanna fiáine. Is baolach nach bhfuil maolú tagtha ar

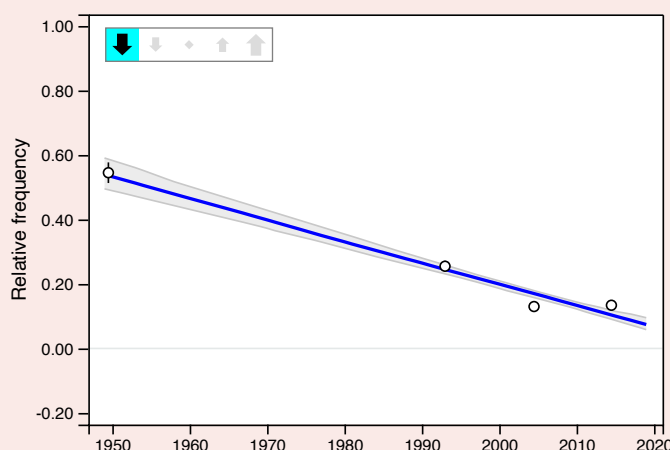
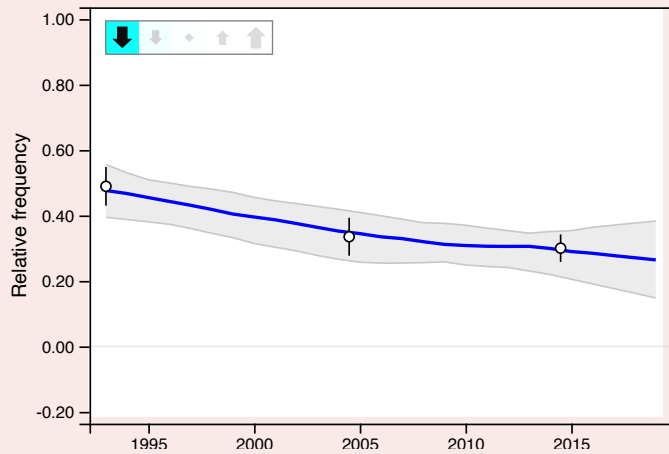


Figure 11. The smoothed long-term trend graph and trend bar (inset) for Corn Marigold *Glebionis segetum*.

Fíor 11. An graf treochta fadtéarmaí smúdáilte agus barra treochta (intlise) le haghaidh an Bhuíáin *Glebionis segetum*.



Paul Green

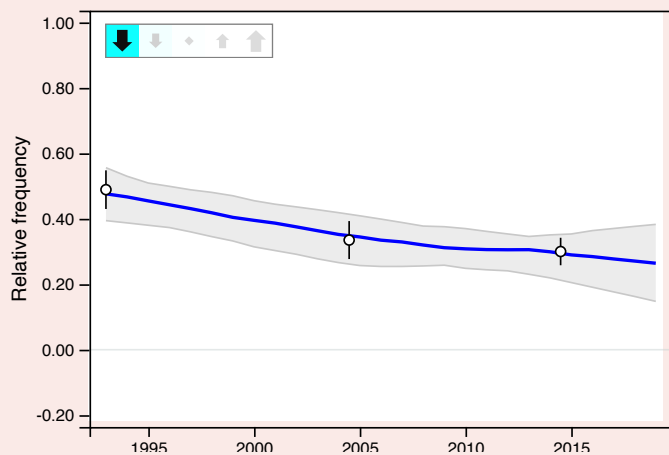


**Figure 12.** The smoothed short-term trend graph and trend bar (*inset*) for Field Gentian *Gentianella campestris*.

**Fíor 12.** An graf treochta gearrthearmaí leibhéalta agus an barra treochta (*intlise*) le haghaidh Lus an Chrúbáin *Gentianella campestris*.



Clare Heardman



**Figure 13.** The smoothed long-term trend graph and trend bar (*inset*) for Heath Cudweed *Omalotheca sylvatica*.

**Fíor 13.** An graf treochta fadtéarmaí leibhéalta agus barra treochta (*intlise*) le haghaidh an Ghnamhluis Móna *Omalotheca sylvatica*.



Chris Gibson

and in the midlands, and less so in the south-east coastal counties. Some old records of Corn Mint could have been misidentifications of its hybrid with Water Mint.

#### **Field Gentian *Gentianella campestris*** [WEB](#)

A low rosette-forming annual or biennial, Field Gentian is primarily a plant of coastal and inland limestone grasslands in Ireland. It has been declining gradually over 70 years and is now rare south of a line from Limerick to Dundalk. Similar long-term losses have occurred in the south of Britain. While this might suggest that climate change is responsible, it is at least as likely that changes in pasture management are involved.

#### **Heath Cudweed *Omalotheca sylvatica*** [WEB](#)

Heath Cudweed is a short-lived native perennial of well-drained sandy acidic sites where there is little competition from other species, for example heaths, gravel pits and tracks. It has been recorded in only 12 hectads since 2000, although formerly known in well over 100. The remaining populations are concentrated in the broad Sperrin Mountains area, with a few in the south. In earlier times, it was widespread throughout Ulster, and scattered elsewhere. Such a dramatic decline, albeit over a long period of time, is hard to explain.

mheath an speicis mar phlanda fiáin Éireannach mar sin féin. Tá sé neamhchoitianta anois go ginearálta, ach amháin i gceantair arúla chósta, Co. Loch Garman go háirithe.

#### **Mismín Arbhair/Miontas Arbhair *Mentha arvensis*** [WEB](#)

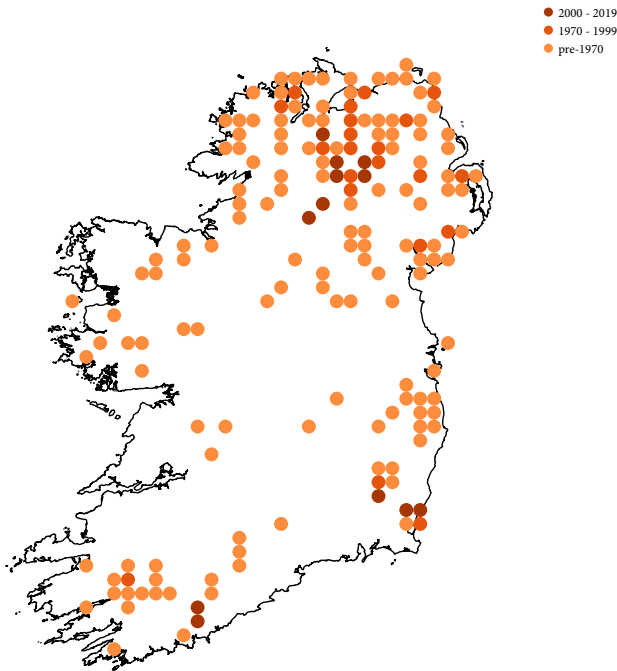
In ainneoin a ainm, is minice a aimsítear an Mismín Arbhair in Éirinn ar imill lochanna agus in áiteanna taise eile ná i bpáirceanna arúla. Ilbhliantóg riseastómach dúchasach é, cosúil leis an Mismín Dearg *Mentha aquatica* ar go leor bealaí, ach fásann sé in áiteanna nach bhfuil chomh fliuch sin. Tá meath ag teacht air de réir a chéile le fada an lá; é suntasach feadh bhord farraige an iarthair agus i lár na tíre, agus ní chomh suntasach sin sna contaetha cósta an oirdheiscirt. Tá amhras ann faoi roinnt seantaifead toisc go bhféadfadh sé gur sainaithníodh an Mismín Arbhair cé gurb í a hibrid leis an Mismín Dearg a bhí ann i ndáiríre.

#### **Lus an Chrúbáin *Gentianella campestris*** [WEB](#)

Bliantóg nó débhlíantóg íseal é Lus an Chrúbáin, a fhoirmíonn róiséid. Ar thailte féaraigh aolchloiche ar an gcósta agus isteach ón gcósta araon is mó a aimsítear in Éirinn é. Tá sé ag laghdú de réir a chéile le 70 bliain agus neamhchoitianta anois ar an taobh theas de líne ó Luimneach go Dún Dealgan. Tá cailteanais

**Figure 14.** Map showing the decline of Heath Cudweed in Ireland since the mid-20th century. Only in the 12 darkest map squares has the species been recorded in the 21st century..

**Fíor 14.** Léarscáil ar a dtaispeántar meath an Gnamhluis Móna in Éirinn ó lár an 20ú haois. Is sna 12 gcearnóg léarscáile is dorcha amháin a taifeadadh an speiceas san 21ú haois.



Nutrient enrichment and loss of suitable habitat may have played a part, but seem unlikely to be the full story.

**Marsh Lousewort** *Pedicularis palustris* [WEB](#).

Marsh Lousewort is a hemi-parasite – it acquires some of its nutrition from the roots of other plants. It is an erect native annual or biennial herb of wet heaths, fens, flushes and wet meadows. Although somewhat more common in the north and west than elsewhere, it occurs in all parts of Ireland. Marsh Lousewort has been losing ground gradually since the middle of the 20th century, not only in Ireland but also in Britain. Loss of habitat to agricultural improvement is almost certainly the cause.

**Mugwort** *Artemisia vulgaris* [WEB](#).

As far back as Mesolithic times, Mugwort has been used as a medicinal herb throughout much of Europe and beyond. In

fhadtéarmacha den chineál céanna ag tarlú i ndeisceart na Breataine. Cé go dtugann sé sin le fios go bhfuil baint ag an athrú aeráide leis an scéal, tá sé chomh dóchúil céanna ar a laghad gurb iad athruithe ar an mbainistiú féarach ba chúis leis.

**Gnamhluis Móna** *Omalotheca sylvatica* [WEB](#).

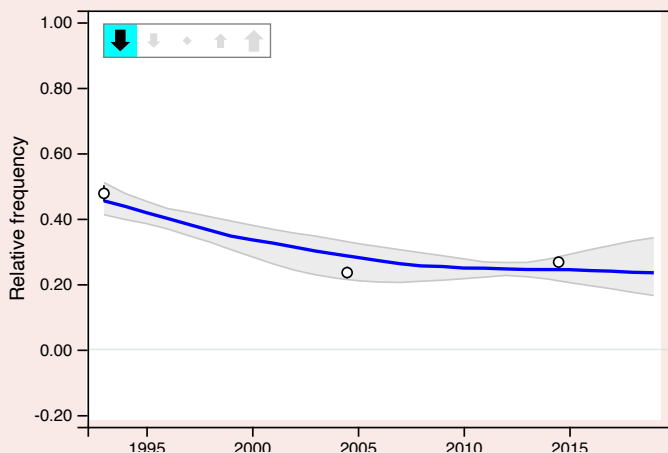
Ilbhliantóg ghearrshaolach dhúchasach é an Gnamhluis Móna. Aimsítear in áiteanna gainmheacha atá idir aigéadach agus dea-dhraenáilte é ar chuntar nach bhfuil mórán iomaíochta ó speicis eile ann, m.sh. móintigh, poill ghairbhéil agus rianta. Níl taifead air ach in 12 chearnóg ó 2000, cé go raibh sé i ní ba mhó ná 100 cearnóg roimhe sin. Is i gceantar Shliabh Speirín atá an chuid is mó de na pobail atá fágtha, agus roinnt bheag eile sa deisceart. Bhíodh sé coitianta go leor ar fud Chúige Uladh, agus scaipthe anseo is ansiúd ar fud na tíre. Is deacair meath chomh suntasach sin a mhíniú, bíodh is gur tharla sé le himeacht tréimhse fhada. B'fhéidir go raibh saibhriú cothaitheach agus caillteanas gnáthóige oiriúnaí ba chúis leis, ach is beag seans gurb é sin an scéal iomlán.

**Milseán Móna** *Pedicularis palustris* [WEB](#).

Is leathsheadán é an Milseán Móna – faigheann sé a chuid cothaithe ó fhréamhacha plandaí eile. Is lus dúchasach díreach é atá bliantúil nó ilbhliantúil agus a aimsítear ar mhóintigh, eanaigh, seascainn agus móinéir atá fliuch. Cé go bhfuil sé beagán níos coitianta sa tuaisceart agus san iarthar ná in áiteanna eile, aimsítear ar fud na hÉireann é. Tá meath ag teacht ar an Milseán Móna de réir a chéile ó lár an 20ú haois, ní hamháin in Éirinn ach sa Bhreatain freisin. Is beagnach cinnte gurb é caillteanas gnáthóige de dheasca feabhsú talmhaíochta is cúis leis.

**Mongach Meisce/Liathlus** *Artemisia vulgaris* [WEB](#).

Chomh fada siar leis an Aois Mhéisiliteach, tá úsáid á baint as an Mongach Meisce mar luibh leighis ar fud cuid mhaith den Eoraip agus níos faide i gcéin. In Éirinn, is gnách go meastar é a bheith ina aircéifit. Planda é atá beagán cumhra agus righin díreach agus a bhfuil bláthanna beaga glasa aige. Fásann sé



**Figure 15.** The smoothed short-term trend graph and trend bar (inset) for Marsh Lousewort *Pedicularis palustris*.

**Fíor 15.** An graf treochta gearrthearmaí leibhéalta agus an barra treochta (intlise) le haghaidh an Mhilséain Móna *Pedicularis palustris*.



Phoebe O'Brien

Ireland, it is usually considered an archaeophyte. It is a stiffly erect mildly aromatic plant, with small greenish flowers, that grows above the strand line on maritime shores, and in fertile human-made habitats such as around farm buildings, refuse tips, and roadsides. It occurs along the eastern and southern seaboard of Ireland and less frequently inland. The calculated trends suggest it has been declining in both the short and long-term; from the Atlas maps, it appears to be retreating mainly from inland sites. The reason for its decline is not obvious.

### **Yellow Oat-grass** *Trisetum flavescens* WEB.

This native perennial grass occurs as a minor component of limestone grassland, meadows and grassy banks. Its range appears to have been in long-term, possibly accelerating, decline. It has disappeared from much of Ulster apart from the basaltic soils of Co. Antrim. South of a line from Achill Island to Dundalk it remains widespread but scarcer than before. At one time, Yellow Oat-grass would have been included in agricultural seed mixtures as it had a reputation for being very palatable to livestock. However, it is intolerant of hard grazing, and this may be part of the reason for its decline in open fields. In other sites, it may be losing out in competition with False Oat-grass *Arrhenatherum elatius*.

## 9 Changes in the Irish flora by habitat

Recording individual species was the main purpose of the Atlas project, but ultimately the fate of species depends on their habitats. Although they were not explicitly recorded, we can in principle shed light on habitats by examining the trends in groups of species that are typical of particular types of habitat; grassland, woodland, wetland etc. For this purpose, the FRESALO trends of all the species in each of four habitat groups were combined to produce an average trend for the group. In principle, this allows estimates of change for the groups as a whole, with a greater level of certainty attached to them than to those of the individual species. These calculated group trends were subjected to the same tests as species trends. The outcome is interesting but not wholly straightforward.

### **Grasslands.**

The best correspondence between a calculated group trend and the expert views was for grassland plants. Individual grassland species featured strongly among those showing the most marked declines. As expected, the grouped analyses showed that grassland plants as a whole showed declines, with those of acid and calcareous grassland faring somewhat worse than those of neutral grassland. This finding corresponded well with the views of fieldworkers with experience of surveying for successive Atlases; reports of species-rich grassland sites that had disappeared or deteriorated between surveys were commonplace. Even more marked trends in grassland species were seen in the British data.

Beyond our shores, grasslands are among the most threatened habitats internationally because of the changes in farming practice that have been taking place: mechanisation, use of herbicides and inorganic fertilisers, installation of drainage, reseeded of old pastures, and a switch from hay and farmyard manure to silage and slurry. It may seem ironic that

os cionn líne an uisce ar chladaigh, agus i ngnáthóga torthúla de dhéantús an duine amhail thart ar fhoirgnimh feirme, ionaid bhruscair agus cois bóthair. Aimsítear feadh chósta thoir agus theas na hÉireann é agus, ní chomh minic céanna, isteach ón gcósta. Tugann na treochtaí ríofa le fios go bhfuil sé ag meath go gearrthéarmach agus go fadtéarmach araon; ó léarscáileanna an Atlais, is cosúil go bhfuil sé ag cúlú go príomha in áiteanna intíre. Ní fios céard is cúis leis an meath.

### **Coirce Buí** *Trisetum flavescens* WEB.

Feictear an féar ilbhliantúil dúchasach seo mar mhionchuid de thalamh féaraigh, móinéir agus bruacha féarmhara aolchloiche. Tá an chuma ar an scéal go bhfuil a raon ag laghdú le fada, agus go mb'fhéidir go bhfuil dlús faoin laghdú sin anois. Tá sé nach mór imithe ó Chúige Uladh, seachas na hithreacha basaltacha i gCo. Aontroma. Tá sé fós coitianta go leor ar an taobh theas de líne ó Acla go Dún Dealgan, ach é níos gainne ná mar a bhíodh. Tráth dá raibh, chuirtear Coirce Buí le meascáin síolta talmhaíochta mar bhí cáil air as bheith an-inbhlasta do bheostoc. Níl sé in ann innilt chrua a sheasamh, áfach, agus b'fhéidir gurb in cuid den chúis leis an meath atá tagtha air i bpáirceanna oscailte. In áiteanna eile, tá seans ann go bhfuil sé ag titim chun deiridh ar an gCoirce Bréige *Arrhenatherum elatius*.

## 9 Athruithe ar fhlóra na hÉireann de réir gnáthóige

Ba é taifeadadh speiceas aonair príomhchuspóir thionscadal an Atlais, ach, i ndeireadh na dála, braitheann a bhfuil i ndán do na speicis ar a ngnáthóga. Cé nach ndearnadh taifeadadh orthu iontu féin, is féidir linn, i bprionsabal, solas a chaitheamh ar ghnáthóga ach breathnú go mion ar na treochtaí i ngrúpaí speiceas is iondúil a aimsítear i gcineálacha áirithe gnáthóg; féarach, coillearnach, bogach, srl. Leis an méid sin a dhéanamh, cuireadh treochtaí FRESALO na speiceas go léir i ngach ceann de cheithre ghrúpa gnáthóige le chéile le meántreocht an ghrúpa a dhéanamh amach. Fágann sé sin gur féidir meastacháin a dhéanamh, i bprionsabal, ar an athrú ar na grúpaí ina n-iomláine, agus go bhfuil siad níos cinnte ná na meastacháin a bhaineann leis na speicis aonair. Rinneadh na tástálacha céanna ar na treochtaí ríofa grúpa seo agus a rinneadh ar na treochtaí speiceas. Tá an toradh suimiúil ach níl sé éasca brí a bhaint as.

### **Féaraigh.**

Is fearr a bhí an treocht ríofa grúpa agus tuairimí na saineolaithe ag teacht le chéile i gcás plandaí féaraigh. Bhí cuid mhaith speiceas féaraigh ar liosta na speiceas is mó a raibh meath tagtha orthu. Mar a bhíodh ag súil leis, thug na hanailísí grúpáilte le fios go raibh laghdú tagtha ar phlandaí féaraigh go ginearálta, agus an chuma ar an scéal go raibh ag éirí ní ba mheasa leis na cinn siúd ar fearr leo féarach aigéadach agus cailcreach ná iad siúd ar fearr leo féarach neodrach. Bhí an toradh sin ar aon dul le tuairimí na n-oibríthe allamuigh a bhí páirteach i suirbhéanna atlais i ndiaidh a chéile; is iomaí tuairisc a fuarthas faoi thailte féaraigh ar mhórán speiceas a bhí imithe go hiomlán nó imithe in olcas idir na suirbhéanna. Bhí treochtaí ní ba shuntasá le sonrú sna sonraí maidir le speicis féaraigh ón mBreatain.

Thar lear, tá tailte féaraigh ar cheann de na gnáthóga is mó atá



Species-rich grassland, Kiltiernan, Co. Galway.

Féarach a bhfuil neart speiceas ann, Cill Tiarnáin, Co. na Gaillimhe.

*Micheline Sheehy Skeffington*

grassland should be threatened in Ireland, but it is the loss of certain types of grassland – those on less fertile soils and rich in wild species – that is the issue. These ‘semi-natural’ grasslands supported a large number of our characteristic native species, including many orchids. They were maintained by extensive grazing, or by the cutting of hay in mid to late summer. Converting these habitats rich in species into more intensively managed grassland, or in some cases abandonment to scrub, has led to the loss of many species that could not compete in the altered environment.

The underlying reason for the decline of many grassland plants lies in their response to nutrient concentrations, such as soil nitrogen levels and nitrogen deposition from the atmosphere. For the most part, native grassland species require low levels of fertility; they cannot compete successfully at higher levels. It may at first seem counterintuitive that high fertility levels could be inimical to plant diversity, but there is now a very large body of evidence pointing in this direction. We can conclude that grassland plants generally are in trouble, with the exception of those few species that thrive in highly fertile conditions.

### Woodlands.

In contrast, a group analysis on woodland plants showed that they have fared relatively well. Most native woodland species are shown as either stable or increasing. Although Ireland is one of the least wooded countries in Europe, the extent of woodland has been gradually increasing, most notably through the planting of introduced conifers (which suppress most ground level plants) but to a lesser extent of broad-leaved trees. There is a minor problem, however.

The ground flora of new plantations is usually dominated for decades by remnants of the original flora or by highly mobile species like ferns from airborne spores or Brambles *Rubus* spp. spread by birds. By and large, native species such as Bluebell *Hyacinthoides non-scripta* are slow to migrate into new woodland. Although the trend statistics do show some woodland species, for example Wood Speedwell *Veronica montana*, to be increasing markedly, effects like this probably owe as much to a bias in the survey data as to genuine increases. The bias would have arisen because there were

i mbaol de dheasca athruithe ar an bhfeirmeoireacht: meicniú, úsáid luibhicídí agus leasuithe neamhorgánacha, suiteáil córas draenála, athshíolú seantailte féaraigh, agus aistriú ó fhéar tirim agus aoileach go sadhlas agus sciodar. B’fhéidir go bhfuil tú ag ceapadh nach bhféadfadh tailte féaraigh a bheith i mbaol in Éirinn, ach is é cailteanas cineálacha áirithe féaraigh atá i gceist anseo – na cinn siúd ar mhórán speicis fhiáine atá ar ithreacha nach bhfuil chomh méith sin. Thacaigh na tailte féaraigh ‘leathnádúrtha’ sin le líon mór dár gcuid sainspeiceas dúchasach, cuid mhaith magairlíne san áireamh. Bhíodh leo toisc go mbíodh innilt fhairsing ar bun, nó go sábháilte an féar ag deireadh an tsamhraidh nó ag tús an fhómhair. Tar éis na gnáthoga seo ar mhórán speiceas a athrú ina dtailte féaraigh dianbhainistithe, nó a thréigean ina scrobarnach i roinnt cásanna, is iomaí speiceas a cailleadh toisc nach raibh siad in ann dul i dtaithe ar an gcomhshaol athraithe.

Is éard is bunchúis leis an meath atá tagtha ar go leor plandaí féaraigh ná a bhfreagairt do thiúchan cothaitheach, amhail na leibhéil nítrigine san ithir, chomh maith le sil-leagan nítrigine ón atmaisféar. Tríd is tríd, teastaíonn leibhéil ísle torthúlachta ó speicis féaraigh dhúchasacha; ní éiríonn leo nuair a bhíonn na leibhéil ard. B’fhéidir nach luíonn sé le ciall ar an gcéad spléachadh go bhféadfadh leibhéil arda torthúlachta a bheith mífhábhach d’éagsúlacht na bplandaí, ach tá an-chuid fianaise ann anois go bhfuil. Is féidir linn a dhéanamh amach go bhfuil plandaí féaraigh i dtrioblóid go ginearálta, cé is moite den líon beag speiceas a mbíonn rath orthu i ndálaí an-torthúil.

### Coillearnacha.

I gcodarsnacht leis an méid sin, léirigh anailís ghrúpa ar phlandaí coillearnaí go bhfuil ag éirí go réasúnta maith leo. Tá an chuid is mó de na speicis choillearnaí dhúchasacha seasmhach nó ag méadú. Cé gur fíor go bhfuil Éire ar cheann de na tíortha is lú atá faoi chrainn san Eoraip, tá méid na coillearnaí sa tír ag méadú de réir a chéile. Is éard atá taobh thiar de sin den chuid is mó ná cur buaircíneach a tugadh isteach (a chuireann formhór na bplandaí ar leibhéal na talún faoi chois) agus, go pointe áirithe, cur crann leathanduilleach chomh maith. Tá fadhb bheag ann, áfach.



Woodland flowers, Glengarriff Woods Nature Reserve, Co. Cork.

Bláthanna coillearnaí, Anaclann Dúlra Choill an Ghleanna Ghairbh, Co. Chorcaí.

Clare Heardman

exhaustive surveys of woodland carried out in the early years of the 21st century, which would have created a disproportion of records in the post-2000 period and thus the appearance of increase. It is probably safer to conclude that woodland plants are at least stable than that they are definitely increasing.

#### Arable land and other disturbed habitats.

The calculated trends in the flora of cultivated land, urban sites and other places subject to physical disturbance were very disparate making generalisation difficult. One of the more conspicuous changes in the wild flora of Ireland has been to the plants – weeds – that co-habit with farm crops. A grouped analysis of typical weeds of arable land showed no clear trend and a high margin of uncertainty. We know that some species that were abundant until the mid-20th century became much reduced as a result of improved husbandry, and in particular the use of herbicides. Typically these were ancient introductions (archaeophytes) like Corn Marigold (Section 8), Shepherd's Purse *Capsella bursa-pastoris*, Small Nettle *Urtica urens* and Corn Spurrey *Spergula arvensis*. Charlock *Sinapis arvensis* remains widespread, although not as abundant as in former times. Just how large it loomed in the lives of ordinary people is suggested by its Irish name *Praiseach* being one that passed into common use by English speakers. One reason why Charlock is still recorded regularly in disturbed ground is that its seeds survive for many decades and germinate when the ground is tilled. Other typical crop weeds like Scarlet Pimpernel *Lysimachia arvensis* and Field Pansy *Viola arvensis* have remained more or less stable, perhaps because they are better adapted to non-crop habitats like gardens and roadsides.

While the volume of weeds in crops is much reduced, the variety of weeds as a whole has increased with the advent of many new species (neophytes), and the spread of others, particularly those that are more resistant to herbicides such as the Docks *Rumex* spp., Willow-herbs *Epilobium* spp. and certain grasses, for example Wild Oat *Avena fatua*. A few of the more colourful weeds of the past, among them Corn Marigold, Field Poppy *Papaver rhoeas* and Cornflower *Centaurea cyanus*, are now reappearing as components of wildflower seed mixtures.

Is gnách go mbíonn flóra talún na bplandálacha nua faoi chois go ceann a fiche nó a tríocha de bhlianta ag iarsmaí den fhlóra bunaidh nó ag speicis ard-shoghluaiste ar nós raihneacha a scaiptear trí spóir aeriompartha nó Driseacha *Rubus* spp. a scaipeann éin iad. Tríd is tríd, bíonn speicis dhúchasacha ar nós na gCoinnle Corra *Hyacinthoides non-scripta* mall ag dul isteach sa choillearnach nua. Cé go léiríonn na staitisticí treochta go bhfuil borradh ag teacht ar roinnt speicis choillearnaí, m.sh. Lus Cré Coille *Veronica montana*, is é firinne an scéil gur mó seans gur claonadh sna sonraí suirbhé is cúis leis sin ná fíorbhorradh. Bheadh an claonadh sin ann toisc go ndearnadh suirbhéanna uileghabhálacha ar thailte coillearnaí go luath san 21ú haois, rud a bhí ina chúis le díréireacht sna taifid ón tréimhse tar éis 2000 agus, dá bhrí sin, leis an méadú a bhí le sonrú. Is dócha gurbh fhearr a bhaint de thátal as go bhfuil plandaí coillearnaí seasmhach ar a laghad, seachas go bhfuil siad ag méadú go cinnte.

#### Talamh arúil agus gnáthóga suaite eile.

Bhí na treochtaí ríofa maidir le flóra talún saothraithe, láithreacha uirbeacha agus áiteanna eile a shuaitear, an-éagsúil le chéile, rud a fhágann gur deacair an rud é léargas ginearálta a fháil. Is é ceann de na hathruithe is feiceálaí atá tagtha ar fhlóra fiáin na hÉireann ná na plandaí — fiailí — a chónaíonn go sásta taobh le barra feirme. Níor léirigh anailís ghrúpáilte ar na fiailí a aimsítear ar thalamh arúil de ghnáth aon treocht shoiléir agus bhí lamháil ard neamhchinnteachta i gceist chomh maith. Is eol dúinn gur tháinig laghdú mór ar roinnt speiceas a bhí flúirseach go dtí lár an 20ú haois de bharr feabhsuithe ar mhodhanna feirmeoireachta, úsáid luibhicídí go háirithe. Speicis a tugadh isteach sa seanam (aircéifítí) ab ea iad sin den chuid ba mhó, amhail an Buían (Cuid 8), Lus an Sparáin *Capsella bursa-pastoris*, an Neantóg Bheag *Urtica urens* agus an Corrán Lín *Spergula arvensis*. Tá an Phraiseach Bhuí *Sinapis arvensis* fós coitianta go leor, ach níl chomh coitianta céanna agus a bhíodh. Léiriú amháin ar cé chomh tábhachtach is a bhí sí i saol na ngnáthdhaoine ná go raibh an t-ainm i nGaeilge á úsáid go forleathan ag cainteoirí Béarla chomh maith. Ar cheann de na cúiseanna a dtaifeadtar an Phraiseach Bhuí go rialta i dtalamh suaite



Charlock *Sinapis arvensis*, roadside, Ballyheigue, Co. Kerry.

Praiseach Bhuí *Sinapis arvensis*, cois bóthair,  
Baile Uí Thaidhg, Co. Chiarraí.

Jessica Hamilton

### Wetlands.

A grouped analysis of the plants of fen, marsh and swamp showed a marked downward trend in the frequency of their typical species in the past 30 years, but a possible increase in an earlier period. In total, these species make up a substantial proportion of the Irish flora and their welfare is therefore a major issue for biodiversity conservation. As well as Corn Mint and Marsh Lousewort (Section 8), numerous other species show up as having declined in the short or long term, among them Bogbean *Menyanthes trifoliata*, Greater Spearwort *Ranunculus lingua*, Marsh Pennywort *Hydrocotyle vulgaris* and several sedges *Carex* spp.. There are many possible reasons for the loss of plants of fen and swamp. Total loss of habitat by its conversion to other uses such as agriculture or construction is one that continues up to the present. Others include changes in the water table (usually lowering), infilling, poaching by heavy stock, cessation of grazing, encroachment by scrub, and nutrient enrichment.

The data on lakes are equivocal. Botanists who survey lakes and other water bodies report a severe decline in many aquatic species including stoneworts *Chara* spp. and true Pondweeds *Potamogeton* spp., but in the analyses these can be masked by quirks in the data. Aquatic plants are a specialist field that some botanists feel unable to tackle. Some aquatic plants are mainly recorded in systematic surveys using boats and/or diving equipment. There are substantial batches of these records in recent recording periods because of intensive surveys, and these can distort the data giving false trends. To make reliable comparisons, specialist surveys need to be repeated like-for-like. The Slender Naiad *Najas flexilis* is a submerged aquatic plant almost confined to the western seaboard of Ireland and Scotland. Based on the data in Plant Atlas 2020, the calculated trends for Slender Najad in Ireland are erratically positive, but we know from detailed studies that the actual trends are likely to be in the opposite direction; in some sites monitored over the last 20 years, the plant has apparently disappeared because of eutrophication.

ná go maireann a shíolta ar feadh na mblianta agus go bpéacann siad nuair a dhéantar an talamh a shaothrú. D'fhan gnáthfhiailí bairr eile ar nós an Fhalcaire Fhiáin *Lysimachia arvensis* agus an Luis Croí *Viola arvensis* seasmhach den chuid ba mhó, b'fhéidir toisc gur fearr atá siad in ann do ghnáthóga neamhbhairr cosúil le gairdíní agus ciumhaiseanna bóthair.

Cé go bhfuil méid na bhfiailí i mbarra laghdaithe go mór, tá méadú tagtha ar éagsúlacht na bhfiailí ar an iomlán le teacht go leor speiceas nua (neofití), agus scaipeadh ceann eile, go háirithe iad siúd atá níos frithsheasmhaí in aghaidh luibhicídí mar Chopóga *Rumex* spp., Saileacháin *Epilobium* spp. agus féara áirithe, m.sh. an Coirce Giáin *Avena fatua*. Cuid de na fiailí níos ildaite a bhíodh i réim san am atá thart, an Buían, an Chailleach Dhearg *Papaver rhoeas* agus an Gormán *Centaurea cyanus*, cuir i gcás, tá siad ag teacht i réim arís de bharr iad a bheith san áireamh i meascáin solta bláthanna fiáine.

### Bogaigh.

Léirigh anailís ghrúpáilte ar phlandaí an eanaigh, an réisc agus an tseascainn treocht shuntasach chun donais i minicíocht ghnáthspeicis na mbogach sin le 30 bliain anuas, ach méadú féideartha sa tréimhse roimhe sin. Tá na speicis sin ina gcuid mhór de fhlóra na hÉireann agus, dá bhrí sin, is saincheist thar a bheith tábhachtach é a leas ó thaobh chaomhnú na bithéagsúlachta de. Chomh maith leis an Mismín Arbhair agus an Milseán Móna (Cuid 8), tá an chuma ar an scéal go bhfuil laghdú tagtha ar go leor speicis eile sa ghearrthearma nó san fhadthearma, lena n-áirítear an Báchrán *Menyanthes trifoliata*, an Ghlasair Léana Mhór *Ranunculus lingua*, Lus na Pingine *Hydrocotyle vulgaris* agus roinnt cíbí *Carex* spp.. Is iomaí rud a d'fhéadfadh a bheith taobh thiar de chaillteanas phlandaí an eanaigh agus an tseascainn. Tá gnáthóga iomlána fós á gcailleadh sa lá atá inniu ann toisc go bhfuil an talamh á thiontú le haghaidh úsáidí eile, amhail talmhaíocht nó tógáil. I measc na rudaí eile a d'fhéadfadh a bheith i gceist tá athruithe ar an maoschlár (ísliú de ghnáth), líonadh, póitseáil ag beostoc trom, scor d'innilt, cúngú scrobarnaí, agus saibhriú cothaitheach.

Níl dada cinnte faoi na sonraí maidir le lochanna. Tuairiscíonn luibheolaithe a dhéanann suirbhé ar lochanna agus ar dhobharlaigh eile go bhfuil meath mór tagtha ar roinnt mhaith speicis uisceacha, lena n-áirítear Aol-Lusanna *Chara* spp. agus fíorDhuileasc Abhann *Potamogeton* spp., ach d'fhéadfadh an méid sin a bheith folaithe sna hanailísí mar gheall ar chora sna sonraí. Is sainréimse iad na plandaí uisceacha agus braitheann roinnt luibheolaithe nach bhfuil siad in ann dóibh. Déantar roinnt plandaí uisceacha a thaifeadadh go príomha i suirbhéanna córasacha ina n-úsáidtear báid agus/nó trealamh tumadóireachta. Toisc go ndearnadh suirbhéanna dian, tá an-chuid taifid a bailíodh ar an gcaoi sin sna tréimhsí taifeadta is déanaí, agus d'fhéadfaidís na sonraí a chur as a riocht agus a bheith ina gcúis le treohtáí bréagacha. Le comparáidí iontaofa a dhéanamh, ní mór suirbhéanna speisialaithe a dhéanamh arís ar an gcaoi ceannann céanna. Planda uisceach faoi uisce is ea an tSiofróg Uisce *Najas flexilis* nach n-aimsítear ach ar bhord farraige thiar na hÉireann agus na hAlban. Bunaithe ar na sonraí in Atlas na bPlandaí, 2020, tá na treohtáí riofa maidir leis an tSiofróg Uisce in Éirinn dearfach ach neamhrialta, ach is eol dúinn ó staidéir mhionsonraithe gur dócha go bhfuil a mhalairt ar fad atá fíor; i roinnt áiteanna a bhfuil monatóireacht á déanamh orthu le 20 bliain anuas, is cosúil go bhfuil an planda imithe go hiomlán de dheasca an eotróifaithe.



Greater Spearwort *Ranunculus lingua*, Lough Corrib, Keelkill, Headford, Co. Galway.  
 Glasair Léana Mhór *Ranunculus lingua*, Loch Coirib, Caolchoill, Áth Cinn, Co. na Gaillimhe.

*Eamonn Delaney*



Slender Naiad *Najas flexilis*, Lough Leane, Killarney, Kerry, now extinct in this part of the lake.

With Delicate Stonewort *Chara virgata*.

Síofróg Uisce *Najas flexilis*, Loch Léin, Cill Áirne, Ciarraí, imithe i léig anois sa chuid seo den loch.

Le hAol-Lus Mín *Chara virgata*.

*Cilian Roden*

There is, however, incontrovertible evidence of a pronounced spread in three aquatic species since 2000, all of them known to be favoured by nutrient-enriched conditions. Nuttall's Pondweed *Elodea nuttallii* has been mentioned before (Section 7); Least Duckweed *Lemna minuta* was first found in Ireland in 1993 and has spread to occupy much of Ulster and the counties of the south coast. The third is a native species, Rigid Hornwort *Ceratophyllum demersum*, once considered very rare but now recorded in over 80 hectads and one of the dominant aquatics of Lough Neagh.

Tá fianaise dhosháraithe ann, áfach, go bhfuil trí speiceas uisceacha ag leathadh go mór ó 2000 i leith agus is eol go bhfuil dálaí saibhrithe cothaitheach fabhrach do gach ceann acu. Luadh an Tím Uisce Chaol *Elodea nuttallii* cheana (Cuid 7); Aimsíodh an Ros Lachan Beag *Lemna minuta* in Éirinn den chéad uair in 1993 agus tá sé le haimsiú i gcuid mhaith de chontaetha Chúige Uladh agus i gcontaetha an chósta theas na laethanta seo. Is speiceas dúchasach é an tríú ceann, an Cornlach *Ceratophyllum demersum*, a mheastaí a bheith an-neamhchoitianta tráth ach atá anois taifeadta i mbreis agus 80 cearnóg agus ar cheann de na plandaí uisceacha is mó atá i réim i gceantar Loch nEathach.



Plant recording, Minane Bridge Marsh, Cork.

Plandaí á dtaifeadadh, Riasc Dhroichead an Mhionnáin, Corcaigh.

*Clare Heardman*



## 10 Is climate change affecting the Irish flora?

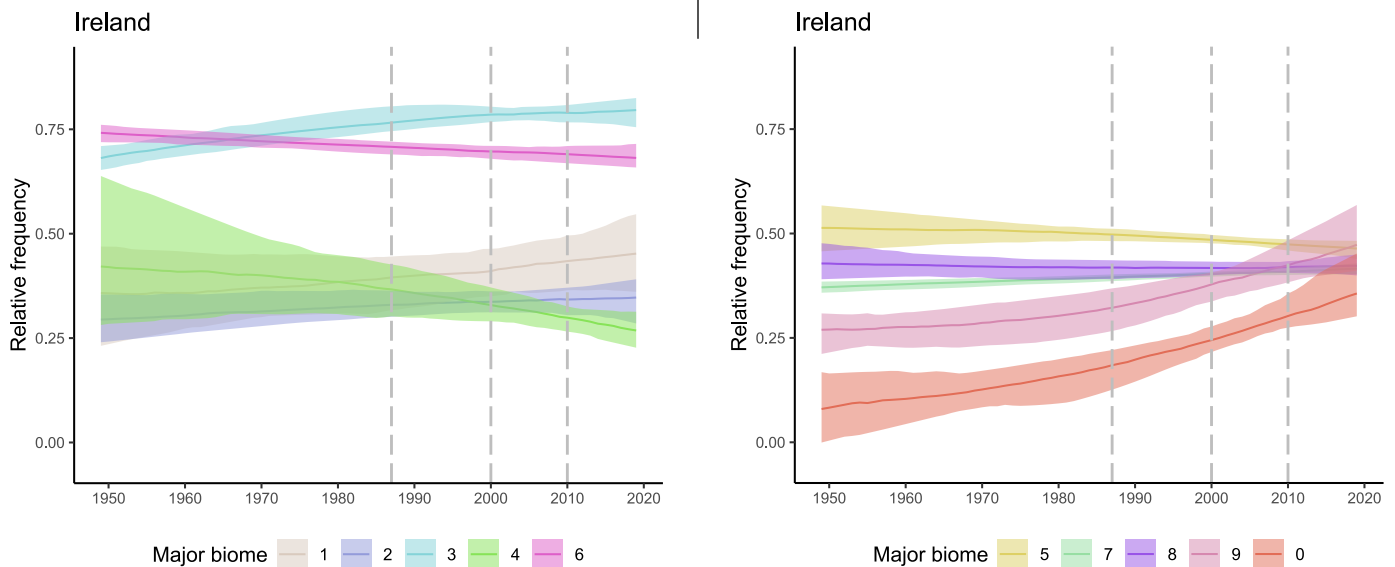
In line with global trends, Ireland's climate has been warming. Average temperatures have risen by nearly one degree in a century, and the distribution of rainfall through the year is shifting. It is inevitable that, if changes like these continue, there will be consequences for wild plants. We can predict that species which have hitherto been more at home further south are likely to expand their range northwards, and that those more typical of northern climes will retreat away from the south. The rates at which they will do so depend on many different factors, including the longevity of individual plants, and the ability of species to disperse across barriers of unsuitable habitat.

The Atlas data provide evidence that the advance of southern species may actually be occurring. Irish plant species can be aggregated into groups – major biomes – characteristic of distinct physical environments, defined by latitude and altitude. Each group has many species, the most numerous in Ireland being the Temperate group with over 400. With this approach, the calculated long-term trends of all the species in a group were combined to produce an average trend for the group as a whole. Two southern ones, the Mediterranean and the Mediterranean-Atlantic, showed increases, providing evidence that these southern elements of the Irish flora have been increasing their ranges (Fig. 16). More difficult to understand, however, are the small decreases in two temperate groups, and

## 10 An bhfuil an t-athrú aeráide ag cur isteach ar fhlóra na hÉireann?

Ar aon dul leis na treochtaí domhanda, tá aeráid na hÉireann ag téamh. Tá ardú beagnach céim amháin tagtha ar na meánteochtaí le céad bliain anuas agus tá dáileadh na báistí i gcaitheamh na bliana ag athrú. Má leanann athruithe mar sin ar aghaidh, níl aon dul as ach go mbeidh iarmhairtí ann do phlandaí fiáine. Is féidir linn a thuar gur dócha go dtabharfaidh speicis atá níos compordaí níos faide ó dheas anois a n-aghaidh ó thuaidh, agus go gcúlóidh aneas na cinn is mó atá ar a gcompord sa tuaisceart. Braithfidh cé chomh sciobtha is a dhéanfaidh siad amhlaidh ar go leor fachtóirí éagsúla, lena n-áirítear fad saoil na bplandaí aonair, agus cumas an speicis le scaipeadh thar na gnáthóga mí-oiriúnacha atá sa bhealach orthu.

Tá sonraí san Atlas a thugann le fios go bhféadfadh sé go bhfuil gluaiseacht ó thuaidh na speiceas sa deisceart ar bun cheana féin. Is féidir speicis plandaí na hÉireann a chur le chéile ina ngrúpaí — mórbhithóim — de réir a dtimpeallachtaí fisiciúla ar leith, arna sainiú le domhanleithhead agus airde. Tá go leor speiceas i ngach grúpa, agus is é an grúpa Measartha, a bhfuil breis is 400 speiceas ann, an grúpa is mó in Éirinn. Leis an gcur chuige sin, cuireadh treochtaí fadtéarmacha na speiceas go léir i



**Figure 16. Long-term trends for Irish plant species grouped by their wider distribution in Europe (biomes).**

Trends of individual species have been averaged across all members of the group.

The trend lines showing 90% uncertainty intervals have been divided between two graphs for clarity.

Vertical lines represent the start time for each recording interval.

Key to biomes: 1 = arctic montane, 2 = boreo-arctic montane, 3 = wide-boreal, 4 = boreal-montane, 5 = boreo-temperate, 6 = wide-temperate, 7 = temperate, 8 = southern temperate, 9 = Mediterranean-atlantic, 0 = Mediterranean.

**Fíor 16. Treochtaí fadtéarmacha le haghaidh speicis plandaí Éireannacha arna ngrúpáil de réir a ndáilte níos leithne san Eoraip (de réir bithóim).**

Rinneadh meánú ar threochtaí na speiceas aonair thar gach ball den ghrúpa.

Roinneadh na línte le eitraimh éiginnteachta 90% treochta idir dhá ghráf ar mhaithe le soiléireacht.

Seasann na línte ingearacha don am tosaithe do gach eatramh taifeadta

Eochair na mbithóim: 1 = Artach-Sléibhtiúil, 2 = Bóireach-Artach-Sléibhtiúil, 3 = Bóireach-Leathan, 4 = Bóireach-Sléibhtiúil, 5 = Bóireach-Measartha, 6 = Leathan-Measartha, 7 = Measartha, 8 = Deisceartach-Measartha, 9 = Meánmhuirí-Atlantach, 0 = Meánmhuirí.



Keeled-fruited Cornsalad *Valerianella carinata*,  
Wellingtonbridge, Co Wexford.

Ceathrú Uain Dhroimneach *Valerianella carinata*,  
Droichead Eoin, Co. Loch Garman.

*Paul Green*

a small increase in one of the northern groups – the Wide-Boreal. As with other trend analyses, the more marked trends are highly suggestive, but uneven recording over time could have given rise to biases in the data.

An alternative approach is to examine particular individual species. Keeled-fruited Cornsalad *Valerianella carinata* is a case in point. It is a small winter-annual found mainly as a weed in human-made habitats such as gardens, unused urban land and graveyards. It is an introduced species in Ireland, belonging to the Southern-Temperate group. Prior to 1986, it had only a few very scattered records in Ireland. Since then, it has spread strongly, at first in the far south, but since 2000 through much of the country as far north as Sligo and Newry. Its distribution in Britain has followed a similar trend. Being at the northern edge of its range in Britain and Ireland, the obvious explanation appears to be that the warming climate is enabling it to spread northwards. However, other causes are possible such as the emergence of a new genetic variant, or confusion by earlier botanists with the similar species Common Cornsalad *Valerianella locusta*, which is cultivated as a salad green. It cannot therefore be asserted that climate change is definitely responsible for its spread, only that it is a plausible explanation.

Other species responding to climate change by increasing their range in Ireland are unlikely to have such an obvious ‘north front’. Candidates would include some of those listed in Section 7, of which most are non-native. Another candidate is the native species Water Figwort *Scrophularia auriculata* which has apparently broken free from its traditional shady waterside habitats to establish itself as a member of the town and country weed flora. One intriguing possibility would be that the range of the Strawberry-tree *Arbutus unedo* might expand. A member of the Mediterranean-Atlantic group, Strawberry-tree’s status as a native in the south-west has recently been called into question. What is beyond doubt, however, is that it survives as a planted tree in many parts of Ireland, and has been recorded as regenerating itself from seed at Great Orme in North Wales where it has been described as ‘invasive’.

There are no clear indications of species that are retreating northwards from a ‘south front’. Whereas those that gain from

ngach grúpa le chéile le meántreocht an ghrúpa ina iomláine a dhéanamh amach. Bhí méadú le sonrú sa dá ghrúpa theas, Meánmhuirí agus Meánmhuirí-Atlantach, rud is fianaise go bhfuil na gnéithe deisceartacha sin de fhlóra na hÉireann ag cur lena raon (Fíor 16). Níos deacra le tuiscint, áfach, tá na laghduithe beaga ar dhá ghrúpa mheasartha, agus an méadú beag ar cheann de na grúpaí thuaidh – an grúpa Leathan-Bóireach. Mar is amhlaidh le hanailísí treochta eile, bheadh sé éasca scéal mór a dhéanamh de na treochtaí níos suntasaí sin, ach caithfear a choinneáil i gcuimhne go bhféadfadh sé go raibh taifeadadh míchothrom le himeacht ama ina chúis le cora sna sonraí.

Cur chuige eile d’fhéadfaí a ghlacadh ná breathnú go mion ar speicis ar leith. An Cheathrú Uain Dhroimneach *Valerianella carinata*, cuir i gcás. Bliantóg gheimhridh bheag í a aimsítear go príomha mar fhaile i ngnáthóga de dhéantús an duine, amhail gairdíní, talamh uirbeach gan úsáid agus reiligí. Is speiceas í a tugadh isteach in Éirinn agus atá sa ghrúpa Deisceartach-Measartha. Roimh 1986, ní raibh ach roinnt taifid an-scaipthe uirthi in Éirinn. Ó shin i leith, tá sí scaipthe go mór, san fhíordheisceart ar dtús, ach ó 2000 i leith, i gcuid mhór den tír chomh fada ó thuaidh le Sligeach agus leis an Iúr. Tá an treocht dáileacháin sa Bhreatain mar an gcéanna a bheag nó a mhór. Nuair a chuirtear sa mheá go raibh sé ar imeall thuaidh a raoin sa Bhreatain agus in Éirinn, is léir gurb é an míniú is soiléire ar an scéal ná go bhfuil an aeráid níos teo ag cur ar a cumas leathadh ó thuaidh. Bíodh sin mar atá, d’fhéadfadh cúiseanna eile a bheith leis, mar shampla, athraitheach géiniteach nua a bheith ag teacht chun cinn, nó mí-shainaithint ag luibheolaithe roimhe seo ar an gCeathrú Uain *Valerianella locusta*, speiceas comhchosúil a shaothraítear mar dhuilleog shailéid. Ní féidir a rá go cinnte mar sin gurb é an t-athrú aeráide is cúis lena leathadh, ach is míniú le dealramh é mar sin féin.

Ní dócha go mbeidh ‘imeall thuaidh’ chomh follasach sin ag speicis eile atá ag cur lena raon in Éirinn mar fhreagairt don athrú aeráide. Bheadh cuid de na speicis atá luaite i gCuid 7 san iomaíocht, ach níl an chuid is mó díobh sin dúchasach. Ar cheann dúchasach atá san áireamh tá an Donnlus Uisce *Scrophularia auriculata*, speiceas is cosúil atá tar éis éalú óna ghnáthóga scáthacha traidisiúnta cois uisce le hé féin a bhunú ina bhall de fhlóra na bhfaiilí sa bhaile agus faoin tuath. Díol spéise é go bhféadfadh méadú a theacht ar raon na gCaithe *Arbutus unedo* ar an gcaoi chéanna. Is ball den ghrúpa Meánmhuirí-Atlantach í an Chaithne ach caitheadh amhras le déanaí ar a stádas dúchasach san iardheisceart. Rud nach bhfuil amhras ann faoi, áfach, ná go maireann sí mar chrann plandáilte i go leor áiteanna in Éirinn, agus go bhfuil sé ar an taifead gur éirigh léi í féin a athghiniúint ó shíol in Y Gogarth i dTuaisceart na Breataine Bige, áit a meastar í a bheith ‘ionrach’.

Níl aon léiriú soiléir ann go bhfuil speicis ag cúlú aneas ó ‘imeall theas’. Cé gur dóichí gur speicis neamhdhúchasacha ó áiteanna níos faide ó dheas a bhainfidh leas as an athrú aeráide in Éirinn, is dócha gur speicis dhúchasacha a bheidh thíos leis. Tá an flóra dúchais faoin oiread sin brú ó fhachtóirí eile, amhail cailteanas gnáthóg, saibhriú mianraí agus brú féaraigh athraithe, gur snámh in aghaidh easa é na cúiseanna leis an meath a dhéanamh amach. Is léir go bhfuil roinnt speicis dhúchasacha Éireannacha i mbaol, áfach. Dhá speiceas cósta Éireannacha is ea Lus na Sceallaí *Mertensia maritima* agus an tSunais *Ligusticum scoticum* atá ar a imeall theas a raoin anseo cheana féin. Is cosúil go bhféadfadh dhá chib a

climate change in Ireland are most likely to be non-natives from further south, those that retreat are likely to be natives. The native flora is under such pressure from other factors such as habitat loss, mineral enrichment and altered grazing pressure that disentangling the causes of decline is problematic. Some Irish native species, however, are obviously vulnerable. Oysterplant *Mertensia maritima* and Scots Lovage *Ligusticum scoticum* are two Irish coastal species at the southern limit of their range here. Two sedges also look vulnerable: Stiff Sedge *Carex bigelowii*, which is more or less confined to sites above 500m, and Few-flowered Sedge *Carex pauciflora*, which is confined to upland bogs in the north-east. Two more species that need watching are Dwarf Willow *Salix herbacea*, which grows on very exposed sites on mountains, and Northern Marsh-orchid *Dactylorhiza purpurella*, a plant of fens and other damp open sites.

Consistent monitoring of these and other vulnerable species will be required to help clarify what is happening to wild plants in the changing climate.

bheith i mbaol freisin: An Chfí Shléibhe *Carex bigelowii*, nach n-aimsítear ach os cionn 500m den chuid is mó, agus an Chfí Scáinte *Carex pauciflora*, nach n-aimsítear ach ar phortaigh shléibhe san oirthuaisceart. Ar dhá speiceas eile a bhfuil gá le súil a choinneáil orthu tá an Chamshaileog *Salix herbacea*, a fhásann in áiteanna sceirdiúla ar shléibhte, agus an Magairlín Corcra *Dactylorhiza purpurella*, a aimsítear ar eanaigh agus in áiteanna taise oscailte eile.

Caithfear monatóireacht chomhsheasmhach a dhéanamh ar na speicis sin agus ar speicis leochaileacha eile d'fhonn tuiscint níos fearr a fháil ar a bhfuil ag tarlú do phlandaí fiáine san aeráid atá ag athrú.



Scots Lovage *Ligusticum scoticum*, Fanad Peninsula, Co. Donegal.  
Sunais *Ligusticum scoticum*, Fánaid, Co. Dhún na nGall.  
*Micheline Sheehy Skeffington*



Dwarf Willow *Salix herbacea*, Dooish, Co. Donegal.  
Camshaileog *Salix herbacea*, an Dubhais, Co. Dhún na nGall.  
*Rory Hodd*



Oysterplant *Mertensia maritima*, Dunaff, Co. Donegal.  
Lus na Sceallaí *Mertensia maritima*, Dún Damh, Co. Dhún na nGall.  
*Oisín Duffy*

## 11 Conclusions

A botanical visitor to the present day from the 1950s would see vast changes in Ireland. Changes in the landscape would stand out, with large swathes of dark conifer forest in the uplands having replaced areas of blanket bog and hill pastures. There would be larger, more uniformly deep-green fields in the lowlands, less length of hedge, more fence, and many fewer areas of marsh and bogland. Roads would be larger and straighter with verges that were mown by machine once or twice a year rather than grazed or cut spasmodically by hand. There would be fewer small potato patches, and arable crops would be less widespread and more concentrated in favourable areas.

Looking more closely, they would see that the mature conifer plantations consisted mainly of one species, Sitka Spruce, in huge numbers of even-aged stands, and had very few plants growing within them. The green fields of the lowlands would have a few plants of familiar common species like Dandelions, Docks and Chickweed along with the ubiquitous Ryegrass, but the diverse flower-rich meadows would have disappeared. Road verges would be dominated by rank growth of grasses. Pockets of wetland would be far fewer except in the West. All these changes and many more have been documented, implicitly or explicitly, by the findings of Plant Atlas 2020 and comparisons with those of its predecessors.

Our visitor might raise a flurry of questions. Have scientists been looking the other way? Why were the best habitats not protected? Who should have prevented the pollution of water bodies by nutrients? How did the idea of planting vast uniform stands of one alien conifer on deep peat take root? Whose job should it have been to develop a long-term vision for Irish land-use? Were the consequences of moving towards energy-intensive farming systems foreseeable?

These are questions closer to the realm of politics than of science. Plant Atlas 2020 itself cannot answer them, but the information within it provides an enormous wealth of data about the distributions of Irish plants and how they have changed. We know far more about what species occur where than we did before, and why they are spreading or retreating. Even the Atlas itself doesn't tell the whole story. Behind every page lies the collective efforts and memories of the recorders. Other insights will emerge as researchers delve deeper with renewed determination to explore and protect our precious flora. Certainly the wealth of data in the Atlas will prompt many new lines of investigation.

One of the most clear-cut findings is that the native flora of Ireland has been retreating as fast in the 21st century as in the 20th century. Introduced species do little to compensate for the loss of natives. For the most part, they are denizens of human-made habitats, are already common elsewhere in Europe and in some cases world-wide and contribute little to biodiversity. Biomonotony, it seems, is taking over from Biodiversity. Perhaps we should not be surprised by the disappointing fact that Ireland was found to languish 13th from the bottom for biodiversity intactness in a list of 240 countries worldwide, with Northern Ireland one place lower.

Human activities are the cause of biodiversity decline, so human activity must be recruited to restore it. We conclude by putting forward some measures that would make a big

## 11 Conclúidí

Dá dtiocfadh cuairteoir mór luibheolaíochta ó na 1950idí go hÉirinn an lae inniu, bheadh iontas air faoi na hathruithe ollmhóra. Athruithe ar an tírdhreach ba mhó a bheadh le sonrú aige, agus d'fheicfeadh sé stráicí móra foraoise lán le buaircínéacha dorcha sna hardtailte in ionad bratphortach agus féaraigh chnoic. Bheadh na páirceanna sna híséalchríocha ní ba mhó agus ar aon dath dúghlas amháin. Bheadh ní ba lú fáлта nádúrtha ann agus ní ba mhó fáлта sreang. Bheadh an-chuid de na riasca agus de na móintigh imithe. Bheadh na bóithre ní ba mhó agus ní ba dhíri agus dhéanfaí na ciumhaiseanna a bhearradh uair nó dhó sa bhliain le measín seachas ainmhithe a bheith ag innilt orthu nó iad a bhearradh anois is arís de láimh. Bheadh ní ba lú paistí beaga prátaí ann, agus ní bheadh barra arúla chomh forleathan céanna, iad ní ba comhchruinnithe sna ceantair ab fhabhraí.

D'fheicfeadh sé gur speiceas amháin, an sprús Sitceach, atá sna plandálacha aibí buaircínéacha go léir agus iad i líon mór millteach clampaí atá ar comhaois le chéile. Ní bheadh ach líon an-íseal plandaí ag fás ina measc. Bheadh cur amach aige ar roinnt speiceas coitianta a d'fheicfeadh sé sna híséalchríocha mar an Caisearbhán, an Chopóg agus an Fhlíodh, chomh maith leis an tSeagalach i ngach áit bheo, ach bheadh na móinéir lán bláthanna éagsúla imithe le sruth. Bheadh ciumhaiseanna na mbóithre faoi fhéar borb. B'annamh a d'fheicfeadh sé paistí beaga bogaigh, ach amháin san Iarthar. Tá na hathruithe seo go léir agus a thuilleadh nach iad doiciméadaithe, go hindíreach nó go díreach, ag torthaí Atlas na bPlandaí, 2020 agus curtha i gcomparáid le torthaí na nAtlas a tháinig roimhe.

Seans maith go mbeadh cuid mhaith ceisteanna ag ár gcuariteoir. An é nach raibh iúl na n-eolaithe ar a gcuid oibre? Cén fáth nach raibh na gnáthoga ab fhearr faoi chosaint? Cé dó ar chóir cosc a chur ar thruailliú doharlach ag cothaithe? Cén sórt scaile a bhí tagtha orthu nuair a thosaigh siad ag cur na mílte buaircínéach coimhthíoch ar phortaigh dhoimhne? Cé air a raibh an fhreagracht as fíis fhadtéarmach a cheapadh maidir le húsáid na talún in Éirinn? An bhféadfaí iarmhairtí an aistrithe go córais feirmeoireachta atá dian ar fhuinneamh a thuar?

Is ceisteanna iad seo ar an lucht polaitíochta seachas an lucht eolaíochta. Is cinnte nach dtiocfaidh tú ar na freagraí in Atlas na bPlandaí, 2020, ach tiocfaidh tú ar mhéid mór millteach sonraí faoi dháiltí na bplandaí in Éirinn agus faoi na hathruithe atá tagtha orthu. Tá i bhfad níos mó ar eolas againn anois faoi na speicis atá ann, faoin áit a n-aimsítear iad, agus faoi na cúiseanna a bhfuil siad ag scaipeadh nó ag cúlú. Níl insint iomlán ar an scéal san Atlas fiú amháin. Taobh thiar de gach leathanach tá comhiarrachtaí agus cuimhní cinn na dtaifeadóirí. Tiocfaidh léargais eile chun cinn mar a bheidh taighdeoirí ag déanamh mionchíoradh ar an bhfaisnéis nua, iad meáite arís eile ar ár bhflóra iontach luachmhar a iniúchadh agus a chosaint. Is cinnte go spreagfaidh saibhreas na sonraí san Atlas go leor bealaí nua imscrúdaithe.

Ceann de na torthaí is soiléire ná go bhfuil flóra dúchasach na hÉireann ag cúlú chomh tapa céanna san 21ú haois agus a bhí san 20ú haois. Is beag a dhéanann speicis a tugadh isteach le cúiteamh a dhéanamh ar chailliúint na gceann dúchasach. Den chuid is mó, is iad gnáthoga de dhéantús

contribution to the restoration of biodiversity, and of wild plants in particular.

- **Protect remaining habitats.** The habitats under greatest pressure are species-rich grassland and wetlands such as fens and marshes. They need special attention, but not at the expense of others. To stop biodiversity loss, all habitats – even degraded ones – need protecting from further damage.
- **Restore habitats in poor condition.** Degraded habitats take time to restore, but as a rule it is quicker, more effective, and less costly to restore than to create anew. Most habitats would be amenable to restoration. Restoring degraded bog, for example, is a field in which Ireland has particular expertise and a track record. There is also a powerful inducement in that restoring a bog can convert a carbon source into a carbon sink.
- **Create new permanent habitat.** The most promising circumstances for entirely new habitat would be adjacent, or at least close, to existing high-quality habitat. Opportunities to extend areas of wetland, woodland, grassland and other habitats in this way may require both quick action and the availability of funds at short notice.
- **Reverse contamination by excessive nutrients.** High fertility associated with applications of fertiliser or with atmospheric deposits puts the majority of plants at risk of being out-competed by a favoured few. No habitat is exempt, though species-rich grasslands and wetlands are very vulnerable. Once released into the environment, these nutrients cannot readily be recovered. Effective measures are therefore needed to stop this form of pollution at source.
- **Strengthen plant monitoring and research.** A more systematic and integrated long-term approach is required to ensure trends can be detected, the consequences of climate change tracked, and findings acted upon in a timely manner.
- **Repair the cultural standing of plants.** As generations of people become more distant from their origins on the land, they tend to overlook the vital roles of plants. Their place in formal education has dwindled, and most people can name very few of them. By omission, plants are misunderstood, downplayed, ignored, and dismissed, even though we still need them as much as ever. Plants require more of our attention and it is in our interest to give it to them.

an duine an áit cheart dóibh, tá siad coitianta cheana féin in áiteanna eile san Eoraip agus, i gcásanna áirithe, ar fud an domhain, agus is beag a chuireann siad le bithéagsúlacht ar aon chuma. Tá an bith-mhonatonaíocht ag teacht in áit na bithionnannas, is cosúil. B'fhéidir nár cheart dúinn iontas a bheith orainn go raibh Éire sa 13ú háit ba mheasa ó thaobh sláine bithéagsúlachta de ar liosta 240 tír ar fud an domhain, agus Tuaisceart Éireann áit amháin ní ba mheasa fós.

Gníomhaíocht an duine is cúis le meath na bithéagsúlachta, mar sin caithfear leas a bhaint as gníomhaíocht an duine leis an scéal a chur ina cheart. Mar chlabhsúr, táimid ag moladh roinnt beart a chuirfeadh go mór le hathchóiriú na bithéagsúlachta, agus le plandaí fáine go háirithe.

- **Cosain na gnáthóga atá fágtha.** Ar na gnáthóga is mó atá faoi bhrú tá talamh féaraigh ar mhórán speiceas, agus bogaigh amhail eanaigh agus riasca. Ní mór aird ar leith a thabhairt orthu, ach níor chóir go mbeadh na cinn eile thíos leis sin ach an oiread. Le stop a chur le cailliúint na bithéagsúlachta, ní mór gach gnáthóg – fiú na cinn atá díghrádaithe – a chosaint in aghaidh a thuilleadh damáiste.
- **Athchóirigh na gnáthóga atá i ndroch-chaoi.** Is fíor go dtógann sé am gnáthóga díghrádaithe a athchóiriú, ach bíonn sé níos tapúla, níos éifeachtaí, agus níos saoire athchóiriú ná cruthú as an nua. D'fhéadfaí an chuid ba mhó de ghnáthóga a athchóiriú. Is rud é an t-athchóiriú portach díghrádaithe a bhfuil saineolas agus ardaithí air in Éirinn. Buntáiste an-suntasach eile ná go ndéanann athchóiriú portaigh foinse charbóin a thiontú ina linn charbóin.
- **Cruthaigh gnáthóg bhuan nua.** Bheadh na cúinsí ab fhearr do ghnáthóg iomlán nua in aice le gnáthóg ardchaighdeán atá ann cheana, nó gar dá leithéid de ghnáthóg ar a laghad. D'fhéadfadh sé go mbeadh idir bheart tapa agus fáil ar airgead faoi ghearrfhógra a bheith ag teastáil le deiseanna a thapú le cur le bogaigh, coillearnacha, féaraigh, agus gnáthóga eile ar an gcaoi sin.
- **Cuir deireadh le héilliú de dheasca ró-úsáid cothaitheach.** Cuireann an torthúlacht ard a bhaineann le leathadh leasaithe nó le sil-leagain atmaisféaracha formhór na bplandaí i mbaol toisc go mbíonn an líon beag plandaí roghnaithe in ann an lámh in uachtar a fháil ar na cinn eile. Tá gach gnáthóg i gceist, ach tá talamh féaraigh ar mhórán speiceas agus bogaigh an-leochaileach. Tar éis na cothaithe seo a scaoileadh isteach sa chomhshaol, ní haon dóithín é iad a thógáil amach arís. Sin é an fáth a bhfuil gá le bearta éifeachtacha le stop a chur leis an gcineál seo truaillithe ag an bhfoinse.
- **Cuir le monatóireacht agus taighde ar phlandaí.** Tá gá le cur chuige fadtéarmach atá níos córasaí agus níos comhtháite lena chinntiú gur féidir treochearta a bhrath, iarmhairtí an athraithe aeráide a rianú, agus beart a dhéanamh de réir na dtorthaí go tráthúil.
- **Cuir ar ais seasamh cultúrtha na bplandaí.** De réir mar a éiríonn an bhearna idir na daoine agus an talamh glúin i ndiaidh glúine, bíonn claonadh acu dearmad a dhéanamh ar ról ríthábhachtacha na bplandaí. Is ar éigean a luitear san oideachas foirmiúil iad na laethanta seo, agus is beag duine a bheadh in ann cuimhneamh ar ainm roinnt bheag acu fiú amháin. Níl tuiscint ar phlandaí, déantar beag is fiú agus neamhshuim díobh, agus cuireann daoine as a n-intinn iad, in ainneoin go bhfuil siad ag teastáil uainn i gcónaí. Teastaíonn níos mó dár n-aird ó phlandaí agus is chun ár leasa féin í a thabhairt dóibh.

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- The plant atlas website: [plantatlas2020.org](http://plantatlas2020.org)
- Walker, K.J., Stroh, P.A., Pescott, O.L., Humphrey, T.A. & Roy, D.B. 2023. The changing flora of Britain. Durham: Botanical Society of Britain and Ireland.
- Stroh, P.A., Walker, K.J., Humphrey, T.A., Pescott, O.L. & Burkmarr, R.J. 2023. *Plant Atlas 2020. Mapping Changes in the Distribution of the British and Irish Flora*. 2 Volumes. Princeton: Princeton University Press.

Irish translation provided by Snasta Teoranta.

Téacs le John Faulkner, le cabhair ó bhaill eile de Choiste an Chumainn in Éirinn. Tá buíochas ag dul do gach duine a chuir taifid ar fáil, na taifeadóirí leas-chontae go háirithe, a ndearna cuid Mhic Craith den obair leis na taifid a bhailiú agus a sheiceáil. Táimid buíoch d'oifigigh an Chumainn in Éirinn (Maria Long, Sarah Pierce agus Paul Green), do na baill foirne, agus do na baill eile ar fad a bhí páirteach sa saothar leis na sonraí maidir le hÉirinn a thaifeadadh, a phróiseáil agus a anailísiú. Tugaimid aitheantas le teann buíochais don mhéid oibre a rinne foireann an Ionaid Éiceolaíochta agus Hidreolaíochta ar na hanailísí agus do na taifeadóirí agus lucht tacaíochta a chuir grianghraif ar fáil go fial le haghaidh na tuarascála seo. Tugaimid aitheantas le teann buíochais freisin don tacaíocht a fuarthas do ghnéithe de Thionscadal an Atlais in Éirinn ó Chumann na mBláthanna Fiáine, ón tSeirbhís Páirceanna Náisiúnta agus Fiadhúlra, ó Ard-Mhúsaem Thuaisceart Éireann, ón Ionad Náisiúnta le Sonraí Bithéagsúlachta, agus ón Ionad um Shonraí agus Taifeadadh Comhshaoil. Is í an tSeirbhís Páirceanna Náisiúnta agus Fiadhúlra a mhaoinigh an t-aistriúchán Gaeilge ar an téacs seo. Seo a leanas na nithe eile atá foilsithe faoi thionscadal an Atlais:

- Láithreán gréasáin Atlas na bPlandaí: [plantatlas2020.org](http://plantatlas2020.org)
- Walker, K.J., Stroh, P.A., Pescott, O.L., Humphrey, T.A. & Roy, D.B. 2023. The changing flora of Britain. Durham: Cumann Luibheolaíochta na Breataine agus na hÉireann.
- Stroh, P.A., Walker, K.J., Humphrey, T.A., Pescott, O.L. & Burkmarr, R.J. 2023. *Plant Atlas 2020 (Atlas na bPlandaí, 2020). Mapping Changes in the Distribution of the British and Irish Flora*. 2 Imleabhar. Princeton: Princeton University Press.

Is é Snasta Teoranta a chuir Gaeilge ar an téacs.



An tSeirbhís Páirceanna Náisiúnta  
agus Fiadhúlra  
National Parks and Wildlife Service



Front cover: Early Purple Orchid, *Orchis mascula*, Burren, Co. Clare.

Clúdach tosaigh: An Magairlín Meidhreach, *Orchis mascula*, Boirinn, Co. an Chláir.

Robert Thompson