BSBI NEWS

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Botanical Society of Britain & Ireland

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CONTENTS January 2022 No. 149

Cover image: *Illecebrum verticillatum* (Coral-necklace), the first modern Scottish record at Loch Treig, Westerness (v.c. 97). *Sarah H. Watts* (*see Scotland roundup, p. 65*).

Contributions for the next issue of *BSBI News* (no. 150) should be sent to the Editor, John Norton (john.norton@bsbi.org) by 25 February 2022.

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Botanical Society of Britain & Ireland

FROM THE PRESIDENT

Since September there have been many meetings throughout Britain and Ireland, including AGMs and Annual Exhibition Meetings, some with new titles such as the Scottish Botanical Conference. Our main meeting in November will also be renamed as the 'British & Irish Botany Conference' but it will still be the same gathering of people interested in botany. Once again we held recent meetings on Zoom, and although we are becoming much better at organising these events, they do take a great deal of effort and time from our willing volunteers and staff. We all owe them a significant vote of thanks.

We have continued to take forward many issues from which the whole Society will benefit, and we really do want to encourage a diversity of members and provide them with training opportunities. Much of this is available online now so that you can dip into it at any time. But we very much hope that field meetings will resume in the coming year and that some indoors meetings will be in person also. Committee members are getting younger – that is good as far as I am concerned. Being involved in running the BSBI is also a learning and training opportunity and one I would encourage members to consider, as it is mutually beneficial.

Despite the circumstances the membership has increased significantly and our financial resources are in good health. However, there is much more we would like to do if we did have more resources, for example on training and supporting our active members. With the New Atlas being published later in the year this will be a major achievement and it does take resources to bring it to fruition. If you think you could make a donation, then please do so. It need not be for a specific project, but we do have a few more in mind!

As I write this in December, storms have swept though Britain and Ireland. Many large trees have been completely flattened in north-west England and the landscape has been considerably altered as nearly every copse has some damage. Not since 1987 have we experienced winds of this vehemence. It will be interesting to see how the woods, parks and gardens recover. There is a push to plant more trees now and these need to be the right species in the right places, So it is pleasing to note work that Kevin Walker our Head of Science is doing with various government agencies. He is using BSBI data and interpretation to show areas of particular botanical interest to guide land management decisions, e.g. in places where planting trees might put rare plants or important habitats at risk.

You will be pleased to know that Micheline Sheehy Skeffington, VCR for SE Galway, keen kayaker, and with an interest in traditional music, was elected as President-elect at the November AGM. You can read more about Micheline's interesting life and that of her forebears on our website. Micheline will take over from me in November 2022. We are delighted to have only the second President-elect from the Irish republic.

Lynne Farrell
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EDITORIAL

In this issue I am pleased to include another varied set of articles relating to recording and researching of the British and Irish flora. Dave Trudgill has taken his own advice (*see Letters, last issue*) and carried out an analysis of historical trends in orchid records in the four country regions, using BSBI data. We have the regular contributions including Matthew Berry's Adventives and Aliens News which has reached a milestone of 25 instalments. For Beginner's Corner I have put together a photographic guide to the identification of yellow-flowered trefoils and medicks – I am looking for guest authors to write similar pieces for future issues or short articles on other suitable topics. Please contact me if you are interested.

John Norton
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Exceptional diversity of strandline plants at Ainsdale-on-Sea, Merseyside

PHILIP H. SMITH

Ainsdale beach strandline, September 2021 with *Beta vulgaris* subsp. *maritima* (Sea Beet) in foreground. *Photographs by the author*

Strandline vegetation comprises hardy, mostly annual, plants that colonise the drift-line at the top of a sandy beach. Populations tend to be ephemeral and opportunist, depending on dispersal by wind and tides, usually being destroyed by equinoxial and winter storms. Many of the plants are said to be halophytic or at least salt-tolerant while some, perhaps most, are nitrophilous, making use of nutrients in organic debris washed in by early season spring tides (Pakeman & Lee, 1991; Rodwell, 2000). Rodwell describes two relevant UK National Vegetation Classification (NVC) communities, the first being SD2: *Honckenya peploides-Cakile maritima* strandline, occurring on this habitat all around the British coasts and characterised by the presence of *Cakile maritima* (Sea Rocket), *Honckenya peploides* (Sea Sandwort) and various *Atriplex* spp. (oraches) as the most consistent elements. Doody (1991) adds *Salsola kali* (Prickly Saltwort) to this list. The other is SD3: *Matricaria maritima* (=*Tripleurospermum maritimum*)–*Galium aparine* community around more sheltered shores in the cooler, wetter north of the country, especially where large amounts of drift materials, including seaweeds, are washed up in storms. In this case, *Tripleurospermum maritimum* (Sea Mayweed), various *Atriplex* spp. and the annual 'weeds' *Galium aparine* (Cleavers) and *Stellaria media* (Common Chickweed) are constant.

The Sefton Coast in north Merseyside (v.c. 59, South Lancashire) includes England's largest sand-dune system (Smith, 2009; 2021). Strandline vegetation occurs sporadically along accreting sections of shoreline, especially from Ainsdale to Birkdale in the north and between Cabin Hill and

Hightown to the south. However, the occurrence of this community varies greatly from year to year. In some years hardly any plants are seen, while other years have extensive and diverse strandline vegetation.

Methods

In summer 2021, it became apparent that an especially rich strandline, often in three parallel lines, was forming on the upper shore between Ainsdale and Birkdale. Nothing like it had been seen for at least ten years, many of the plants seemingly being atypical of this habitat (*see title photograph*). It was therefore decided to record the vascular taxa along a 500 m section north of Ainsdale-on-Sea, including an estimate of frequency on the DAFOR scale, and to investigate the nature and attributes of the community, especially the extent to which the flora was halophytic and nitrophilous. Ellenberg salinity and nitrogen values for each taxon were sourced from Hill et al. (2004). The study area (OS Grid Reference SD300135) was immediately seaward of two recently formed sections of Birkdale Green Beach, known locally as the 'Newest Green Beach' (400 m) and the 'Even Newer Green Beach' (100 m) (Smith, 2007; 2021).

Artemisia maritima (Sea Wormwood) (top) and *Melilotus indicus* (Small Melilot) (bottom) on the Ainsdale strandline, September 2021.

Results

During September 2021, searches of the strandlines produced a total of 119 vascular taxa, 65 along the Even Newer Green Beach section and 99 on the longer Newest Green Beach stretch; 45 plants were common to both (Table 1). Analysis of the DAFOR scores (Table 2) shows that most taxa were ranked 'rare' (62%) or 'occasional' (35%). Two were 'frequent' or 'locally frequent', namely *Atriplex prostrata* (Spear-leaved Orache) and *Senecio vulgaris* subsp. *vulgaris* (Groundsel), while only one was 'abundant', this being *Puccinellia maritima* (Common Saltmarsh-grass). *Salsola kali* was represented by one individual. Only 13.5% of the taxa were non-native, compared with about 40% aliens for the dune system as a whole (Smith, 2015). A low total of 13 plants (10.9%) was regionally or nationally notable.

The most surprising discovery was two small plants of *Artemisia maritima* (Sea Wormwood), extinct in the vice-county. Savidge et al. (1963) state that it used to occur amongst the typical strand community plants just above the high tide mark, the most recent record being at Southport in 1859. Other unexpected finds were a few specimens of *Melilotus indicus* (Small Melilot), an uncommon non-native taxon that I had seen only twice on the Sefton Coast in over 50 years and a single specimen of *Verbena officinalis* (Vervain),

a vice-county rarity. Also surprising were two large, spreading patches of *Rumex acetosella* (Sheep's Sorrel) on a strongly calcareous substrate with abundant shell fragments. This plant is typically associated with acid sands (Stace, 2019).

Reference to keys and descriptions in Rodwell (2000) suggested similarities to both SD2 and SD3. Rodwell's floristic tables give 31 taxa for SD2 of which 25 (81%) were found at Ainsdale, while 19 (68%) of the 28 taxa listed for SD3 were present. Overall, the flora more closely resembled SD2. Although *Stellaria media* and *Tripleurospermum maritimum* were 'occasional', *Galium aparine* was restricted to one or two individuals of P.D. Sell's subsp. *agreste*; other components did not suggest SD3, which is more frequent in Scotland (Rodwell, 2000).

The mean Ellenberg Indicator value for salinity was 1.56 (range 0–9). Figure 1 shows that the frequency distribution of S-values for strandline plants was heavily skewed towards non-halophytes, 49% having S-values of 0. In contrast, only 37% of species had moderate to high adaptation to saline conditions with S-values of 2–9. Are the strandline plants nitrophilous, as suggested by Pakeman & Lee (1991) and Rodwell (2000)? A frequency distribution of Ellenberg nitrogen (N) values (Figure 2) shows a majority (66%) had values of 6–9, typical of species adapted to fertile habitats. Only 16% had N-values of 2–4, the mean value of 5.89 being associated with plants of relatively infertile substrates.

About 35 plants (29% of the flora) were 'ruderal' species that typically colonise disturbed ground. Most of these have no adaptation to salinity (Ellenberg S-value = 0) (Table 1). Twenty-four (20%) were taxa more usually associated with freshwater wetland, while 34 (29%) were characteristic of maritime conditions, including typical strandline, fore-dune and saltmarsh species.

Discussion

Gateley & Michell (2004) described SD2 but not the SD3 strandline community during their comprehensive NVC survey of the Sefton dune system; this supports the finding that SD2 was the more likely community at Ainsdale. They noted that 2003 and 2004 were not particularly good years for strandline plants, measuring only 0.6 ha of SD2 in 2004, compared with 2.9 ha in 1988/89. As is the case currently, their strandline vegetation was restricted to accreting zones north and south of the eroding Formby Point. Why particular years are better than others for this community is unclear but Packham & Willis (1997) stated that strandline annuals germinate in April and May. Meteorological Office data show that April 2021 was one of the sunniest and driest on record, being followed by a relatively wet, cool May. High spring tides during 27–30 April may have washed up propagules, which then experienced ideal conditions for germination and establishment in May.

The flow of groundwater from the domed dune water table leads to seepage of freshwater westwards onto the shore. Thus, Clarke & Pegg (1993) estimated groundwater-flow from the water table at Ainsdale Sand Dunes National Nature Reserve, 1 km south of the study area, at 17% of annual rainfall. An exceptionally high water table, caused by the wet autumn and winter of 2020/21 (personal observations), would have led to more than usual seepage of freshwater onto the upper shore, further assisting colonisation by a wide range of species, including 'wetland' plants. Despite three months of below-average rainfall before the study, the strandline sand was saturated about 4 cm below the surface.

Also important to the development of strandline vegetation are washed-up debris, such as macro-algal litter, containing organic matter and nutrients (Pakeman & Lee, 1991). Russell & Felton (2010) showed that the Ainsdale/Birkdale beach was a rich source of driftweed, comprising 70 taxa of algae, many samples of which had likely origins in North Wales and southern Ireland.

Most of the Ainsdale strandline plants had low or negligible adaptation to salinity, contradicting the finding that strandline plants are generally halophytic (Pakeman & Lee, 1991; Rodwell, 2000). Maun (2009) noted that inundation by the sea and effects of salt-spray are seasonal, taking place mainly in autumn and winter when plants are dormant and

Table 1. Vascular taxa recorded on the strandline at Ainsdale-on-Sea, September 2021.

ENGB = Even newer Green Beach; NGB = Newest Green Beach; *= non-native; r = rare; o = occasional; f = frequent; a = abundant; NT = Near Threatened; VU = Vulnerable (italics = England Red List); SCI = Species of Conservation Importance in North West England.

Taxon	English name	ENGB	NGB	Status	S	N
Agrostis stolonifera	Creeping Bent	r			1	6
Ammophila arenaria	Marram		r		3	3
Apium nodiflorum	Fool's Water-cress		r		0	7
Arctium minus	Lesser Burdock		r		0	5
Arenaria serpyllifolia	Thyme-leaved Sandwort	r			0	5
Arrhenatherum elatius	False Oat-grass	r			0	7
Artemisia maritima	Sea Wormwood		r	NT SCI	5	6
Artemisia vulgaris	Mugwort		r		0	7
Atriplex glabriuscula	Babington's Orache	o	o		3	8
Atriplex laciniata	Frosted Orache	o	o	SCI	3	7
Atriplex littoralis	Grass-leaved Orache		r		4	6
Atriplex portulacoides	Sea Purslane	r	r		6	6
Atriplex prostrata	Spear-leaved Orache	f	f		2	7
Beta vulgaris subsp. *maritimus*	Sea Beet	o	o		3	8
Bidens tripartita	Trifid Bur-marigold		r		0	7
Bolboschoenus maritimus	Sea Club-rush	o			4	7
*Brassica napus**	Rape		r		0	7
*Brassica oleracea**	Cabbage		r		3	8
*Buddleja davidii**	Butterfly-bush	r			0	5
Cakile maritima	Sea Rocket		o		3	7
Carex arenaria	Sand Sedge	o	o		1	2
Carex extensa	Long-bracted Sedge	r			4	5
Carex otrubae	False Fox-sedge		r		2	7
Cerastium diffusum	Sea Mouse-ear		r		1	3
Cerastium fontanum	Common Mouse-ear		r		0	4
Chenopodium album	Fat-hen	o	o		1	7
Cirsium arvense	Creeping Thistle		r		0	6
Cochlearia anglica	English Scurvy-grass	r			6	6
Elymus junceiformis	Sand Couch	r	r		3	6
Elymus repens	Common Couch		o		2	7
Epilobium hirsutum	Great Willowherb	r	r		0	7
Erodium sp.	Stork's-bill		r			
Eryngium maritimum	Sea Holly		r	SCI NT	3	5
Euphorbia paralias	Sea Spurge		r	SCI	3	5
Fallopia convolvulus	Black Bindweed		r		0	5
Festuca rubra	Red Fescue		r		2	5
Galium aparine subsp. *agreste*	Cleavers		r		0	8
*Helianthus annuus**	Sunflower		o		0	7
Heracleum sphondylium	Hogweed		r		0	7
*Hippophae rhamnoides**	Sea Buckthorn		r		3	5
Holcus lanatus	Yorkshire-fog	r			0	5
Honckenya peploides	Sea Sandwort		o		3	6
*Hordeum vulgare**	Barley		r		0	7
Hypochaeris radicata	Cat's-ear		r		0	3

Table 1. (Cont.)

Taxon	English name	ENGB	NGB	Status	S	N
Iris pseudacorus	Yellow Iris	r	r		1	6
Juncus articulatus	Jointed Rush	r	o		1	3
Juncus bufonius	Toad Rush	r			1	5
Juncus inflexus	Hard Rush		r		1	5
Juncus ranarius	Frog Rush	r		SCI	4	5
Leontodon saxatilis	Lesser Hawkbit		r		0	3
Leymus arenarius	Lyme Grass	r	r		3	6
Lolium perenne	Perennial Rye-grass		r		0	6
Lotus corniculatus	Bird's-foot-trefoil		r		1	2
Lycopus europaeus	Gypsywort	o	o		0	6
Lysimachia maritima	Sea Milkwort	r	r		4	5
Medicago lupulina	Black Medick		r		0	4
*Melilotus albus**	White Melilot		r		0	4
*Melilotus indicus**	Small Melilot		r		2	7
*Melilotus officinalis**	Ribbed Melilot		r		0	5
Myosotis laxa	Tufted Forget-me-not	r	r		0	5
Nasturtium officinale	Water-cress	o	o		0	7
Oenanthe crocata	Hemlock Water-dropwort		r		1	7
Oenothera sp.*	Evening-primrose	r	r		0	4
Oenothera × *fallax**	Intermediate Evening-primrose	r			0	4
Oxybasis rubra	Red Goosefoot	o	o	SCI	1	8
Persicaria hydropiper	Water-pepper		r		0	6
Persicaria lapathifolia	Pale Persicaria	o	o		0	7
Persicaria maculosa	Redshank	o	o		0	7
Phalaris arundinacea	Reed Canary-grass	r	r		1	7
Plantago coronopus	Buck's-horn Plantain	r			2	4
Plantago lanceolata	Ribwort Plantain		r		0	4
Plantago major	Great Plantain	r	r		0	7
Plantago maritima	Sea Plantain		r		3	4
Poa annua	Annual Meadow-grass	o	o		1	7
Polygonum depressum	Equal-leaved Knotgrass	r	o		0	6
Polygonum oxyspermum subsp. *raii*	Ray's Knotgrass	o	o	SCI	3	8
Potentilla anserina	Silverweed	r	r		2	6
Puccinellia maritima	Common Saltmarsh-grass	a	a		5	6
Ranunculus flammula	Lesser Spearwort	r		VU	0	3
Ranunculus repens	Creeping Buttercup		r			
Ranunculus sceleratus	Celery-leaved Buttercup	o	o		2	8
Raphanus raphanistrum subsp. *maritimus*	Sea Radish	r	r	SCI	3	5
Raphanus raphanistrum subsp. *raphanistrum*	Wild Radish	r			3	6
Rumex acetosella	Sheep's Sorrel		r		0	3
Rumex conglomeratus	Clustered Dock	r	r		0	7
Rumex crispus	Curled Duck	o	o		2	6
Rumex obtusifolius	Broad-leaved Dock	o	o		0	9
Salicornia dolichostachya	Long-stalked Glasswort	o	r		9	6

Table 1. (Cont.)

Taxon	English name	ENGB	NGB	Status	S	N
Salicornia europaea	Common Glasswort		r		9	6
Salicornia ramosissima	Purple Glasswort	o	o		9	5
*Salix × fragilis f. basfordiana**	Hybrid Crack-willow	r				
Salix caprea	Goat Willow		o		0	7
Salix cinerea	Grey Willow	o	o		0	5
Salix repens	Creeping Willow		r	NT	0	3
Salix viminalis	Osier		r		0	6
Salsola kali	Prickly Saltwort		r	SCI VU LC	3	8
Schedonorus arundinaceus	Tall Fescue	r			1	6
Schoenoplectus tabernaemontani	Grey Club-rush		r	SCI	3	7
Senecio vulgaris subsp. *vulgaris*	Groundsel	o	lf		0	7
Silene sp.	Campion		r			
Sinapis arvensis	Charlock		r		0	7
*Solanum lycopersicum**	Tomato		r		0	7
Sonchus asper	Prickly Sow-thistle	o	o		0	6
Sonchus oleraceus	Smooth Sow-thistle		r		0	7
*Spartina anglica**	Common Cord-grass	r			7	6
Stellaria media	Chickweed	o	r		0	7
Suaeda maritima	Annual Sea-blite	o	o		7	6
Taraxacum agg.	Dandelion	r	r		1	6
*Trifolium hybridum**	Alsike Clover		r		0	6
Trifolium pratense	Red Clover	r			0	5
Trifolium repens	White Clover	r	r		0	6
Triglochin maritima	Sea Arrowgrass	o	o		4	5
Tripleurospermum maritimum	Sea Mayweed	o	o		1	6
Tripolium pannonicum	Sea Aster	o	o		5	6
Triticum aestivum	Bread Wheat	r			0	7
Tussilago farfara	Colt's-foot	o	r		0	6
Urtica dioica	Common Nettle		r		0	8
*Verbena officinalis**	Vervain		r	SCI	0	6
Veronica catenata	Pink Water-speedwell	o			0	8
Total 119 taxa (16 non-native)		**65**	**99**	**13**	**1.56**	**5.89**

salt is washed away by rainfall. He found that, as at Ainsdale, many strandline plants are salt-tolerant non-halophytes. As supported in relevant literature (e.g. Packham & Willis, 1997; Pakeman & Lee, 1991; Rodwell, 2000), most of the Ainsdale strandline flora was nitrophilous, with a high mean Ellenberg N-value of 5.9. Packham & Willis (1997) suggest that nitrogen availability is a major determinant of success for strandline annuals; this nutrient was presumably sourced from rotting driftweed and other organic debris.

The low proportion (13.5%) of alien plants noted on the strandline accords with Carboni et al. (2010) and Valcheva (2019) who found relatively few non-native plants in early dune successional stages. They suggested that these pioneer communities comprised mostly specialised halophytes and psammophytes adapted to harsh conditions, while neophytes were more often generalists, lacking such adaptations. Reasons for the small number and proportion of regionally or nationally notable plants are less clear. The Sefton dune system as a whole supports over 220 notable vascular plants (17% of the flora) (Smith,

Table 2. DAFOR scores for the two strandline sections
ENGB = Even Newer Green Beach; NGB = Newest Green Beach

Score	ENGB	%	NGB	%	Total	%
rare	35	54	67	68	102	62
occasional	28	43	29	29	57	35
frequent	1	1.5	2	2	3	2
abundant	1	1.5	1	1	2	1
Total	**65**		**99**		**164**	

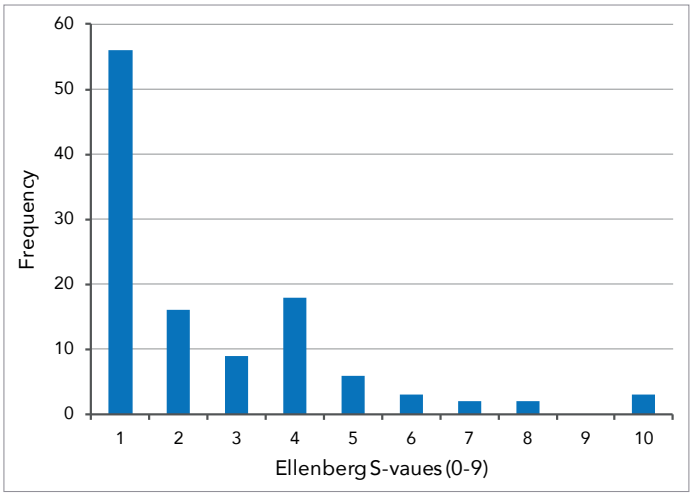

Figure 1. Frequency distribution of Ellenberg S-values for strandline plants at Ainsdale.

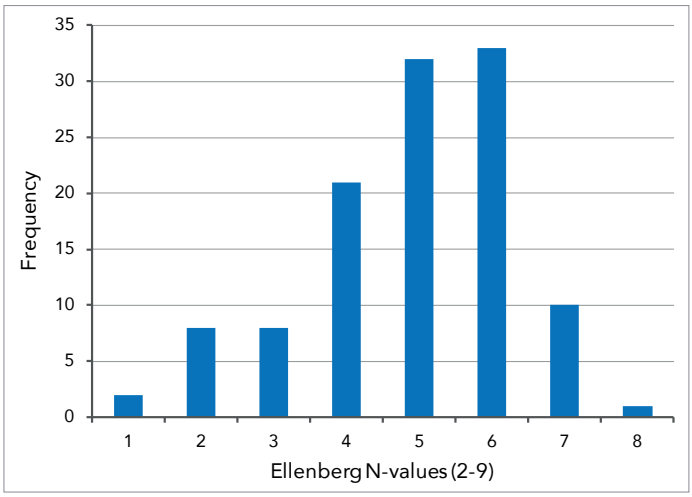

Figure 2. Frequency distribution of Ellenberg N-values for strandline plants at Ainsdale.

2015) but only 13 notable taxa (10.9%) were identified on the strandline. However, almost all of these are 'maritime' species. The unexpected presence of many widespread ruderals and freshwater wetland plants seems to have altered the expected proportion of notable plants, which would have been higher for a more typical strandline community.

In early October 2021, prolonged high winds deeply covered most of the strandline plants with blown sand. A few days later, a sequence of high spring-tides (up to 10 m O.D.) washed over the drift-line but caused little scouring, probably because accretion around *Puccinellia maritima* to the west raised beach levels sufficiently to reduce wave action. The tides deposited large quantities of seaweed, especially *Ascophyllum nodosum* and *Fucus vesiculosus*, indicating the source of nutrients for nitrophilous strandline plants.

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A view of the Ainsdale strandline, 27 September 2021.

Rampant Sea Radish: *Raphanus raphinistrum* subsp. *maritimus* around Anglesey and other Welsh coasts

E. IVOR S. REES

Based on his extensive knowledge of the flora of Anglesey (v.c. 52), R.H. Roberts (1910–2003) wrote that *Raphanus raphinistrum* subsp. *maritimus* (Sm) Thell. (Sea Radish) was 'very rare', citing only two localities (Roberts, 1982). Later, in the 1980s and early 1990s, there were a few more records but only after 2000 was it being encountered much more frequently. The upsurge has been such that by September 2021 it had been recorded in 68 of the island's 170 coastal monads. Nearly all have post-2000 records and most of the remaining monads lack suitable habitats. In season, and in some places, the bushy flowering stems have now become semi-continuous for hundreds of metres. This is particularly noticeable in the south-west section of the Menai Strait, including the Caernarfonshire (v.c. 49) side, and parts of Red Wharf Bay. In the 2010–2019 recording period 90 entries into the BSBI DDb were made from Anglesey.

Abundant Sea Radish dominating an area adjoining a shingle storm beach at the Llanddona end of Red Wharf Bay, Anglesey (SH571808), 14 June 2019. *Photographs by the author*

To check whether the dramatic increases seen around Anglesey had been matched elsewhere, the pattern of records shown in the BSBI DDb (up to 18/09/2021) was checked for all the ten Welsh vice-counties with any coast. This provided confirmation of the past scarcity, with relatively few records of this conspicuous plant from anywhere in Wales before 1930. The few extra early literature or herbaria records found during this study did not change that impression and, by contrast, it now occurs in multiple monads in all the Welsh coastal vice-counties.

The earliest record of Sea Radish in Britain and Ireland was in 1625, on an undercliff near

Eastbourne (Pearman, 2017). For Wales, the earliest records located so far were in South Wales during the late 19th century (Tenby 1873 [herb BIRM, Herbaria@home]; Oxwich, 1881; Penclawdd, 1887 [herb BM, in Vauchell, 1936]). For North Wales, there were just two records from the 19th century, both in 1889 (NE corner of Tremadog Bay and Menai Strait between Beaumaris and Penmon).

To try to quantify the scale of increase and when it may have begun in North Wales, the DDb was searched for the numbers of records from each coastal Welsh vice-county by time periods. To smooth some of the idiosyncrasies of recording in different vice-counties, the data were pooled to compare the four vice-counties in North Wales bordering the Irish Sea with the four in South Wales adjoining the Celtic Sea, Bristol Channel and Severn Estuary. The two Cardigan Bay vice-counties, having relatively few records for differing reasons, were omitted from this analysis.

Counts of records by time periods are inevitably crude indicators of change in frequencies of actual occurrence. The amount of effort going into recording has increased significantly over time and the durations of the BSBI recording periods was not uniform. Other factors influencing the figures are that when a plant becomes common, 'saturation' occurs at the scale of the recording grid and time periods. Both these have varied over time and between vice-counties. At the other extreme, when in the past specimens were commonly exchanged between private herbaria, multiple entries in the DDb can sometimes be seen to derive ultimately from single collection events. To partly control for effort, approximate conversion factors were derived to attempt some rough hindcasting as if recording effort in the series of periods from 1970 onwards had been as high as the levels achieved during 2010–2019. For this, rough conversion factors were calculated from the numbers of records in the DDb from the whole of GB for six other coastal species during each period (*Ammophila arenaria*, *Armeria maritima*, *Beta vulgaris* subsp. *maritima*, *Honckenya maritima*, *Silene uniflora* and *Suaeda maritima*). The species were chosen as being common and easily recognised, with the added assumption that any actual occurrence variation between them might balance out. For each, factors were calculated from the differences between the numbers of records in earlier periods compared to those in 2010–2019. Means were then taken so each species contributed equally to the eventual effort conversion factors. After applying these factors to the numbers of Sea Radish records, they were then adjusted for period durations to derive 'Hindcast Effort Adjusted Records per Decade'.

In Table 1 the hindcast estimates are in brackets alongside the actual numbers of records. The table shows that even allowing for the lower numbers of records resulting from previous targeting by hectads, less use of GPS and computers in earlier periods, the changes really have been substantial in both parts of Wales. The greater overall number of records in South Wales compared to the North in the last two decades is partly due to the greater intensity of mapping effort in Carmarthenshire (v.c. 44). The method of extrapolation was considered far too unrealistic going back any earlier than 1970. Another crude indicator of relative change is that, of the total numbers of Sea Radish records from Great Britain and Ireland, only 3.4% were from Wales prior to 1987 but in 2000–2019 Wales contributed 16.2% of them.

Table 1. Total numbers of records in the DDb (at end August 2021) by time periods in North Wales (v.cc. 49, 50, 51 & 52) and South Wales (v.cc. 35, 41, 40 & 45). Figures in brackets, estimated N/10 years, after applying correction factors for recording effort at 2010–19 level (see text) and duration of recording period. Pre 1930 and 1930–49 figures do not include some additional early herbarium and literature records.

Period	North	South
Pre 1930	1	1
1930–49	0	2
1950–69	2	7
1970–86	5 (24)	12 (56)
1987–99	17 (26)	80 (120)
2000–09	59 (83)	274 (385)
2010–19	129	408

Having robust pericarps surrounding them, Sea Radish seeds should be able to survive quite long-distance dispersal by currents and wind drift. Seeds brought naturally by prevailing marine drift and carried high enough ashore by the highest tides and storm waves to have a chance to establish are most likely to reach Wales from the south or south-west. The south coast of Cornwall and the Isles of Scilly had the greatest number of 19th century Sea Radish records in the DDb of anywhere in Britain and Ireland. Pembrokeshire, being nearest to Cornwall in both distance and climate, had the most Welsh pre-1970 records. There is some indication that the increases may have begun almost a decade earlier in South Wales than in the North. The absence of records until recent decades from the leeward coasts of Denbighshire and Flintshire also fits a marine drift hypothesis. However, a short distance north-east across Liverpool Bay, in the approaches to the now closed port of Preston, two hectads had several records before 1970. The disjunct distribution and proximity to some ports of pre-1930 and 1930–1969 records shown on the BSBI DDb map for the whole of Britain and Ireland suggests that some of the apparent clusters may not be entirely natural in origin. The two 19th century records in North Wales may not have been unassisted either as both were close to the slate ports of Portmadog and Port Penrhyn at a time when solid ballast was often discharged before vessels were loaded. Snow & Campbell (2005) also pointed to the significant potential for the accidental introduction of various radishes as seed or animal feed contaminants.

Three stages in colonisation and population increase can be deduced from the North Wales data in recent decades. Firstly, there was primary colonisation of coastal cells, typically major bays or estuaries. This would have applied whether arrival was natural or accidentally assisted. Self-incompatibility would probably have been a restraining factor, so isolated casuals might be short-lived. This may have been the case at Cemlyn on the north coast of Anglesey where R.H. Roberts recorded it in 1971. The location is a high-profile

Sea Radish on shingle at the base of a low glacial till cliff, Porth Nobla, Anglesey (SH330711), 29 June 2019.

nature reserve visited by hundreds of naturalists every year, but it was not seen again for nearly four decades. In 2021 the Sea Radish plants on the shingle ridge, flowering amongst the *Crambe maritima* (Sea kale) could not be missed. If a lack of records is an indication of absence anywhere, it would have been here.

Secondary, medium range, local spread within the coastal cells was most likely brought about by wave action and currents particularly when extreme tides coincided with storm surges. The pattern of spread within the Menai Strait illustrates the role of tidal currents, with extensive colonisation of shores in the part of the Strait south-west of the bridges, but hardly any north-east of them. The difference can be attributed to the timing of high water and different tide ranges at the two ends of the Strait. This causes current directions to change and run strongly to the south-west in the narrow section between the two bridges more than an hour before high water. Seeds washing from shores in the southwest section of the Strait would only get set adrift near high tide and so would seldom get carried north-east beyond the bridges. Dispersal by flood tides and south-westerly gales would also explain the spread up the Severn estuary during recent decades.

Storm surge tides and strong winds would also have had a role in the localised, but sometimes temporary, third stage increases through spreading seeds further onshore and more widely, as well as adding decaying debris to fertilise ruderal situations. The verges of coastal roads and the edges of car parks subject to splash over or sea water flooding, now often have large stands of Sea Radish. A tumbleweed effect, as observed by Cadée (2005) with *Crambe maritima* fragments becoming trapped by fences or walls seems to have occurred at some places. In others, dispersal by scavengers may have played a part, the first Cardiganshire record having been associated with a gull colony on top of a small island.

Sea Radish is primarily a sub-oceanic plant, probably with a Lusitanian post-glacial history, occupying ruderal situations adjoining strandlines. Rich (1991) suggested that distribution in Britain and Ireland was limited by winter frosts and that dispersion was driven by wave action. In line with a hypothesis of climate change accounting for part of the increase in North Wales, rosette leaves were seen to be damaged by even short duration moderate frosts. There have been many fewer and less prolonged periods of hard frosts in recent decades with none matching the extreme winter of 1962/63.

Around the world, various radish cultivars are grown as fodder or break crops, as well becoming weeds in other crops. Due to this, there has been much research on the genetic origins of the commercial cultivars and the links between these and wild or feral congeners (Snow & Campbell, 2005).

Sea Radish fruits showing characters intermediate between *Raphanus raphinistrum* subsp. *maritimus* and subsp. *raphinistrum* (Wild Radish), Menai Strait near Tal y Foel, Anglesey (SH412643) 3 July 2021.

There are also ongoing taxonomic disagreements about how many subspecies of *R. raphinistrum* should be recognised, whether these should be classified as species or indeed whether the Sea Radish on British coasts (subsp. *maritimus*) is just a variant of the Mediterranean Sea Radish *R. raphinistum* subsp. *landra* (Moretti ex DC) Bonnier & Layens. Given the potential for genomic variability and introgression by related taxa, alteration to the genotype seems a plausible explanation for most of the change in status. Relevant to the diversity of the genome, a small proportion of the plants in the south-west section of the Menai Strait in 2021 were seen to produce fruits that partly resembled the range of shapes in *R. raphinistrum* (= subsp. *raphinistrum*) as illustrated by Rich (1989; 1991) and Stace (2019). Although the main flowering period is May–July (Rich, 1991), another distinct secondary peak of flowering in Anglesey now occurs in September.

Tim Rich (pers. comm.) has also advised that the range of shapes of the rosette leaves he has seen elsewhere in Wales is very much greater than the illustrations in several identification guides would imply. This includes a form with extra small pinnae between the main ones on basal rosette leaves which is commonly found on Menai Strait shores (*see photograph*).

Although classed as a native, the speed and scale of change of Sea Radish populations in parts of North Wales seems to have been more akin to that expected of an invasive 'thug'. A sign that baseline perceptions more widely have shifted is that as well as R.H. Roberts' view from Anglesey, Hepburn (1952), writing more generally about the rarer flowers of British coasts, included *R. raphinistrum* subsp. *maritimus* in the same sentence as *Mertensia maritima* (Oysterplant).

Sea Radish leaf with extra pinnae (arrowed).

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An exploration of orchid records in the BSBI database in four regions of the British Isles

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This article uses the BSBI Distribution Database (DDb) to explore the changing status of eighteen species of orchids, all of which occur in England, Wales, Scotland and Ireland. It covers five time periods from 1950 to 2019 and seeks to determine whether these species have all declined, or whether some, such as *Anacamptis pyramidalis* (Pyramidal Orchid) have increased. The total numbers of orchid records were determined for the default time periods as used for the BSBI maps, i.e. 1950–1969, 1970–1986, 1987–1999, 2000–2009 and 2010–2019 (*bsbi.org/maps*). However, as these periods differed in length, the data presented are the mean numbers of records per year for each time period. The orchid data are based on the numbers of tetrads (or better) in which a species of orchid had been recorded. Hectad records were also included and added to the tetrad totals, but only for those hectads where there were no corresponding tetrad records. Records regarded as doubtful or needing confirmation were not included.

Lesser Butterfly and Pyramidal orchids, Perthshire. *Dave Trudgill*

The focus of this article is on the changes over time and differences between the above four regions. Consequently, the majority of the results are presented as the sum of the tetrad records for all eighteen species of orchids. The results are in two parts. The first part (Tables 1 to 3) explores changes in the orchid tetrad (plus hectad) records. Surprisingly, it was found that in all four regions the total numbers of orchid tetrad records progressively increased and were greater in the period 2010–19 than in any earlier period. The second part explores the impact of changes in recording between 1950 and 2019 by expressing the orchid tetrad records as a proportion of the total numbers of records for all plant taxa (duplicates excluded) for each region and time period (Tables 4 and 5; Figures 1 and 2). By this measure, most orchid species have substantially declined, some by more than 80%.

Part 1 – Orchid tetrad records

A list of the eighteen orchid species and the numbers of positive tetrad records in England for each species, presented as the annual mean for each time period, is given in Table 1. Space does not allow for equivalent tables for the other three regions. I have separated the species into two groups. In the first group of seven species, the greatest number of records occurred in, or before the period 1987–99. These species are, by any measure, declining. In the second group of eleven species, the greatest number of records was in the period 2010–19, indicating that they might be increasing. There were large differences between species in the frequency with which they were recorded, the most records being collected for *Dactylorhiza fuchsii* (Common Spotted-orchid) and the fewest for *Pseudorchis albida* (Small-white Orchid).

The total number of tetrad records per annum for the eighteen species of orchids in England for each of the five time periods is shown at the bottom of Table 1. In Table 2 the equivalent values are also shown for Wales, Scotland, and Ireland. In all four regions the total numbers of tetrads positive for orchids progressively increased to a maximum in the period 2010–19. Compared with 1950–69, the number of orchid tetrad records had increased 3.4-fold in England and c. 6-fold in Wales, Scotland and Ireland (Table 2). England consistently had the greatest numbers of records and Wales the fewest.

The values in Table 2 could be taken to indicate that, as a generalisation, all orchids are thriving in all four regions of the British Isles. However, as shown in Table 1, there is a tendency for those that may be increasing to be much more numerous than those that have declined (e.g. in England in 2010–19 Common Spotted-orchid contributed nearly 30% of the records on which the total is based compared with 0.08% contributed by Small-white Orchid). Removing the effect of this quantitative difference

Table 1. Numbers of positive tetrad records for eighteen species of orchids in England collected over five time periods (expressed as annual means).

Species	1950–69	1970–86	1987–99	2000–09	2010–19
Group 1					
Cephalanthera longifolia (Narrow-leaved Helleborine)	1.6	2.2	3.0	2.5	2.5
Dactylorhiza incarnata (Early Marsh-orchid)	20.9	31.0	46.2	33.5	33.6
Dactylorhiza viridis (Frog Orchid)	17.3	19.4	23.8	19.6	18.7
Epipactis atrorubens (Dark-red Helleborine)	1.8	3.2	3.8	3.6	3.6
Gymnadenia (Fragrant Orchid)*	34.2	53.8	69.6	58.3	68.8
Platanthera bifolia (Lesser Butterfly-orchid)	14.0	17.9	14.4	13.2	13.9
P. chlorantha (Greater Butterfly-orchid)	33.8	47.4	68.2	53.4	65.4
Group 2					
Anacamptis pyramidalis (Pyramidal Orchid)	37.9	68.7	124.6	164.4	285.3
Dactylorhiza fuchsii (Common Spotted-orchid)	140.1	304.5	421.2	470.9	616.5
D. maculata (Heath Spotted-orchid)	37.6	77.8	111.2	91.5	124.6
D. purpurella (Northern Marsh-orchid)	7.4	37.8	34.0	50.1	77.6
Epipactis helleborine (Broad-leaved Helleborine)	54.3	78.8	112.3	134.6	182.5
Hammarbya paludosa (Bog Orchid)	1.8	4.2	4.2	2.7	5.2
Neottia cordata (Lesser Twayblade)	2.4	6.8	6.2	5.5	8.1
N. nidus-avis (Bird's-nest Orchid)	25.8	24.7	32.3	29.1	35.6
N. ovata (Twayblade)	88.5	170.8	216.5	191.1	221.6
Orchis mascula (Early Purple-orchid)	86.3	185.4	247.7	244.4	304.0
Pseudorchis albida (Small White-orchid)	0.6	1.4	1.6	1.2	1.7
Totals	**606**	**1137**	**1542**	**1566**	**2070**

*The three species of *Gymnadenia* were treated as one taxon.

by expressing the number of records for each time period as a proportion of the mean of the five time periods for each species made almost no difference to the trends observed in Table 2 (i.e. these proportional records also increased over time to a maximum in the period 2010–19 in all four regions – results not shown).

The regions differ in land area (Table 3). The relative frequency of orchid tetrad records in the different regions, and changes over time were determined by dividing the values in Table 2 by the area of each region. By this measure, the frequency with which orchids were recorded again progressively increased in all regions and reached their maximum in 2010–19. The frequency of tetrads with orchids was consistently greater for England than the other regions until the period 2010–19 when that for Wales was similar to that for England and that for Scotland was slightly greater. In Ireland the frequency of tetrads positive for orchids was always less than for the other regions. This could be because there are fewer orchids, but it is more likely to be due to other differences, especially in the intensity of recording.

Comments on Part 1

The results in Tables 1–3 all show a progressive increase between 1950–69 and 2010–19 in the total numbers of tetrad records for the 18 species of orchids. This was not what I had expected as we all think we 'know' that, with possibly a few exceptions, orchids have greatly declined. A search of recent, relevant publications only added to my confusion. Harrap & Harrap (2009) report that in the period 1970–86 all British species declined (except for *Ophrys fuciflora* that is conserved at protected sites). Kull and Hutchings (2006) came to a similar conclusion, based on the accounts in the *New Atlas of the British and Irish Flora* (Preston et al., 2002). However, their conclusion resulted from a misunderstanding of the UK data that meant the values they quote are unreliable (see *pubpeer.com/publications/58B16F03A1C6494A50B80BAEB68589*). More reliable evidence for orchid decline comes from the BSBI Threatened Plants Project (Walker et al., 2018) in which 1,993 randomly selected 'historic' populations of 50 threatened species, including eight species of orchids, were revisited between 2008 and 2013 at sites across the British Isles. 'Historic' was not defined but, on average, only 49% (range 61% to 31%) of the orchid populations were re-found. Three of these eight orchid species are also covered here (Table 1): *Cephalanthera longifolia* (Narrow-leaved Helleborine), *Dactylorhiza viridis (Coeloglossum viride)* (Frog Orchid) and *Pseudorchis albida* were re-found at 60%, 43% and 45% respectively of the sites revisited. However, this study was narrowly focused on 'threatened' species

Table 2. Total numbers of orchid tetrad records collected annually for each time period and for each region of the British Isles.

Region	1950–69	1970–86	1987–99	2000–09	2010–19	Mean
England	606	1137	1542	1566	2070	1384
Wales	51	133	191	205	310	178
Scotland	234	248	631	736	1376	645
Ireland	118	91	403	511	736	372
Mean	**252**	**402**	**692**	**755**	**1123**	

Table 3. Areas of each region of the British Isles (as number of tetrads) and total numbers of orchid tetrad records (from Table 2) divided by the area of each region (expressed in tetrads).

Region	Area	1950–69	1970–86	1987–99	2000–09	2010–19
England	32,570	0.019	0.035	0.047	0.048	0.063
Wales	5,195	0.010	0.026	0.037	0.040	0.060
Scotland	19,478	0.012	0.013	0.032	0.038	0.071
Ireland	21,105	0.006	0.004	0.019	0.024	0.035

and therefore is not representative of the majority of species. Also, no account was taken of spread to new sites, so a degree of decline was almost inevitable.

Conversely, Preston et al. (2002) found that between 1930–69 and 1987–99 five of the eighteen species listed in Table 1 may have increased in Britain when compared to an 'average species'. Similarly, 7 of 14 orchid species increased between 1987–88 and 2003–04 when 635 tetrads were re-surveyed as part of the BSBI's Local Change project (Braithwaite et al., 2006). Collectively, these seven species had been 'lost' from 106 tetrads but had been gained by 215 tetrads.

In Part 2 of this article, I seek to clarify the confusing situation outlined above, especially the impact of changes in recording since 1950–69, and to determine whether the species listed in Table 1 are increasing or declining. I do this by expressing the orchid tetrad records as a proportion of the total of the BSBI records for all plant taxa (species plus hybrids).

Part 2 – Orchid records expressed as a proportion of all plant records

To paraphrase ex-President Trump 'the more you test (for Covid 19), the more you will find'. The same applies to plant recording but, unfortunately, it is not possible to quantify the 'testing' (i.e. the amounts of recording) involved in collecting the records that comprise the BSBI database. We do know that since the 1950s there have been big increases in the annual rate of record collection (Amphlett, 2015). In Part 2 of this article I reverse the 'Trump proposition' by assuming that the total of the records for all taxa (i.e. what has been found) are proportionate to, and can be used as a measure of the amounts of recording (i.e. amount of testing). Based on this assumption, I explore the relationship between numbers of orchid tetrad records and the total numbers of all records (duplicates excluded) for all taxa. I then express the numbers of orchid tetrad records as a proportion of the total numbers of records for all plant taxa and use this to explore whether orchids are increasing or decreasing.

The total numbers of records for all plant taxa compiled from the BSBI database for the five time periods and the four regions were kindly supplied by Andy Amphlett. From these I have calculated the yearly mean for each time period. The results (Table 4) show that in all four regions the numbers of records for all taxa progressively and substantially increased. In England, the rate at which records were collected increased nearly 12-fold from 103,907 records per year in 1950–69 to 1.22 million records in 2010–19. In Wales, Scotland and Ireland respectively there were 26-fold, 14-fold and 17-fold increases. Over the same period, the corresponding numbers of orchid tetrad records increased only 3.4-fold in England, 6.1-fold in Wales, 5.9-fold in Scotland and 6.3-fold in Ireland (see Table 2).

When the total numbers of records for all taxa were expressed as numbers per tetrad (Table 4, numbers in italics), the values were surprisingly low: e.g. in the period spanning 1950–86 an average of less than one record per tetrad per year was recorded in Ireland. The intensity of recording (i.e.

Table 4. Annual mean numbers of records for all taxa (duplicates excluded) for four regions of the British Isles. Data compiled by Andy Amphlett. Values in italics are average numbers of records per tetrad.

Region	1950–69	1970–86	1987–99	2000–09	2010–19
England	103,907	258,458	556,032	687,051	1,224,512
Per tetrad	*3.2*	*7.9*	*17.1*	*21.1*	*37.6*
Wales	6,163	19,201	44,363	80,245	159,425
Per tetrad	*1.2*	*3.7*	*8.6*	*15.5*	*30.8*
Scotland	20,617	31,343	105,216	134,436	280,696
Per tetrad	*1.1*	*1.6*	*5.4*	*6.9*	*14.4*
Ireland	11,419	10,321	72,440	88,552	195,189
Per tetrad	*0.5*	*0.5*	*3.4*	*4.2*	*9.2*

recording effort) again appears to have progressively increased to a maximum in 2010–19 in all regions, but England always had the greatest frequency of records and Ireland the fewest (Table 4). On this basis, we can conclude that since 1950 the intensity of recording has greatly increased, but that there remained substantial differences between regions, with Ireland being the least well surveyed. However, a part of the differences between regions might also be due to real differences in species diversity (Preston et al., 2002), e.g. much of Scotland has fewer grassland species than are found in most of England (Stroh et al., 2019).

The next obvious question is: 'are the progressive increases in the numbers of orchid tetrad records observed in Part 1 correlated with the increases in total numbers of records for all plant taxa?' To answer this question I regressed the annual numbers of tetrad records for orchids for each time period and region (i.e. body of Table 2) against the corresponding total numbers of records for all taxa (i.e. body of Table 4). When this was done a strong, non-linear correlation was evident (Figure 1). A logarithmic regression accounted for 81% of the variation ($P < 0.001$), i.e. the relative increase in orchid records became progressively smaller as the numbers of records for all taxa increased. Four of the five data points on the left-hand side of the graph in Figure 1 are English records. They lie on the upper, less steep part of the non-linear regression and this, together with the results in Table 3 enable us to predict that any further increases in recording effort in England will be progressively less rewarding, contributing fewer and fewer new orchid records. In contrast, the data for Ireland are at the steeper, bottom end of the curve, so we can anticipate that there are still many more tetrads in Ireland waiting for their orchid populations to be found and recorded.

The strong correlation in Figure 1 between the numbers of orchid records and those for all plant taxa supports the suggestion that the progressive increases in both are largely being driven by the same process (i.e. by increases in the intensity of recording) and that it is reasonable to use total numbers of records for all taxa as a proxy for these increases in recording. The results of this approach are presented in Table 5, where the numbers of orchid tetrad records are expressed as a percentage of the corresponding number of records for all taxa. Orchids as a percentage of records for all taxa declined in all four regions, progressively so in England, Wales and Scotland, but with a slight 'hump' in the data for 2000–09 in Ireland. Overall, orchids as a percent of all taxa declined by nearly two-thirds from a mean of 0.90% in 1950–69 to 0.31% in 2010–19. Since 1970–86, the decline has been the greatest in Wales (76%), and the least in Scotland (57%). This analysis also supports the widespread perception that orchids are relatively more abundant in Ireland and Scotland than in England and Wales.

The decline in orchids since 1950–69 appears to be continuing in all four regions, but to be least in Scotland (58%) and greatest in Wales (76%). To assess rates of decline across the four regions the mean values in the last column of Table 5 were regressed against the numbers of years after 1969 (Figure 2). A negative exponential regression ($R^2 = 0.982$) and a linear regression ($R^2 = 0.980$) fitted the

Table 5. Numbers of orchid records as percentage of records for all taxa for five time periods in the four different regions of the British Isles.

Period	England	Wales	Scotland	Ireland	Mean
1950–69	0.58	0.83	1.16	1.03	0.90
1970–86	0.44	0.70	0.81	0.89	0.71
1987–99	0.28	0.43	0.62	0.56	0.47
2000–09	0.23	0.26	0.53	0.58	0.41
2010–19	0.17	0.20	0.49	0.38	0.31
Mean	**0.33**	**0.48**	**0.72**	**0.69**	

data equally well. Extrapolation of the linear regression indicated that, if the decline continued at the same rate, no orchids would be recorded after 2042. This is clearly improbable, especially as some orchid species are declining much more slowly than others, but it does indicate the seriousness of the current decline in orchids.

To return to the question posed at the start of this article as to whether Pyramidal Orchid is increasing? All species in this article, except perhaps Pyramidal Orchid and Heath Spotted-orchid in Scotland, have decreased in all four regions. In England, records for Pyramidal Orchid as a percentage of those for all taxa have not consistently decreased or increased – they were 0.027%, 0.022%, 0.024% and 0.023% in 1970–86, 1987–99, 2000–09 and 2010–19 respectively. Similarly, the numbers of tetrad records of *Ophrys apifera* (Bee Orchid), as a percentage of all taxa, has similarly remained relatively constant in England (0.026% in both 1970–86 and 2010–19). Bee Orchid was not recorded in Scotland until after 2000 (hence it is not included in this study), but since then there have been eleven tetrad records. In contrast, Common Spotted-orchid has undoubtedly declined in England from 0.118 orchid tetrad records as a percentage of all taxa records in 1970–86 to 0.05% in 2010–19. By the same measure, in England there has been an 84% decline in the records for *Platanthera bifolia* (Lesser Butterfly-orchid) from 0.007% of all taxa records in 1970–86 to 0.001% in 2010–19. In Scotland, Lesser Butterfly-orchid appears to have persisted relatively well and, over the same period has declined by only 54% – but the Scottish data may be biased because recently there has been an increased focus on locating and recording populations of Lesser Butterfly-orchid (Lavery & Scobie 2013).

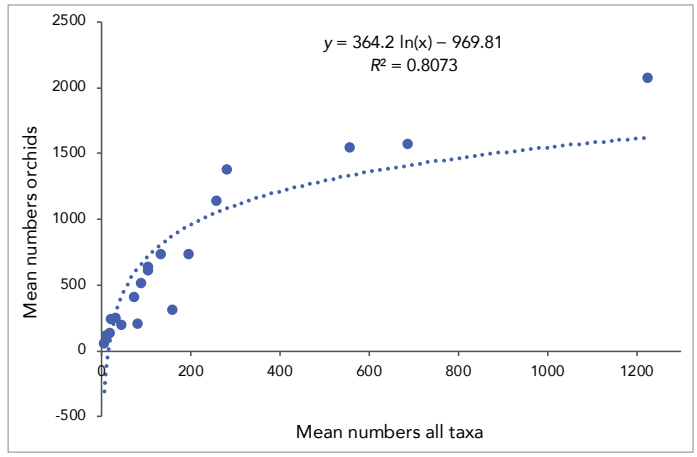

Figure 1. Numbers of tetrad records for eighteen species of orchids, as annual means of the five time periods and four regions of the British Isles, regressed against corresponding mean numbers for all plant taxa. A logarithmic regression has been fitted to the data.

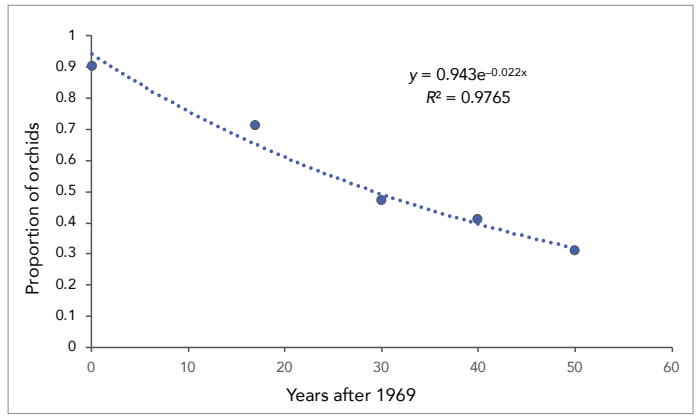

Figure 2. Mean numbers of orchid tetrad records (as proportion of total records for all taxa) regressed against numbers of years after 1969. A negative exponential regression is fitted to the data.

Final comments

Interpretation of the changes over time in the numbers of records for species in the BSBI database is bedevilled by changes in the intensity of recording. I have assumed that the total number of records for all taxa can be used as a measure of this change in the

intensity of recording and as a means of adjusting the numbers of orchid records. However, other changes in recording have occurred. In particular, since 1970–86 there has been a 28% increase in the numbers of all taxa recorded in the BSBI database. In 1970–86 a total of 5009 taxa were recognised. This had increased to 5444 in 2000–09, and to 6395 in 2020–19 (Amphlett, pers. comm.). This is probably mostly due to an increase in the recording of alien taxa. If so, the numbers of records involved are likely to be relatively small. There will be other biases, e.g. in Scotland *Dactylorhiza maculata* (Heath Spotted-orchid) increased from 0.0140% of records for all taxa in 1970–86 to 0.0163% in 2010–19 (data not shown). However, this apparent increase may be due to a shift in the balance of recording from the Lowlands to the Highlands rather than to an actual increase in occurrence.

The data used here are the totals of the tetrad (plus appropriate hectad) records for the eighteen species of orchid. Consequently, these results provide only a partial measure of the changes in numbers of an orchid species – populations can be lost from a tetrad, or have diminished numerically, without a change in that tetrad's positive status for that species – provided at least one plant remains (and is recorded). And, when a species is declining, it seems almost certain that losses will exceed gains.

Using the total numbers of records for all taxa as a proxy for changes in recording, especially in intensity of recording, is simplistic and as indicated for Heath Spotted and Lesser Butterfly orchids, and by the increase in the numbers of alien taxa being recorded, will be subject to biases. Because of the uncertainties outlined above, the results in Part 2 provide only an estimate of the rate of decline of the orchids involved in this study. However, currently they provide the best estimate available and, importantly, indicate that this decline is continuing in all four regions of the British Isles. Using all taxa as a measure of changes in the intensity of recording lacks the analytical power of more complex programs such as the 'Frescalo' local occupancy model' (Pescott et al., 2019), but it is likely to be more readily accessible and understood. The results in Tables 1–3, whilst informative with regard to differences between regions, are confounded by the increase in recording and are, therefore, almost impossible to interpret in terms of general trends in orchid abundance. In contrast, those in Table 5 shine a light on past and recent changes in the status of orchids in Britain and emphasise the need to reverse their continuing decline by reverting to past low-intensity management practices (Walker et al., 2018).

Acknowledgements

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The difficult plant problem

TIM RICH

We have a problem: There are lots of 'difficult' vascular plants in Britain but there are very few botanists able to identify them. The scale of the problem is shown in Table 1; taking our total flora as about 2700 species, about 46% are difficult to identify in one way or another. There are very few national experts and those we do have are amateurs, retired or both and there are currently no taxonomists specialising in the British flora employed in any of our museums or universities. So if you want to identify difficult plants, contribute to biodiversity conservation or find new species, you will probably have to do it yourself. In this article I will set out some approaches for dealing with difficult plant groups, with particular reference to dandelions *Taraxacum*.

There are many reasons why particular plant groups may be difficult to identify. Hybridisation is widespread in some groups (e.g. willows *Salix*) and there may be little agreement on when variation is part of the normal spectrum in a species or due to introgression from one or more relative, let alone where to draw the lines between the resulting taxa.

Dandelion heaven, Wolves Newton 2019. *Tim Rich*

Some groups are morphologically highly reduced, resulting in few identification characters being available (e.g. glassworts *Salicornia* or duckweeds *Lemna*), whilst in others features only available at specific times of year are needed, such as spring leaves in dandelions. Some species are very variable, either genetically (e.g. smooth sow-thistle *Sonchus oleraceus*) or environmentally plastic (e.g. leaves of brambles *Rubus* in shaded woodlands can look very different to the more typical ones in open habitats) or both. There may be unresolved problems where evolution is ongoing, and the taxonomic treatments have not yet caught up with what is actually happening (e.g. scurvygrasses *Cochlearia*; Gill, 2007). The groups with a large number of species which look superficially similar (such as umbellifers or crucifers) can result in keys having to use both flowers and fruit characters, and specimens are often found without one or the other. Finally, some taxa reproduce apomictically (i.e. as direct clones of the mother) resulting in a

large number of closely related, clonal species (e.g. brambles, dandelions, hawkweeds *Hieracium*).

Table 1. Summary of number of species in some difficult plant genera and number of national experts.

Genus	No. taxa	No. experts
Alchemilla	20	3
Callitriche	7	1
Carex	81	5
Cotoneaster	93	1
Dactylorhiza	7	2
Dryopteris	11	2
Euphrasia	21	1
Hieracium	c.420	3
Limonium	15	3
Ranunculus auricomus	58+	1
Rosa	25	1
Rubus	c.345	6
Salicornia	7	1
Sorbus	53	3
Taraxacum	244	1
*Ulmus**	62	2

*I am sceptical of treating the elm vegetative clones described by Armstrong & Sell (2018) as species as the clones do reproduce sexually, even if rarely operating over a longer timescale; it is clear such clones can be recognised, but they are not species.

Resources

The first step for identification within a difficult plant groups such as dandelions is to find out what resources are available to help.

Literature

Literature is the starting point for identification as it summarises what is currently known, usually enabling identification through dichotomous keys. Invaluable reference works include national Floras and monographs (such as Peter Sell's hawkweed account; Sell & Murrell, 2006), atlases showing distributions (e.g. the bramble Atlas; Newton & Randall, 2004) and journal papers. It requires significant investment to build up a traditional reference library; books are not cheap and most recent journals are hidden behind paywalls.

For dandelions we now have the fourth of John Richard's summaries of the work he and co-workers have carried out since the 1960s. The first of these was his *Taraxacum Flora of the British Isles* (Richards, 1972) which provided a first comprehensive review with many new species. This was largely presented as descriptions based on dried material with no illustrations. Following additional work especially by Chris Haworth and through collaboration with continental workers, the second summary was the BSBI Handbook *Dandelions of Great Britain and Ireland* (Dudman & Richards, 1997) which included illustrations of capitula and silhouettes of pressed material as well as distribution maps. This was a great advance but was again based on dried material which never quite matched live plants in the field. As an interim third measure we produced pictorial identification guides in the *Plant Crib* series (*bsbi.org/plant-crib*), subsequently further extended by John with summaries for individual species (*bsbi.org/species-account-list*). The fourth summary, a completely new BSBI Handbook (Richards, 2021), now has full colour pictures of virtually every species and focuses on the characters of living plants in the field (Figure 1). This is a major step forward making identification accessible to a much wider audience.

These improvements to the quality of the dandelion accounts reflect the on-going revolution in printing, photography and falling costs of digital media. The minimal constraints to space in production of eBooks suggests further expansion of images in the future.

Finding relevant literature can be a challenge, though digital libraries such as the outstanding Biodiversity Heritage Library (*www.biodiversitylibrary.org*) have revolutionised access to historic literature with original descriptions. Internet searches rarely bring up literature older than 1990, for which bibliographies such as Simpson (1960) or the BSBI literature database (*websites.rbge.org.uk/BSBI/litsearch.php*) may help. It is also worth looking at NW European and Scandinavian literature to be aware of overseas work, though we are oddly introspective in Britain (perhaps due to language barriers – translation apps can give the gist but they miss the nuances of botanical terminology).

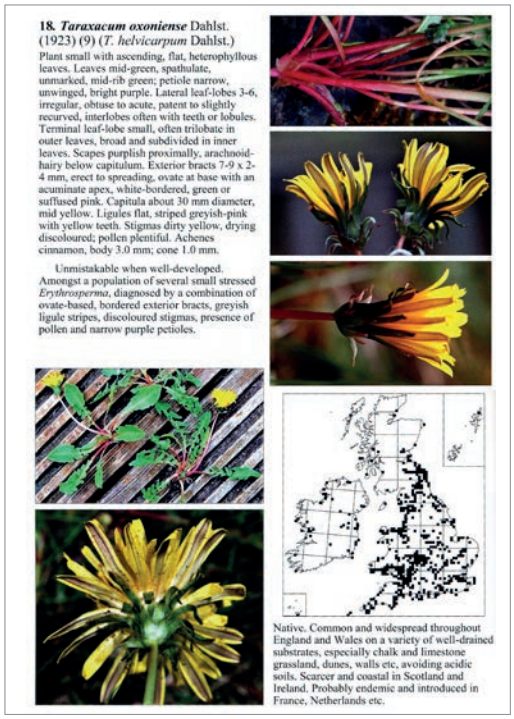

Figure 1. Part of the *Taraxacum oxoniense* account from the latest BSBI Handbook on Dandelions. *Reproduced with permission of BSBI and John Richards.*

Herbaria

Herbarium collections allow comparison of species side by side and allow named vouchers to be matched against unknown material. Initially for each difficult group, it is best to focus on national collections created by, or revised by, experts as these are more likely to be named correctly and they show the development of the taxonomy with time. To be useful, the collections need to be kept up-to-date by taxonomists, for example the superb *Rubus* collection at the Natural History Museum has been extensively revised by the authoritative amateur David Allen over the last 40 years.

When he retired from Newcastle University, John Richards gave the national *Taraxacum* herbarium collection to the Welsh National Herbarium, which we then curated, databased and stored (Figure 2). This is now the starting point for dandelion research in Britain; there are also good dandelion collections in Oxford University, Royal Botanic Gardens Edinburgh and the Natural History Museum, though these are somewhat out of date taxonomically. Local museum herbaria are rarely worth looking at unless revised by an expert, and many are now managed by specialist conservators who know how to look after the specimens long term but not how to use them.

Anyone studying difficult plants will need to access such herbaria. There are few computerised catalogues available to plan what to see in advance, it costs to travel and most herbaria are not open at weekends (I was guilty of this at Cardiff – I had a young family). Curators are generally helpful sending images if you know what to ask for, but there is no substitute for seeing the actual specimen when, say, looking at types of hair under a microscope.

Expert opinions

Once you have made a provisional identification using the literature or herbarium, confirmation

Figure 2. Part of the National *Taraxacum* collection in the Welsh National Herbarium in 2007; I look considerably older now as a result of tackling difficult plant groups.

by an expert or referee – if there is one – is the next step. Usually this requires dried specimens to be posted but sometimes photographs are sufficient if they show the right features (they are rarely sufficient for hawkweeds). The BSBI have a series of voluntary referees for difficult groups who provide identifications for BSBI members, and some museums/institutions have enquiry services. For dandelions there is only one BSBI referee so at busy times it may take a while to get material named. These days, experts are expected to be on Twitter or Instagram to give an instant diagnosis to anyone who asks. Not all experts agree, and I know some of my identifications even of well-presented material are less than perfect.

Distribution databases

Distribution databases can show which species are mostly likely to be found or, for well recorded sites, what is already known. The more difficult the plant group, the more the distribution databases and maps reflect the distribution of the botanists working on the group and the less complete they are. The specialist databases maintained by experts are probably the only ones to trust (some are included in the BSBI 'Big Database') as most general databases (such as the NBN Atlas) are out-of-date with lots of errors. For hawkweeds, I usually summarise which species have been previously recorded from a particularl cliff or mountain, but for dandelions were there may be 30 species in a meadow the patchy data are rarely specific enough to be much use. Expert determinations should be to the relevant Vice-county Recorders and/or added to databases such as iRecord to ensure the data are used.

Internet resources

The huge potential for the internet to provide access to multiple images and help with identification is in its infancy. Anyone googling pictures knows how few reliable pictures there are on the internet, but you may find specialised websites you can trust. For example, there are verified pictures of Cardiff dandelions (Rich, 2011) with others uploaded to iSpot as 'dandelion of the day' (*www.ispotnature.org*). The *Taraxacum* Netherlands website has pictures of their section *Taraxacum* species (*www.taraxacumnederland.nl*) which partially overlap with our species.

Some difficult plant groups have specific Facebook pages set up to help with identification and to share knowledge – the 'Dandelions (*Taraxacum*) of Britain and Ireland' page has an astonishing 883 members; there is the usual inevitable range of opinions, but it does enable beginners to get started. I have also made some short introductory YouTube videos about identification of some of my hawkweeds[1] which I hope are useful summaries despite the camerawork.

In general, identification apps are currently little use for difficult plants as they do not have sufficient data behind them. I toyed with interactive Bayesian multiple access keys on iSpot but their success rate was significantly lower than for conventional keys (e.g. *Hieracium* section *Alpestria www.ispotnature.org/webkeys*, and two draft dandelion section keys which never worked satisfactorily). No doubt such resources will improve as the software improves.

DNA

DNA analyses using various methods has provided many insights into difficult groups, and they have revolutionised our understanding of taxonomy and evolution in whitebeams *Sorbus* (Rich et al., 2010). It takes significant financial resources and time to build up sufficient samples for a DNA reference library but the biggest limitation is finding an interested molecular biologist. As yet there have been no detailed studies of British dandelion DNA; clearly a project for the future.

Learning a difficult plant group

The two main approaches to learn a difficult plant group are taxonomic and geographic. Taking a taxonomic approach means attempting to cover the whole group, or at least a discrete subgroup. For example I have studied the relatively small

1 'Tim's Botanical Riches' YouTube video (2021): *www.youtube.com/channel/UCGRlIWNJXcR1B-S-pzIRTlw*

British hawkweed sections *Alpestria* and *Foliosa* in detail, but have no plans to cover the whole genus in similar style. Taking a geographical approach means looking at all the species within a specific area, which reduces the number of taxa to manageable proportions; an outstanding example of this approach is Vincent Jones' (2014) 30-year study of hawkweeds in Yorkshire. Getting to know a few local taxa first and building up knowledge over time is often the easier way to start. Local Floras can indicate what is known, but for some groups they are little more than brief summaries; contrast Mike Shaw's excellent Sussex hawkweed account with my woefully inadequate dandelion account which was largely based on limited fieldwork during family visits (Abraham et al., 2018).

It helps to compile what is known from the different resources before starting fieldwork to get an overview, but you can learn as you go along. Once you start fieldwork, do it properly: collect plants, take photographs, make notes, revise, review and document.

Perhaps the most important starting point is to go on a training course or workshop run by an expert to learn some common species (anyone remembering more than 15 new taxa in a day is doing well). John Richards has been running annual dandelion workshops around Britain and Ireland since 2013 which have been enormously popular and productive (Figure 3) – those attending the full Breckland workshop in 2019 saw 18 species of *Taraxacum* section *Erythrosperma* alone. It is equally important to use the training course to learn how to interpret the characters as there may be catches; for example, the pink colouration in dandelion petioles becomes much more obvious in dried material than fresh material, and may develop in the plant press from apparently white petioles!

Anyone studying difficult plants must create their own herbarium, providing collecting is done responsibly (see BSBI Code of Conduct[2]). Good material selected to show the key characters collected

Figure 3. John Richards demonstrating dandelions, Blairgowrie workshop 2013. *Tim Rich*

in the right season is essential but what is needed differs in the different plant groups. For whitebeams, the sterile lateral rosette leaves are essential and ripe fruit help (Rich et al. 2010). In dandelions, the early-season leaves with petioles, mature buds and open flowers with, for some species, ripe seeds are needed (Richards 2021). The material needs to be properly collected too – it is essential to dry dandelions quickly to retain colouration, which may involve changing the drying paper in a plant press twice a day for a week for each specimen (Figure 4). It can be a lot of work pressing, drying, labelling, mounting and storing specimens, and high quality materials can be expensive. My working collection is glued with PVA onto thin A3 card stored in re-sealable plastic bags which are routinely frozen to minimise pests like booklice which is not ideal. Longer term the specimens will be deposited in a proper herbarium.

With fieldwork, it may be best to concentrate on what is obviously different, rather than struggling with every plant. In Cardiff, I tried to select a few distinctive dandelions from each of many different sites, but still ended up collecting far too much of the variable *T. aequilobum*. I took photographs of the plants in situ so I could recognise them again as they looked so different to the dried specimens. I found more species on return visits once I had my eye in.

2 *bsbi.org/wp-content/uploads/dlm_uploads/Code-of-Conduct-v5-final.pdf*

Figure 4. Drying dandelion pressing paper in hotel room, BSBI Workshop, Bute 2017. *Tim Rich*

Figure 5. An unknown Cardiff dandelion, nicknamed the 'Pantmawr Giant', possibly new to science. *Tim Rich*

I learned not to collect trampled or mown plants, those in fertile pastures or those in shaded woodland, however distinctive they appeared. Within three years I was surprised to find I had collected 110 species and two unknown species (Figure 5); it is going to take an enormous amount of research across Europe to determine if they are new to science but such finds can be among the rewards for tackling difficult plant groups.

Acknowledgments

I would like to thank John Richards for his world-class inspiration, patience and time spent helping me learn *Taraxacum* as measured on the dandelion clock.

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'That's half of North Meadow collected…' *Tim Rich*

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Glaux maritima (Sea Milkwort) dominant on a six-halophyte road verge in South Northumberland

JOHN RICHARDS

Glaux maritima (Sea Milkwort), common and widespread in maritime locations, has been recorded in very few inland locations on salted road verges. As far as I can ascertain from the BSBI maps website (*database.bsbi.org/maps*), it has only been recorded in nine hectads away from tidal influence: six in the West Midlands, one in eastern Scotland (NO17), one on Hartside Summit in Cumbria (NY64) and two in South Northumberland. The record for NY47 should be for SD47 which is coastal. One of the Northumberland records I made myself while listing plants in NY9853 (Winnowshill, v.c. 67) on 26 July, 2010. My recollection is that only a few isolated plants were present.

In August 2021 Jim Bowyer reported large quantities of *Glaux maritima* growing in what is presumably the same site, at NY 9825 5378, in company with *Plantago coronopus* (Buck's-horn Plantain) first recorded from here in 2003, but which I failed to record in 2010. I visited this location on 30 August 2021. *Glaux* and *P. coronopus* both now occur in great quantities over some 700 m distance on both

sides of the road between Winnowshill junction and Actonmill Bridge (from 250–300 m asl), and in many places both species are dominant, forming continuous carpets. Four other maritime species are also present as roadside halophytes: the now common-place *Spergularia marina* (Lesser Sea-spurrey) (abundant), *Puccinellia distans* (Reflexed Saltmarsh-grass) (scattered), *Plantago maritima* (Sea Plantain) (two clumps) and *Sagina maritima* (Sea Pearlwort). I had searched carefully for the Pearlwort, which is found in a few of our best upland halophyte communities, but without success, but a careful later examination of a photo of one of the Sea Plantains revealed several small plants of the Pearlwort. Although I have found five halophyte species together on upland verges in S. Northumberland on several occasions, this is the first time I have found six species co-occurring.

The halophyte communities on road verges below Winnowshill junction contain an eclectic range of other species, with locally abundant *Acaena novae-zelandiae* (Pirri-pirri-bur), considerable quantities of *Anagallis arvensis* (Scarlet Pimpernel), a rather uncommon plant with us, *Gnaphalium uliginosum* (Marsh Cudweed) and several patches of *Polygonum rurivagum* (Cornfield Knotgrass), which is proving to be a frequent co-habitant of upland roadside halophyte communities in our area. There are also considerable patches of the lichen *Cladonia portentosa* with which the *Glaux* intergrows.

One notable feature of these verges are piles of coarse gravel which are left for spreading on the gradient during icy conditions. These have been colonised by several of the halophyte species and *Acaena novae-zelandiae*. They are presumably mixed with salt, and it is tempting to suggest that they are the source of the seed of the less common halophytes.

Acknowledgement

My thanks to Jim Bowyer for communicating his records.

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Patch of *Glaux maritima* (Sea Milkwort) with a few plants of *Plantago coronopus* (Buck's-horn Plantain) on the road verge at Winnowshill junction, S. Northumberland (v.c. 67), 30 August 2021. *John Richards*

An historic herbarium: what can it tell us about the changing flora of Britain in the 20th and 21st centuries?

RICHARD G. JEFFERSON

Herbarium sheet of *Phleum arenarium* (Sand Cat's-tail) collected by Peter Jefferson from 'sand dunes, Llandudno, N. Wales', 2 June 1948.

Over the last eight decades, the native flora of Great Britain has undergone substantial change with some species extinctions but with many more species having suffered from contractions in range and/or in the number and size of their populations. The 20th century was a period of heightened extinctions in the vascular flora at different geographical scales with semi-natural habitat specialist species being particularly extinction-prone (Stroh et al., 2019; Walker, 2003; Walker & Preston, 2006; Walker et al., 2017).

This article describes a small herbarium of vascular plants collected and assembled during the 1940s and 1950s and, with the assistance of the BSBI Distribution Database (DDb), explores what can be concluded with respect of changes in the British flora over the last 80 years or so.

Background to the herbarium

Between 1943 and 1956, my father, the late Peter Jefferson (PJ), put together a small herbarium of flowering plants from a variety of localities across Great Britain. In 2018, the information in the herbarium was collated and documented by the author prior to donation to the Natural History Museum, London (BM). This provided an opportunity to assess whether the information contained in the documentation of each specimen could be used to provide further insights into change in the British flora since the 1930s.

By way of context, my father was a zoologist with an amateur interest in botany. He worked for the Sports Turf Research Institute at Bingley, West Yorkshire (STRI) until 1956 where he researched the effects of the impacts of earthworms on sports turf (e.g. Jefferson 1956). During this period, he resided in Bramley, Leeds. He then lectured in Zoology at Nottingham College of Technology (now Nottingham Trent University). During his stint working for STRI, he was involved in advising on the management of golf courses around the country. This enabled him to visit sites on or within the vicinity of golf courses (but by no means exclusively) and to collect plants from around Great Britain. However, specimens from West and North Yorkshire make up a significant proportion of the collection.

The herbarium

The herbarium consists of 299 specimens of pressed vascular plants mounted on 38 × 28 cm cartridge paper. In most cases, information provided included the locality, habitat and date of collection. The locality is sometimes quite specific, such as a site name, e.g. Austwick Moss, and in other cases more general, e.g. '*near Rievaulx Abbey, North Yorkshire*'. Photographs of two of the specimens are shown on pages 31 and 34.

What information was collated?

Thirty-four specimens were omitted from this analysis where there was (i) no locality information, (ii) species could not be identified and/or had no locality information and (iii) specimens were not identified to species. Non-native species (neophytes) were also omitted. This left 265 species.

The information from the herbarium labels was entered into a Microsoft Excel spreadsheet. The locality was then spatially referenced depending on the detail of the site or locality information. In all cases it proved possible to at least allocate a specimen to a hectad (10 × 10 km square) and in many cases more detailed locational information could be determined – tetrad (2 × 2 km square), monad (1 × 1 km square) or 6-figure grid reference.

Following this, records for each species in the respective localities were checked in the DDb, which contains records from pre-1930 to the present. For each of six recording periods (pre-1930, 1930–1969, 1970–1986, 1987–1999, 2000–2009 and 2010–2019) a record was ascribed to one of the following categories:

0 = no record for the species in the relevant hectad;
1 = a record for the hectad but at a different site or locality to that where recorded by PJ;
2 = general non-specific record(s) for hectad (not recorded if 3 applies);
3 = record for PJ site or locality;
4 = combination of 1 and 2 (not recorded if 3 applies).

If there was any doubt about whether a species was extant at the site or locality for a specific time period, then the assumption was always taken that it was 'present' rather than 'absent'. A certain amount of judgement was required, especially when deciding whether a record in the DDb would conform to '*cliffs near Lyme Regis*', for example.

Other information assembled for each species included the threat status (Cheffings et al., 2005; Dines, 2008; Stroh et al. 2014) and the Ellenberg N value (Hill et al., 2004).

Numbers of species and status

Of the 265 species, there are 9 shrubs/trees and 256 herbaceous vascular plants broken down as follows: 6 aquatic macrophytes, 12 orchids (Orchidaceae), 18 grasses (Poaceae), 3 ferns and horsetails,11 sedges and related taxa (Cyperaceae) and 4 rushes (Juncaceae). Sixty-two species (23%) are listed as threatened in one of the country or GB vascular plant red lists (Cheffings et al., 2005; Dines, 2008; Stroh et al. 2014); of which 71% have an Ellenberg N value between 1 and 3, indicative of low-nutrient conditions.

Distribution

Figure 1 shows the distribution of localities where the herbarium specimens were collected. Of the 265 specimens, over two-thirds (183; 69%) are from North and West Yorkshire with Meanwood (Leeds) accounting for 81 (31%) of the records. This is where my maternal grandparents resided! Some well-known North Yorkshire sites include Austwick Moss, Hole of Horcum and various sites on the Craven limestone of the Yorkshire Dales.

Overall trends and conservation implications

Figure 2 shows changes in the number of site-specific records from post 1930 to 2019. This demonstrates that there has been an increasing pattern of apparent species loss during this period. Thus, post 1930 and up until 1969, 47 species (18%) recorded from a specific locality by PJ were not recorded in the DDb for that period or subsequently, increasing to 163 species (61%) for the period 2010–2019. However, at least for the period 1930 to 1999, there are non-specific hectad records (2nd bar for each time period

in Figure 2) that all or some could have conceivably been from the PJ locality. If one subtracts these from the loss percentages, these become 1930–1969: 36 (14%), 1969–1987: 41 (15%) and 1987–1999: 45 (17%). Note that these figures include species recorded by PJ that have no records for any period in the DDb, including 6 threatened species (Table 1).

There was a steep rise in apparent species loss from localities from the period 1987–1999 to 2019, equating to a 172% change (Figure 2).

The data, although qualitative, appear to support the conclusions of other studies on floristic change in the British flora in the 20th and 21st centuries (e.g., Walker, 2003; Smart et al., 2005; Walker & Preston, 2006). That is, a continuing overall loss of species over the period 1930 to present.

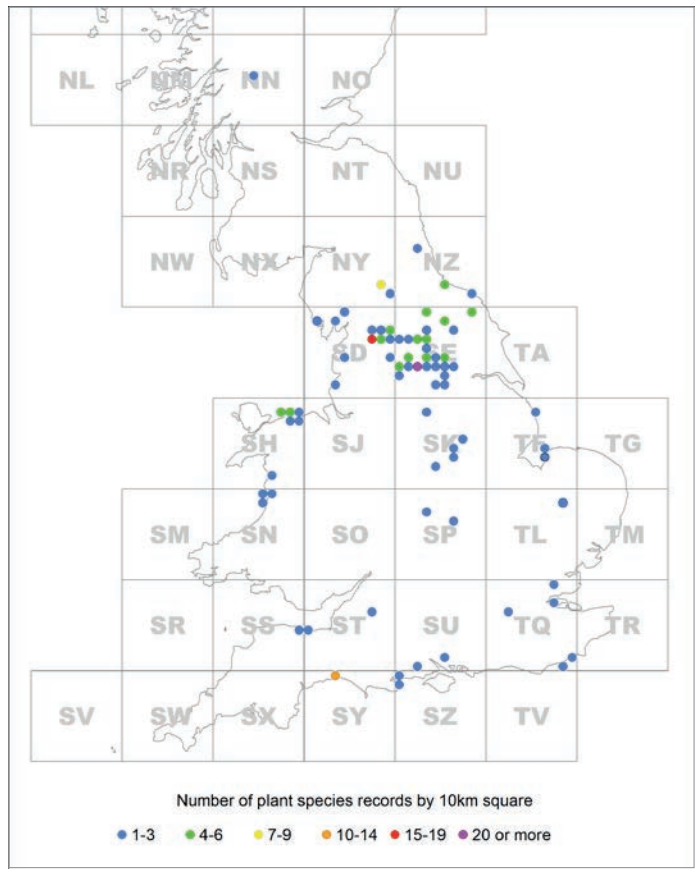

Figure 1. Distribution of the herbarium specimens by 10km square.

Of course, interpretation of these findings must be undertaken with caution for a number of reasons. Firstly, decisions relating to the presence or absence of a species where the locality description is non-specific may have resulted in both false positives and false negatives. Secondly, this is not a random sample and the sites from which specimens were collected would have been strongly influenced by personal interest, geographical proximity to residences and site visits for work, and possibly a focus on sites that are likely to have a higher likelihood of species persistence due to the nature of the environment or land tenure, such as unenclosed upland areas, coastal cliffs and golf courses.

The wider issues relate to the general limitations of botanical recording such as the unevenness of recording both spatially and temporally (Walker, 2003). This may be due to a range of factors such as the influence of specific recording initiatives (e.g. atlases, sample surveys) and changes over time in the number of recorders in a specific patch, their particular interests and inclinations and levels of expertise. Also, some species may be overlooked or be sporadic in occurrence in a site or area due to having unpredictable or transient life-histories (Walker, 2003).

Threatened species

The herbarium contains 62 species (65 specimens, as three species have two specimens each from two localities) which are classified as threatened in the Great Britain, England or Welsh Red Lists (Cheffings et al., 2005; Dines 2008; Stroh et al., 2014).

Table 1 lists those threatened plant species with herbarium specimens that (i) have no DDb records for the locality or hectad (Table 1a) for any period,

Astragalus glycyphyllos (Wild Liquorice) collected by Peter Jefferson from 'limestone quarry, Burton Leonard, nr Ripon', June 1950. There are no DDb records for this species for hectad SE36 for any period.

Table 1. Threatened species apparently lost from a locality or hectad

Species	Hectad and vice-county (v.c.)	Threat status in relevant country; Ellenberg N value in parentheses*	Possible cause(s) of 'loss' at that locality†
(a) No database records for locality, tetrad or hectad for any period			
Hordeum marinum (Sea Barley)	SH78 v.c. 49 Caernarvonshire	LC (England = VU) (6)	1, 2, 4
Hydrocotyle vulgaris (Marsh Pennywort)	SE39 v.c. 65 North-west Yorkshire	NT (3)	1
Linum perenne subsp. *anglicum* (Perennial Flax)	TQ79 v.c. 18 South Essex	LC (GB = VU) (2)	1
Lysimachia thyrsiflora (Tufted Loosestrife)	SD38 v.c. 69 Westmorland (with Furness)	CR (3)	1, 4, 5
Neottia nidus-avis (Bird's-nest Orchid)	SP37 v.c. 38 Warwickshire	VU (2)	8
Scleranthus annuus (Annual Knawel)	SE67 v.c. 62 North-east Yorkshire	EN/DD (2)	1, 2
(b) Not recorded for locality or hectad post 1969			
Anacamptis morio (Green-winged Orchid)	SE54 v.c. 64 Mid-west Yorkshire	VU (3)	1
Botrychium lunaria (Moonwort)	SE76 v.c. 64 Mid-west Yorkshire	VU (2)	1, 2, 6
Centunculus minimus (Chaffweed)	SU51 v.c. 11 South Hampshire	EN (3)	1, 2
Comarum palustre (Marsh Cinquefoil)	SE39 v.c. 65 North-west Yorkshire	NT (3)	1
Hydrocharis morsus-ranae (Frogbit)	SE39 – last record = 1944 – v.c. 65 North-west Yorkshire	VU (7)	4, 5
Jasione montana (Sheep's-bit)	SK75 v.c. 56 Nottinghamshire	VU (2)	1, 3
Platanthera bifolia (Lesser Butterfly-orchid)	SD76 v.c. 64 Mid-west Yorkshire	EN (2)	1, 6
Pseudorchis albida (Small-white Orchid)	SE89 v.c. 62 North-east Yorkshire	VU (2)	2, 6, 7
Stellaria palustris (Marsh Stitchwort)	SE39 v.c. 65 North-west Yorkshire	VU (4)	1
(c) Not recorded for locality post 1969 but a there is a more recent hectad record			
Cerastium arvense (Field Mouse-ear)	SP66 v.c. 32 Northamptonshire	NT (3)	1, 7
Triglochin palustris (Marsh Arrowgrass)	SE26 v.c. 64 Mid-west Yorkshire	NT (2)	1

* See Hill et al. (2004). Nitrogen (N) values range from 1–9, 1 = extremely infertile sites and 9 = extremely nutrient-rich sites.

† For other general pressures and threats for threatened species see Preston et al. (2002), Walker et al. (2017), Stroh et al. (2019).

Key for possible causes of loss: 1 = conversion to arable cropping and/or intensive grassland (including pre-drainage) including use of herbicides; 2 = lack of or insufficient management; 3 = development; 4 = changes in watercourse/water body management including drainage and hydrological changes to terrestrial/coastal wetlands; 5 = nutrient enrichment/pollution (water bodies); 6 = extinction due to impact of stochastic event (abiotic or biotic) and/or decline in genetic diversity negatively impacting on a small population; 7 = intensive grazing or cutting; 8 = changes in woodland management including conversion to softwood plantations.

(ii) have apparently been lost from the locality since 1969 (Table 1b) or (iii) lost from the locality since 1969 but remain present in the hectad (Table 1c) post 1969. There are 17 species listed; 27% of the total. Table 1 also tentatively ascribes possible causes for the loss of a species from the locality.

In contrast, Table 2 lists threatened species or those with a very restricted distribution or habitat specialists that have a virtually near-constant presence in a locality since 1930. Of the 15 listed species, all bar one occur in protected areas of one sort or another, at least from the 1950s onwards.

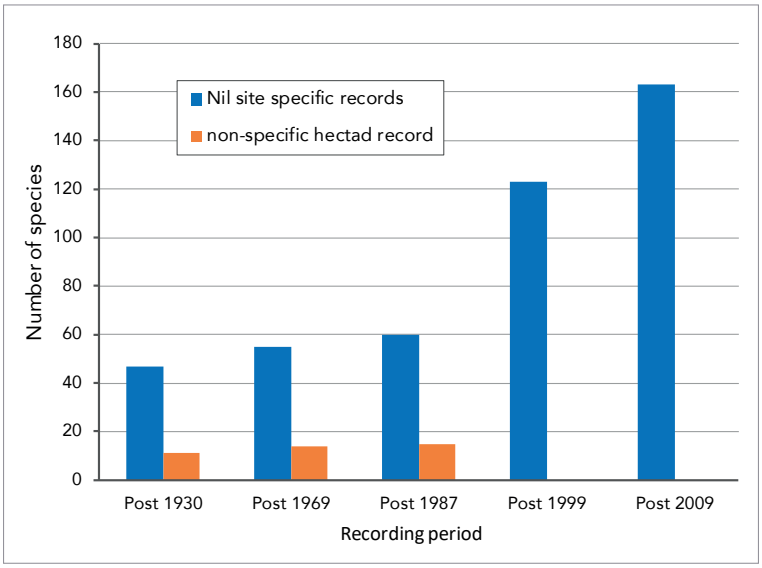

Figure 2. Changes in the number of site-specific records from post 1930 to post 2009

Table 1 demonstrates the vulnerability of the more specialist plant species to habitat loss, lack of management and eutrophication in particular and is consistent with other more quantitative studies (e.g., Walker et al., 2017). It is evident that a high proportion of these species are associated with infertile habitats (Table 1, column 3) that are sensitive to agricultural improvement and terrestrial and atmospheric nutrient pollution.

On the other hand, Table 2 suggests that habitat or landscape protection measures can have an important role in conserving populations of threatened species. Supporting this contention, when all 62 threatened species are considered, a much higher percentage have post-1987 records when in protected sites than those outside of designated sites. This pattern is marginally stronger when a subset of the threatened species with Ellenberg N values of 3 or less (occurring in infertile to extremely infertile sites) are considered. Walker et al. (2017), for example, present compelling evidence that statutory site protection has contributed to decelerating the declines of many threatened plant species. In addition, some occur in habitats that for one reason or another would be difficult to convert to land uses inimical to the survival of the species. The former might include certain types of wetland, rocky coasts and unenclosed upland habitats.

Summary

These findings appear to be consistent with other studies of change in the British flora over the last 80 years and the probable causes of losses of both threatened and more widespread species. The need for continuing deployment of both existing and new conservation measures and policies will be essential to prevent further declines and to promote recovery of species. In particular, the development of the Governments' Nature Recovery Network underpinned by Local Nature Recovery Strategies should have a vital role to play.

Acknowledgements

I thank Fred Rumsey (BM) for agreeing to curate the herbarium. This gave me the idea of analysing the information to examine change in the British flora. I am also grateful to Stephen Edge for preparing the map and to Pete Stroh for comments on the text.

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Table 2. Threatened species, species with restricted distribution or habitat specialists with a constant or near constant presence from before 1930.

Species	Status in relevant country	Hectad and 1st record where specified	Protected site/area status
Astragalus danicus (Purple Milk-vetch)	EN	NZ52 (1777)	SSSI
Actaea spicata (Baneberry)	LC	SE58 (1863)	SSSI
Cerastium diffusum (Sea Mouse-ear)	LC	SD31 (1840)	SSSI
Draba muralis (Wall Whitlowgrass)	LC	SD86	SSSI
Glaucium flavum (Yellow Horned-poppy)	LC (NT England)	SS94	None
Helianthemum oelandicum subsp. *incanum* (Hoary Rock-rose)	LC	SH87	SSSI, LNR
Hottonia palustris (Water-violet)	VU	SE54 (1888)	SSSI, WTNR
Illecebrum verticillatum (Coral-necklace)	EN	SU20	SSSI, SAC, NP
Lathyrus sylvestris (Narrow-leaved Everlasting-pea)	LC	SY39	SSSI, SAC
Minuartia stricta (Teesdale Sandwort)	EN	NY82 (1844)	SSSI, SAC, NNR, AONB
Polygala amarella (Dwarf Milkwort)	EN	SD96 (1904)	SSSI, SAC, NNR
Rubus chamaemorus (Cloudberry)	LC	NY82 (1797)	SSSI, SAC, NNR, AONB
Scheuchzeria palustris (Rannoch-rush)	LC (GB)*	NN45 (1912)	SSSI, SAC
Thalictrum alpinum (Alpine Meadow-rue)	LC	NY82	SSSI, SAC, NNR, AONB
Tofieldia pusilla (Scottish Asphodel)	LC	NY82 (1836)	SSSI, SAC, NNR, AONB

* Least concern but geographically restricted to several (6) hectads including Rannoch Moor.

Key to column 4: SSSI = Site of Special Scientific Interest; SAC = Special Area of Conservation; NNR = National Nature Reserve; WTNR = Wildlife Trust Nature Reserve; LNR = Local Nature Reserve; NP = National Park; AONB = Area of Outstanding Natural Beauty.

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Some interesting plant records from a Winchester allotment

TRISTAN NORTON

In mid-September 2021 I paid a visit to Highcliffe Community Allotments in Winchester, a long-established allotment site in the east of the city, just a few tens of metres inside the v.c. 11 South Hampshire boundary. I had kindly been granted access by the Allotment Committee, having asked if I might have a look for interesting plant species. Allotments are often home to some interesting arable species sadly lost from the wider farmed landscape and I thought that it was well worth a look, especially on the base-rich soils of the mid-Hampshire chalk. My hunch was right, and I was not to be disappointed.

Like many older allotments (about 120 years old in this case), the site is a varied mix of plots growing vegetables, fruits and flowers from all corners of the globe. It's fair to say that in common with all the allotment sites I've visited, there is a high degree of variability in the 'weediness' of plots, ranging from exceptionally neat and tidy to wholly overgrown. As ever in life, there is a middle way sweet-spot, and it is often the tended but not-too-tidy plots that yield the best botanical interest.

Clinopodium nepeta (Lesser Calamint), Winchester, South Hampshire (v.c. 11), September 2021. *Photographs by the author*

I was soon noting some interesting species such as Weasel's Snout (*Misopates orontium*) (locally quite frequent) and both Round-leaved Fluellen (*Kickxia spuria*) and Sharp-leaved Fluellen (*K. elatine*) so things were looking good for something even more interesting turning up.

I'd spent about a half-hour looking around before walking past a green plastic *Brassica* cage. The front was slightly unzipped and I happened to glance inside and spot a large ramping-fumitory. The inflorescences were large, pinkish-white and with recurved pedicels – I immediately though it might be White Ramping-fumitory (*Fumaria capreolata*), a species I was reasonably familiar with, having studied a recently-discovered population from Kings Worthy just outside Winchester. On closer inspection this plant didn't look quite right: the sepals were not obviously large and toothed as in *F. capreolata* but

were very noticeably ovate and more or less entire, and I was sure that *capreolata* wouldn't be quite so pink even late in the season. A quick look at a *Fumaria* crib I keep on my phone led me to think this must either be Tall Ramping-fumitory (*F. bastardii*) or Martin's Ramping-fumitory (*F. reuteri*).

Following some initial input online from Tim Rich (BSBI *Fumaria* referee) and Mark Spencer (Vice-county Recorder for London), I was grateful for expert ID opinions from Tony Mundell (v.c. 12 Recorder) and Gareth Knass (who had discovered *F. reuteri* in another Hampshire allotment site in 2010). The consensus was that the plant was likely to be *reuteri*. I managed to get a fresh sample off to Tim Rich and he was able to confirm the identification. This is the fourth modern Hampshire site for this nationally scarce species: the first from Ampfield in 1964 (as *F. martinii*), and recent records from allotment sites at Park Gate and Gosport, and arable at Cholderton.

Fumaria reuteri (Martin's Ramping-fumitory) at the Winchester allotment, September, 2021.

Fumaria reuteri stigma, showing apical projection.

The challenges of *Fumaria* identification will be known to many. I very much enjoyed using the excellent BSBI *Fumaria* handbook (Murphy, 2009), the *New Flora* (Stace, 2019) and various useful online sources to try and get to the bottom of this conundrum myself. The clincher was getting a good look at the stigma. The stigma of *F. reuteri* has, uniquely amongst this genus, a distinct conical appendage at the apex (see Murphy, 2009). The plant clearly had this feature on the stigmas I examined (*see photograph*). The upper petal on *reuteri* is also tipped blackish-red unlike the nominate form of *bastardii* which is wholly pink, with the blackish tips restricted to the lateral petals. Two very rare *bastardii* varieties do however exhibit dark-tipped upper petals so, as ever with fumitories, caution is needed.

After this find I then carried on searching and noticed a calamint growing amongst some tall grass. Having recently seen plenty of Common Calamint (*Clinopodium ascendens*) near home I was familiar with the key differences between this species and Lesser Calamint (*C. nepeta*). Following examination of the relative length of the calyx teeth (these were even lengths) and the presence of protruding hairs from the calyx tube I was feeling confident that this plant was *C. nepeta*. Given the location there is always the potential for this to have been a planted specimen, although the allotment secretary insisted not. John Poland kindly sent me a list of UK suppliers of *C. nepeta* and it would appear to be widely available in the horticultural trade. John

also noted that the Winchester plant was subtly different from specimens he'd examined in Essex (less grey, less hairy and more aromatic). Whatever its origin, the Winchester plant is the second record for Hampshire, the last being recorded near Morestead (c. 4 km SSE of the allotments) in 1933. The species was presumed extinct by Brewis et al. (1996) in the *Flora of Hampshire*.

Clinopodium nepeta (Lesser Calamint), showing hairs protruding from even-toothed calyx.

The third interesting plant was found, oddly enough, next to a plot that my wife and I used to tend when we lived in Winchester over ten years ago, although this and the one next door had clearly been untended for some time and was largely overgrown with dense Bramble (*Rubus fruticosus* agg.) and Hedge Bindweed (*Calystegia sepium*).

Whilst walking through this area I noticed a strange plant amongst the tangled growth. It was clearly a *Rubia* species with leaves in whorls, distinctly spiny four-angled stems and strongly toothed leaf edges. The plant was flowering, with a small yellowish calyx of five petals. Now this didn't look quite right for the Wild Madder (*Rubia peregrina*) that I was familiar with from trips to Devon. That species was, to my recollection, distinctly dark-green and shiny: this plant was bright apple-green and not shiny at all. I had 'Stace' in my bag and was able to discern that *Rubia* ID is not quite that simple. I was out of my depth and needed help.

I sent some images to Tony Mundell and Martin Rand and Martin was able to provide some insight from European Flora sources. The key feature on the Winchester plant was that the leaf veining formed a complex closed network (is anastomose), with the main and secondary veins turning back on themselves before the leaf margin: this is a feature of Madder (*Rubia tinctorum*) whereas *R. peregrina* doesn't do this to such an obvious extent. The corolla tube is also longer/deeper on *tinctorum*. A few days later Martin was able to visit the plant and brought along a pressed specimen of *R. peregrina* for comparison; the identification was confirmed as *R. tinctorum*, an apparent first record for Hampshire (but see below).

Rubia tinctorum (Madder), showing venation on leaf underside (bottom photo).

Madder is a decidedly scarce plant in Britain, with only a handful of records on the BSBI Distribution Database.

The find got me thinking about possible origins of the plant. Obviously the most parsimonious answer was that in the last decade a former plot-holder had planted some for home dyeing purposes (this practice seems to be on the increase). However, the allotment secretary was certain this was not the case and the plot had been untended for several years. We then discussed other possibilities, including the chance of this being a relic from former Madder cultivation for the Winchester dye trade.

Luckily, we have some highly-qualified friends in the archaeological world who were able to do a little research on my behalf. Tracey Matthews, the Winchester City Council Historic Environment Officer, unearthed some references on the historic use of Madder in early-mediaeval Winchester. This includes Madder-stained pottery fragments from Late Saxon/Saxo-Norman contexts in excavations at Northgate House (in the city centre, c. 1.5 km north-west), with c. 300 sherds showing evidence of staining from use as Madder dye pots: this is a significant percentage of the total pottery fragments recorded. Before renaming in modern times, the nearby Tower Street was known as Snithling Street (Street of the Tailors). It is evident that late-Saxon and early-mediaeval Winchester held a thriving textile industry that included the use of Madder dye. Whether it was grown around the city is unclear, but it seems reasonable to assume that domestic or artisanal cultivation occurred to serve this trade and that the all-powerful Church at that time was a key consumer of Madder-dyed cloth. It is of note that the allotment site is on former church land.

Commercial-scale Madder cultivation appears not to have taken off in Britain. It was the Dutch who really put the effort in and their Madder trade, centred on Zealand, was highly profitable in the 17th century (see *www.suzannedekel.com/post/a-madder-history*). Attempts at wholescale production in Britain were made in Deptford, Romney Marsh and Wisbech (Thirsk, 1970) but none seems to have made a dent in the lucrative Dutch trade. The development of artificial dyes in the 19th century seems to have ruined the Madder cultivation industry almost overnight.

Interestingly, D.E. Allen (1982) provides some commentary on an early record of 'a madder' from 1568 by William Turner, who stated 'the farest and greatest that ever I saw groweth in the lane of [sic] beside Wynchester in the way to Southampton'. Allen postulates that, rather than what was previously thought of as an anomalous record of *Rubia peregrina* (being some way distant from native coastal Hampshire populations), this might actually be a relic of former *R. tinctorum* cultivation. Allen mentions that there is documentary evidence from a 12th-century census of two 'waranchiers' (dealers or dyers of Madder) living in the city at that time, and an early 13th-century record also mentions this occupation. There is also evidence that Madder was cultivated around Winchester and nearby Alresford in the 14th century. It is quite possible then that this 1568 plant may be a relic from former cultivation.

Does this prove that my modern allotment plant is a survivor of an ancient Madder industry in Winchester? No, it doesn't of course. However, it does at least indicate that the current distribution of some of our plant species may be explained by examining our social, cultural and industrial history. Plants can tell us so much about the places in which we live. Oh, and allotments are well-worth an explore.

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BEGINNER'S CORNER

Yellow-flowered trefoils and medicks – a guide to our commoner native species

JOHN NORTON

These five yellow-flowered native legumes all resemble clovers in their trifoliate leaves and creeping habit. All usually grow as annuals, especially in short turf and disturbed habitats. Although familiar to all botanists, they are a common source of confusion to beginners and even the more experienced. Here is a short guide to the main ID features and typical habitats. *Photographs by the author.*

Lesser Trefoil (*Trifolium dubium*). The commonest of the three trefoils and found throughout the whole of Britain and Ireland. Flowerheads are round (globose), less than 1 cm across, on a long stalk, usually with about 15–20 individual bright yellow flowers (each 3–4 mm long), but beware poorly developed heads with only a few flowers, which make it confusable with Least Trefoil. Leaves are glabrous (hairless) above or may have a few hairs around the margins or underneath. The middle leaflet does not have a green tooth at the apex like Black Medick, but there may be a tiny bristle. Occurs in various types of neutral to mildly acidic short grassland, which can be dry, or winter-wet; and in disturbed habitats and sometimes urban environments.

Least Trefoil (*Trifolium micranthum*). Similar to Lesser Trefoil but has only a few (2–6) deeper yellow flowers, which are distinctly smaller (1.5–3 mm long), in clustered (not globose) heads. As the name implies a truly diminutive species which rarely grows more than a couple of centimetres tall. Favours well grazed pony fields and dry acid grassland. Common in lowland areas but mainly a coastal plant in Scotland and Ireland.



Hop Trefoil (*Trifolium campestre*). The largest of the trefoils, growing up to 30 cm high. Distinctive in having large, pale yellow 'pom-pom'-like flowerheads, each with more than 20 individual flowers, 4–7 mm long. Close up it can be seen that the petals are broader than the other two species and have a corrugated texture which gives the whole flower a resemblance to the fruits of Hop (*Humulus lupulus*). Leaves are sparsely hairy, as in the other two species. Favours disturbed, well drained and sunny calcareous habitats, but also occurs in dry acid grassland where there is some gravel or shingle present.



Black Medick (*Medicago lupulina*). Medicks are distinguished from the trefoils by the small triangular green tooth at the apex of the middle leaflet. Black Medick leaflets are usually silvery hairy above and have a broader shape than those of the trefoils. The flowerheads are closest in appearance to Lesser Trefoil, but a bit larger and denser, with more flowers, which are usually a slightly paler yellow. The fruiting heads (not shown) are characteristic, turning black when ripe. Widespread and common throughout the British Isles, favouring dry neutral to calcareous grassland and disturbed habitats. Often trailing but can grow to 50 cm or more.


Spotted Medick (*Medicago arabica*). Easily identified by the characteristic purple chevron marks on its glabrous leaflets, though sometimes these are very faint. Flowers are deep yellow, in clusters of 2–6, c. 3-6 mm long. Also note the sharply toothed stipules and the distinctive spiny fruits. It is the least widespread of the five, common only in southern England, where it occurs in similar habitats to Lesser Trefoil. The similar Toothed Medick (*M. polymorpha*) is a rarer species without spotted leaflets, and is more strongly coastal.

ADVENTIVES AND ALIENS

Adventives and Aliens News 25

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Before passing onto the latest compilation, I would like to share a few observations from Eastbourne in 2021 if I may, in case they might be of more general interest as a possible indication of future trends or to give food for botanical thought.

In September I was surprised to find non-flowering plants of *Pennisetum petiolare* and *Arthraxon hispidus* (Small Carpet-grass) in Addingham Road in the Seaside area of Eastbourne (both conf. E.J. Clement). The first was sprouting in a tuft from a broken kerbstone, the second formed a very small prostrate mat on a dropped kerb of the pavement directly in front of the entrance to a property. There were also a few non-flowering plants of *Guizotia scabra* subsp. *schimperi* at the base of a wall and the foot of a lamppost. Both of the grass species have appeared in recent compilations for this section but these reports and others have tended to involve plants that were obviously very closely associated with bird tables and/or feeders, often actually in gardens. This was not the case in Addingham Road, although no doubt that bird seed was their source.

For the second time in the space of a few years, I found a self-sown plant of *Lathyrus odoratus* (Sweet Pea) in 2021, growing in the gutter of Channel View Road also in the Seaside area and not far from a garden where flowering Sweet Peas often take pride of place in high summer. If it is to become a more familiar sight as a 'street weed', it might be worth noting that at an early stage characters such as the winged stem and wavy leaflet margins are not necessarily that obvious. The leaflets, stems and stipules will probably be hairy, however, and as indicated in Poland & Clement (2020), these hairs have swollen bases. It also seems that a proportion of hairs fail to develop and when the light catches them under a lens, these swellings can then resemble tiny sessile glands.

In the introduction to Adventives & Aliens News 22, I wrote a little about *Iberis amara* (Wild Candytuft) as a constituent of wild flower seed mixes. Not long afterwards I sent flowering material I had collected from a wild flower seed mix to Eric Clement. He could not confirm that it was identical to the *I. amara* found as a native in this country, leaving open the possibility of a non-native infraspecific taxon such as *Iberis amara* var. *coronaria* (D. Don) Voss, or even a hybrid with a non-native species such as *Iberis gibraltarica* L. This year I was able to send him fruiting material from the same source and he thought it a very good match for our native *I. amara*. Even so, the situation might not be as straightforward as I implied, and the white-flowered, annual *Iberis* found in these mixes might not always be exactly the same as the plants that make up our native populations.

V.c. 6 (N. Somerset)

Stachys annua (Annual Yellow-woundwort). Radstock Railway Sidings (ST69085470), 12/7/2020, H.J. Crouch, J.M. Crouch & P. Watson: one plant on waste ground on former disused railway sidings, now the edge of a housing estate. The second v.c. 6 record and the first since 1908 at Portishead Station yard. An erect Eurasian annual (Lamiaceae) with cream corollas and a rare casual in Britain, brought in for example with grain and oil-seed. 'Formerly established in abundance on the downs in W. Kent', Clement & Foster (1994). Stace (2019): 657.

Tanacetum macrophyllum (Rayed Tansy). Frome (ST777478), 28/6/2021, H.J. Crouch & V. Graham: in waste ground below boundary wall of churchyard, St. John's Church. It is not thought to have been

Left: Stachys annua, Radstock; *right: Tanacetum macrophyllum*, Frome, North Somerset (v.c. 6). *Helena Crouch*

planted and might have escaped from a large, neighbouring garden. A rhizomatous, perennial garden plant (Asteraceae) to 120 cm, native to south-east Europe and south-west Asia, with 1–2 pinnately lobed leaves and white, rayed capitula; 'known since 1912 at Jervaulx Abbey (v.c. 65)', Clement & Foster (1994), it was last formally recorded there in 2010. Confused with other species in the past, it seems at least one well-known nursery might be supplying it as *Achillea chrysocoma* 'Grandiflora'. My limited researches suggest that *A. chrysocoma* is a more compact, yellow-flowered rockery plant with a similar native distribution. Clement et al. (2005): 325. Stace (2019): 788.

V.c. 9 (Dorset)

Cyrtomium fortunei (Fortune's Holly-fern). Canford Cliffs (SZ05898952), 7/10/2021, D. Leadbetter (det. F. Rumsey): one shuttlecock on bare ground near Martello Towers. An east Asian native (Dryopteridaceae) cultivated as an ornamental and less tender than *C. falcatum* (House Holly-fern). It has more pairs of smaller, more toothed pinnae per frond than the latter species. Stace (2019): 35.

Aronia arbutifolia (Red Chokeberry). Near Broadstone (SY98889559), 10/9/2021, D. Leadbetter: several in Stonecrop Wood, where first recorded c. 10 years ago. Red berries separate it readily from *A. melanocarpa* (Black Chokeberry) and *A.* × *prunifolia* when in fruit. Poland & Clement

Cyrtomium fortunei, Canford Cliffs, Dorset (v.c. 9). *David Leadbetter*

(2020) distinguish it from the former by the more elliptic leaves with much hairier lower surfaces. Stace (2019): 230.

V.c. 10 (Isle of Wight)

Pennisetum villosum R. Br. ex Fresen. (Feathertop). East Cowes (SZ502959), 11/2020, P. Stanley: well naturalised, kerb by side of car park, a long way from any garden. A perennial grass native to north-eastern Africa, grown as an ornamental and known for its long-bristly, white, plumose panicles. There are only a few records in the DDb, the earliest from 2006. I also found a self-sown plant in a road gutter in Rylstone Road (TV62189969), Eastbourne in 2021 (conf. E.J. Clement).

V.c. 11 (S. Hants)

Tropaeolum ciliatum Ruiz & Pav. Brockenhurst (SU2902), 6/7/2021, D. Leadbetter (conf. E.J. Clement): invasive in garden hedge, Rhinefield Road. The owner informed David Leadbetter that the plant had appeared in the garden without having been knowingly introduced and has thus far proved impossible to eradicate. Wishing to make it as irresistible as they can, Plant World Seeds wax lyrical about how 'from the leaf axils of the thin branching stems spring countless blood red-veined yellow flowers amidst attractively lobed delicate leaves'. They describe it as being a hardy perennial climber from the high Andean mountains, ideal for climbing through a dwarf conifer or on a climbing frame, note that it makes a perennial tuber and is easier to grow than the red-flowered *T. speciosum* (Flame Nasturtium). Another website describes it as a very vigorous hardy climber and a native of shady gullies around Santiago (Chile); and states that after a slow first year 'it can rapidly make 10–15 m of growth in rich soil', and that 'it will travel underground extensively'.

V.c. 12 (N. Hants)

Scrophularia vernalis (Yellow Figwort). St. Giles Hill (SU49072934), 25/3/2021, T. Norton: one large flowering clump in cemetery. A biennial Eurasian native (Scrophulariaceae) which can be a very persistent garden escape. Young plants of *S. vernalis* could be confused with the west Asian *S. chrysantha* Jaub. & Spach, which might also occasionally be in cultivation. However, the latter has more densely rounded inflorescences (c. 2.5 cm × 3 cm). Stace (2019): 643.

Hedera helix subsp. *poetarum* (Yellow-berried Ivy). Aldershot (SU85795002), 9/4/2021, F. Rumsey: on corner of Ayling Hill and Ayling Lane, and in Ayling Lane itself (SU85824996). A Mediterranean native (Araliaceae) that is sometimes grown in gardens. Stace (2019): 840.

V.c. 13 (W. Sussex)

Silene baccifera (Berry Catchfly). Wick (TQ02630348), 2021, D. Donovan (comm. N. Sturt): two plants on verge by the exit from Morrisons, Lyminster Road, soon cleared. A scrambling, well-branched, hairy perennial (Caryophyllaceae) to 2 m, with greenish-white bell-shaped flowers. Until recently it was segregated as *Cucubalus* on the strength of its fruit being a black berry rather than a capsule. The classic site is in and around Merton (v.c. 28), where it is supposed to have been introduced from eastern Europe as an additional food source for the local pheasant population. A native of Eurasia and North Africa, its typical habitats include hedges, banks and

woods. It also has limited availability as an unusual garden plant. Stace (2019): 501.

V.c. 14 (E. Sussex)

Portulaca grandiflora hort., non Hook. (Rose-moss). Eastbourne (TV59379950), 10/8/2021, M. Berry: several plants at the foot of a wall, in pavement cracks and road gutter, Salehurst Road. The second Sussex record, the first being for Yapton (v.c. 13) in 1996 (D.M. Donovan). A spreading annual garden plant (Portulacaceae) native to eastern South America. The fleshy stems and succulent cylindrical leaves resemble those of certain members of Aizoaceae, but the structure of the red, pink, yellow or white (often semi-double) flowers (up to c. 5 cm across) clasped between two blunt sepals and the transversely dehiscent capsules indicate the correct family. The persistent hair-like stipules are also distinctive.

Solanum pseudocapsicum (Winter-cherry). Eastbourne (TV61959945), 10/10/2021, M. Berry: one self-sown plant at base of wall behind lamp post, St. Aubyn's Road. A perennial house plant and sewage waste casual, native to eastern South America. It can be more or less glabrous or sport a variable indumentum of branched hairs. Before the berries form, it is perhaps best distinguished from *Capsicum annuum* (Sweet Pepper) by the more divided calyx and the anthers with apical pores, if the stem base is not yet obviously woody. The first record for v.c. 14 and the second for Sussex as a whole. Stace (2019): 611.

Helichrysum petiolare (Silverbush Everlastingflower). Eastbourne (TV61209926), 12/7/2021, M. Berry (conf. E.J. Clement): one seedling in angle between wall and footpath, pedestrian cut-through between Ashford Road and Junction Road, self-sown from a back garden. It seems to be the first Sussex record. A scrambling evergreen shrub (Asteraceae) native to South Africa and widely cultivated. A thick white tomentum is usually present, particularly at the apex of this seedling, otherwise as a street weed it might blend in surprisingly well with ubiquitous *Parietaria judaica* (Pellitory-of-the-wall). The leaves are actually much more obtuse and lack the translucent dots of that species. It is a naturalised alien of various habitats in some more western v.cc., and more generally an infrequent casual garden escape. It is viewed as a troublesome invader in other parts of Europe, e.g. northern Spain. Stace (2019): 773.

Erigeron annuus (Tall Fleabane). Hastings (TQ82840979), 26/7/2021, J. Rose (conf. M. Berry): three plants crowded together in a paving crack against a garden fence at the turning point in Tackleway, Old Town. There was no sign of the species in any nearby garden. It is the second record both for E. Sussex and Sussex as a whole. See Adventives & Aliens News 22, v.cc. 14 and 17. Stace (2019): 783–784.

V.c. 15 (E. Kent)

Paulownia tomentosa (Foxglove Tree). Finglesham (TR33895318), 2/8/2020, O. Leyshon (conf. S. Buckingham): seedling in junction of kerb and road surface at Fowlmead. The first v.c. record. A second

Erigeron annuus, Hastings, East Sussex (v.c. 14). *Jacqueline Rose*

was made by Danny Chesterman two months later in Faversham. No doubt the winged seeds have always dispersed themselves effectively, the more suitable conditions for their formation/germination are a recent development. See Adventives & Aliens News 23, v.c. 13. Stace (2019): 680.

Galactites tomentosus (Mediterranean Thistle). St. Margaret's at Cliffe (TR36234419), 11/7/2020, O. Leyshon: six plants on dry, grassy roadside verge, Lighthouse Road. Second record for v.c. 15, the first from 2014. *Kent Botany* 2020, p. 14 (including photos). See Adventives & Aliens News 21, v.c. 9. Stace (2019): 732.

V.c. 16 (W. Kent)

Cotula coronopifolia (Buttonweed). Crayford Marshes (TQ5376), 23/7/2020, G. Kitchener: flowering in a depression. New to this 10 km-square and spreading in the north Kent marshes area. This is very much the damp, saline habitat where it has established elsewhere in Britain. Stace (2019): 799.

V.c. 27 (E. Norfolk)

Scorzonera hispanica (Garden Scorzonera). North Walsham (TG30013267), 19/10/2021, S. Pryce: a single plant on a road verge. The first Norfolk record. A Eurasian perennial (Asteraceae) grown in gardens and allotments as a root vegetable and sometimes a persistent escape from them. There have been eight post-2000 records, two for v.c.14 and one each for v.cc. 11, 16, 17, 24, 37 & 40. Stace (2019): 743.

V.c. 28 (W. Norfolk)

Dichondra micrantha (Kidneyweed). Holkham NNR (TF87964520), 10/5/2021, M. Crewe: a large, well-established patch beside coastal track in stabilised dune grassland. The first Norfolk record. A prostrate, East Asian perennial (Convolvulaceae) rooting at the nodes with reniform leaves and solitary axillary flowers. The American *D. argentea* Humb. & Bonpl. ex Willd., a favourite of hanging baskets, has silky, silvery upper leaf surfaces (vs green and more or less glabrous in *D. micrantha*). The Australian/New Zealand *D. repens* Forster & Forster f. has sparsely hairy upper leaf surfaces. It also has somewhat larger corollas, longer fruiting pedicels that are more or less straight (strongly recurved in *D. micrantha*), longer sepals and fruits that do not exceed the calyx (fruits longer than calyx in *D. micrantha*). There are no confirmed records for Britain and Ireland. Although

Scorzonera hispanica, North Walsham, East Norfolk (v.c. 27). *Suki Pryce*

Dichondra micrantha, Holkham, West Norfolk (v.c. 28). *Mike Crewe*

we are some way from the situation in warmer parts of the world where *D. micrantha* is widely naturalised, it might be increasing, with other recent records for v.cc. 77 (2017) and 86 (2019). 'Established since 1955 on dunes near Hayle (v.c. 1)', Clement & Foster (1994), the last traceable record for it there is from 1979. Clement et al. (2005): 222, Stace (2019): 599.

V.c. 50 (Denbs)

Jasminum beesianum (Red Jasmine). Trefydd Bychain (SJ20155054), 9/6/2021, D. Williams (comm. S. Tyler): single small plant in flower growing out of limestone outcrop in mixed ash woodland on private land. There are no other v.c. 50 records in the DDb. A native of China (Oleaceae) which has only become a more popular garden shrub relatively recently. This occurrence has every appearance of having been naturally dispersed by a bird or a small mammal. Delyth Williams found what she thinks must be the original parent plant in a garden 50 to 100 m away (pers. comm.). Stace (2019): 614.

V.c. 52 (Anglesey)

Potentilla indica (Yellow-flowered Strawberry). S of Beaumaris (SH58177419), 18/6/2021, G. Vaughan (comm. S. Tyler): several plants on roadside. It was first noticed in 2018. The only v.c. 52 record of the species in the DDb. See Adventives & Aliens News 17, v.c. 58. Stace (2019): 271.

Alstroemeria aurea (Peruvian Lily). Mynydd Mechell (SH35458913), 22/6/2021, N. Brown: in trackside vegetation. The only v.c. 52 record of species in DDb. A spreading tuberous perennial garden plant (Alstroemeriaceae) with slightly zygomorphic flowers from Chile and Argentina. The flowers of *A. aurea* (in its typical form at least) are orange with red spots and streaks. It is perhaps less likely as a garden throw-out because its delicate root system is easily damaged and it is particular about the depth of planting. The pot-like capsules produce many largish, globose seeds, however. An odd feature of this species is that the petioles are twisted through 180 degrees, so the leaves are resupinate (i.e. the lower leaf surfaces are actually uppermost). At one time it looked as if *A. aurea* might be supplanted in gardens by *Alstroemeria* hybrids, the so-called 'Ligtu Hybrids' after one of the parent species. Perhaps cultivars of *A. aurea* now adequately supply the demand for novelty. It is or was an 'established garden escape; well naturalised in damp places in the Greeba Curraghs, near St. John's (v.c. 71) and in several places in Scotland', Clement & Foster (1994). Clement et al. (2005): 433. Stace (2019): 898.

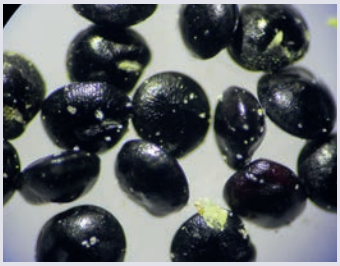
V.c. 57 (Derbys)

Chenopodium berlandieri (Pitseed Goosefoot). Barlborough (SK4776), 8/8/2021, M. Lacey (conf. J. Akeroyd): on waste ground opposite McDonalds (*see photographs on next page*). The seeds were pitted and with rounded edges quite unlike those of *C.album*; the red-striped stems and dark green leaves help to distinguish it from *C.suecicum* which has a similar pitting pattern on its seeds. The Barlborough plant had noticeably keeled tepals too, which also fits *C. berlandieri*. A grain, oil-seed casual and former wool alien from North America and Mexico. Stace (2019): 517.

Chenopodium bushianum (Soyabean Goosefoot). North of Shirebrook (SK518699), 12/9/2021, M. Lacey (conf. J. Akeroyd): in a maize field (*see photographs on next page*). Like *C. album* overall but the large seeds (2 mm × 1 mm) lacking acute edges pointed the way to the final determination. Mick Lacey also noted that the seeds were pitted and slightly furrowed. John Akeroyd made additional mention of the paniculate, leafy inflorescence drooping at the tips, as being rather more characteristic of *C. bushianum* than of *C.album* (Fat-hen) and the remarkably similar *C. berlandieri* (Pitseed Goosefoot). The large seeds also apparently help to distinguish it from certain forms of *C. suecicum* (Swedish Goosefoot). A casual alien of tips and waste ground from North America, particularly associated with soyabean waste. Stace (2019): 517.

V.c. 63 (S.W. Yorks)

Rumex crispus L. subsp. *robustus* (Rech.) Pestova (Curled Dock). Rossington area (SK64579867), 15/7/2021, D.A. Broughton (conf. G. Kitchener): c. 10 plants, shady hedgebank on heavy soil, Warren



Chenopodium berlandieri, Barlborough, Derbyshire (v.c. 57), with flowers and seeds. *Mick Lacey*

Left: Chenopodium bushianum, near Shirebrook, Derbyshire (v.c. 57) with larger seeds compared to those of *C. album* (inset). *Mick Lacey*

Above: Rumex crispus subsp. *robustus*, near Rossington, South-West Yorkshire (v.c. 63). *David Broughton*

House Farm. There were also more than 10 plants at SK64619854, growing in ruderal vegetation on a disturbed ditch bank at the edge of an arable field, on a drainage-impeded, sandy-loam substrate, also Warren House Farm. This is an area where much grain has been scattered as pheasant feed and also lying near site of a former airfield, now Donacaster/Sheffield Airport. David Broughton was struck by these Curled Dock plants which were 'unusually tall (over 1.3 m) and robust, with broad leaves, a huge inflorescence, large tepals and unusual dark green colouration'. According to the account in Manual of the Alien Plants of Belgium, this taxon seems almost to have affinities with *R. patientia* (Patience Dock) that are not evident in the nominate subspecies. For more information on the Rossington site, see *botanyhuntsyorks.blogspot.com/2021/08/rumex-crispus-subsp-robustus.html*; and for details of a recent v.c. 16 record, see *Kent Botany* 2019, p. 33.

Hedera algeriensis 'Gloire de Marengo' (Algerian Ivy). Mickletown (SE38682730), 14/2/2021, D.A. Broughton: escape/planting at level crossing, Station Road. The leaves of this cultivar have creamy-white margins. See Adventives & Aliens News 22 for a v.c. 62 record also at a railway crossing. Stace (2019): 840.

Hedera algeriensis 'Ravensholst', Temple Newsam, Mid-West Yorkshire (v.c. 64). *David Broughton*

V.c. 64 (M.W. Yorks)

Cicer arietinum (Chick Pea). Apperley Bridge (SE19483792), 21/9/2021, M.P. Wilcox (comm. D. Broughton): one plant on river shingle by River Aire, downstream of a major sewage treatment works at Esholt. The only modern v.c. 64 record in the DDb. See Adventives & Aliens News 20, v.c. 29. Stace (2019): 174.

Hedera algeriensis 'Ravensholst' (Algerian Ivy). Temple Newsam (SE35793284), 4/4/2021, D.A. Broughton: extensive up trees and over woodland floor, North Plantation. The leaves of this cultivar can assume a purple tinge in winter.

Hosta 'Undulata Albomarginata' (A Plantain Lily). Lumby (SE47273023), 15/8/2021, D.A. Broughton: area where spoil and garden waste has been tipped, Red Hill Lane. *Hosta* are rhizomatous perennials (Asparagaceae) cultivated primarily for their distinctive, stalked, ribbed leaves rather than their generally unimpressive racemes of funnel-shaped, six-lobed flowers of various often rather pale shades of mauve or violet-purple. This cultivar is probably of hybrid origin, not a good species, and unlikely to produce viable seed. Plantain Lilies were formerly known by the generic name of *Funkia* and might still be referred to as such by some in the horticultural trade. They are natives of north-eastern Asia.

Allium siculum subsp. *dioscoridis* (Honey Garlic). Ben Rhydding (SE13224689), 12/6/2021, D.A. Broughton: one flowering clump, south of Wheatley Rakes. A bulbous perennial (Amaryllidaceae) native to southern Europe and Turkey, which occurs as a garden escape, sometimes becoming naturalised. Until recently it was placed in another genus, *Nectaroscordum*, because it has a semi-inferior rather

Cynoglossum amabile, Mungoswells, East Lothian (v.c. 82). *Richard Milne*

than superior ovary. For a drawing of the rarer subsp. *siculum*, see Clement et al. (2005): 426. Stace (2019): 948.

V.c. 82 (E. Lothian)

Cynoglossum amabile (Chinese Hound's-tongue). Mungoswells (NT49378050), 25/8/2021, R.I. Milne: on soil heap at side of field near ditch, with *Chenopodium album* (Fat-hen), *Solanum tuberosum* (Potato) and *S. lycopersicum* (Tomato), near Coldhame Wood. A rather tall (at least when well-grown), erect biennial garden plant (Boraginaceae) native to western China, with grey-green foliage and flowers resembling a very large *Myosotis* (Forget-me-not), c. 8 mm across. There are other recent records in the DDb for v.cc. 1 (2019), 2 (2019), 34 (2018), 63 (2019) and 94 (2018). See *BSBI News* 134, pp. 47–48.

V.c. 83 (Midlothian)

Urtica membranacea (Mediterranean Nettle). Edinburgh (NT32347131), 15/6/2021, R.I. Milne: one plant on side of soil mound with other weedy species, e.g. *Urtica dioica* (Common Nettle) and *Conium maculatum* (Hemlock), Whitehill Road. New to v.c. 83. Stace (2019): 305.

V.c. 94 (Banffs)

Downingia elegans (Californian Lobelia). Dufftown Golf Course (NJ30503918), 27/8/2021, J. Milne & I. McDonald (det. A. Amphlett & M.J. Crawley): one flowering/fruiting plant appeared in a small area cleared of vegetation by John Milne. It was likely introduced in grass seed as for most/all of the other British/Irish records. A blue-with-white-flowered North American annual (Campanulaceae), like a *Lobelia* but with long, sessile ovaries rather than short pedicellate ones. The last British record was in 1998 (v.c. 32), the last Irish record known to me was in 1994 (v.c. H39). This is the first for Scotland. It occurs 'usually in damp hollows or by newly-made ponds', Clement & Foster (1994). It also occurred at the edge of a reservoir in at least one of its localities (v.c. 14). See *BSBI News* 23, p. 11 for a full page drawing. Stace (2019): 706.

Downingia elegans, Dufftown, Banffshire (v.c. 94). *Ian McDonald*

V.c. 95 (Moray)

Crocus kotschyanus (Kotschy's Crocus). Grantown on Spey (NJ02722604), 25/10/2021, A. Amphlett (det. M.J. Crawley & I.P. Green): c. 40 plants on south-east side of footpath, just beyond parking area by Inverallan graveyard. The second Scottish record. See Adventives & Aliens News 19, v.c. 95. It was also recorded in Newhaven (v.c. 14) in October 2020 (TQ45350138, det. M. Berry, record not in DDb). Stace (2019): 935.

Allium sphaerocephalon (Round-headed Leek). Fochabers (NJ34255891), 23/7/2020, A. Burgess (conf. I. Green): two flowering stems in grassy area by path at edge of cricket field. New to v.c. 95. A supposed native (Amaryllidaceae) in the Avon Gorge (v.c. 34) and sandy maritime habitat in Jersey, it is also a garden plant. Stace (2019): 948.

Bromus arvensis (Field Brome). Forres (NJ03565767), 18/6/2020, I. Green: one clump on east verge of old railway line, Dava Way. The first v.c. 95 record since 1871. An annual grass from Eurasia found as a grain/agricultural seed alien of arable fields and as a wool adventive. It is also a rare casual of verges and waste ground. See Adventives & Aliens News 13, v.c. 17. Stace (2019): 1089–1090.

V.c. 97 (Westerness)

Cardamine heptaphylla (Pinnate Coralroot). N of Killiechonate (NN24078158), 17/4/2020, I.M. Strachan: a large flowering clump on bank of River Spean. An often white-flowered perennial garden plant (Brassicaceae) that is native in many European countries. It was formerly in the genus *Dentaria*, a reference to the tooth-like scale leaves on the fleshy rhizome of this and several other *Cardamine* species, also known formerly as *Dentaria*. See Adventives & Aliens News 16, v.c. 69. Stace (2019): 425.

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Crocus kotschyanus, Grantown on Spey, Moray (v.c. 95). *Andy Amphlett*

Rubus nepalensis (Hook. f) Kuntze: a previously unrecorded Bramble in the UK

GRAHAM LAVENDER & ROB RANDALL

The purpose of this article is to draw attention to the first record in the UK for *Rubus nepalensis* in the wild; a prostrate Bramble without prickles or acicles and attributable to subgenus *Dalibardastrum*, which currently has only one entry, *Rubus tricolor* (Stace, 2019).

Rubus nepalensis is distinguished from *Rubus tricolor* by its lighter trifoliate leaves, abundant purplish stem bristles and entire stipules. *Rubus tricolor* is a more robust plant with simple leaves, which are usually darker green, reddish brown bristles and laciniate stipules.

Rubus nepalensis was found on the east bank of Hawknest Combe stream under oak canopy, covering some 6 × 4 square metres with a maximum height of around 20 cm. Hawknest Combe stream is narrow and fast flowing, located in the steep coastal woods above Porlock Weir on Exmoor, Somerset (SS866472; v.c. 5). Vouchers were taken for Taunton Herbarium (TTN) and identification was made by Rob Randall, BSBI *Rubus* referee.

Rubus nepalensis was first described by Kuntze in 1879. The *Flora of India* suggests that the holotype is at Kew Herbarium (K); however Kew in personal communication is unable to confirm if its specimen is the holotype. Kew has two specimens collected by J.D. Hooker in 1879 under the name *Rubus nutans* var. *nepalensis* (e.g. see *www.kew.org/herbcatimg/339743.jpg*).

A search of the literature also found a number of synonyms, including *Rubus nutantifolius* in the United States National Herbarium, Smithsonian Institution (US). Vernacular names include Nepalese Raspberry and Himalayan Creeping Bramble. It was also noted that the Royal Horticultural Society lists six suppliers of *Rubus nepalensis* as a ground cover plant so it may have been originally planted or, given its relatively remote location in dense woodland, more likely bird-sown from a planted colony nearby. It is also possible, given that rhododendrons are known to have been introduced to the area from Nepal in the 1940s, that it may have been accidentally introduced with them.

Currently *Rubus nepalensis* is not in the DDb although a request has been made and the purpose of this article is to seek out further records of this potentially invasive Bramble.

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Rob Randall
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Rubus nepalensis at Hawknest Combe, Somerset (v.c. 5). *Graham Lavender*

NOTICES

BSBI SUPPORTER SURVEY

The staff and committees would like to extend their thanks to everyone who took part in the first Member and Supporter Survey across August and September. We had a fantastic response, with over 770 current members, former members and non-members taking the time to give feedback on their experiences of BSBI. This insight will now inform discussions across the charity, acting as a tool and source of information for our teams and committees in taking the goals of the Society forward.

At the same time, responses represented a real insight into individual experiences of botany and how people want to practise their interest and engage with fellow botanists. It was very encouraging to see that the majority (93%) of current members are happy with their membership and, health allowing, likely to continue as members into the future. After the past few years, many are also keen to engage more and more with like-minded people who share their interest in wild plants.

Through our expanding presence, more and more individuals are finding out about BSBI through the internet and social media, where previously it had been more common to come across the Society at university. However, there remains a universal truth: individuals are more than twice as likely to have heard of BSBI through another member than any other source. It is fantastic to see such advocacy for botanists, by botanists.

As an initial piece of work and insight, there is a lot to be positive about. As with BSBI data in general, the findings give us a baseline to compare future surveys against, so we can look to know if we are moving in the right direction, and hopefully future iterations will continue to show the impact of all the hard work done at BSBI.

Sarah Woods
BSBI Fundraising Manager
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MEMBERSHIP

Thanks to a targeted promotional campaign online and on social media, this year's Special Offer from the start of October, where new members get the last three months of the year 'free', resulted in an unprecedented number of new members joining (over 200 in the first eight weeks). This included almost 50 students who joined as a result of a student recruitment campaign (see below).

To comply with GDPR regulations, BSBI no longer offers a List of Members. If you have any query regarding members details, including lists of members in your area, please contact our CEO Julia Hanmer (*julia.hanmer@bsbi.org*) in the first instance.

Following new postal regulations for all international destinations, including Ireland and the Channel Islands, full customs labels are now obligatory on all mailings. It would be useful to know if any overseas member has experienced delays or any problems with customs, not just for regular mailings but also for books.

When sending change of address details please remember to give your membership number or your old address, especially postcode, and include any new phone number.

I would also ask all Irish members to please let me have their Eircode if they have not done so already. If you don't know it, visit *https://finder.eircode.ie/#/* to find out.

Gwynn Ellis
BSBI Membership Secretary
gwynn.ellis@bsbi.org

LONG-STANDING MEMBERS

BSBI thanks every member for your ongoing support – your contribution helps to make the Society the success that it is. And particular thanks go to the following who have reached an amazing 60 years of membership!

Joined in 1960: Dr D.F. Chamberlain, Mr B. Goater and Mr M.M. Oakes. **Joined in 1961:** Mr I.R. Bonner, Mr J.C. Henly, Dr M. Keith-Lucas, Mr J.E. Kirby, Mr J.R.I. Wood and Dr A.J. Gray. **Joined in 1962:** Miss A. Burns, Dr G.C.S. Clarke, Mr A.N. Codling, Dr J. Dransfield, Mr P.J. Ellison, Mrs R.F.L. Hamilton, Dr A. Harrington, Mr R.J. Mitchell, Mrs M.E. Pugh, Dr F.M. Slater and Mr P.W. Wilberforce.

Steve Gater
Hon. General Secretary
steve.gater@bsbi.org

SUPPORTING THE NEXT GENERATION OF BOTANISTS

In October we launched a targeted recruitment drive aimed at helping our budding botanists and boosting the number of student members in our Society. A video, produced by BSBI member Andrew Rowley, featured BSBI staff and officers setting out how BSBI membership can help students, from undergraduate to post-doc, to access the Society's resources and expand their knowledge of British and Irish plants.

The video can be viewed via our new student membership page, which also has links to the various grants on offer, volunteering opportunities, support available when publishing a first scientific paper and of course the membership form, with a reminder that students benefit from a heavily-subsidised subscription rate, paying only £15/€18 per year. That rate now applies to everyone under 25 and to any registered student in possession of a student card.

We are delighted to announce that by the end of November, our student membership had almost doubled! Find out more on our student membership page and please help us spread the word by pointing any students you know to this page: *bsbi.org/students*.

Louise Marsh
BSBI Communications Officer
louise.marsh@bsbi.org

DIRECT DEBIT

The majority of BSBI members are already using our handy Direct Debit facility to pay their annual subscription: it's quick and easy for members and it's efficient and cost-effective for us processing your payment. So if you don't already pay by Direct Debit and haven't yet paid your subscription for 2022, it's not too late to consider setting one up. You'll only need to do it once and then you'll never need to worry about paying your sub again!

Online: please visit *bsbi.org/join-us* and follow the links. If you have no internet access and wish to pay in £ sterling, a paper DD mandate can be posted to you for completion; just contact Gwynn Ellis (his address and phone number are on the inside front cover of this issue) with your request. Please note that SEPA Direct Debit (Euros) is only available via online sign up.

Julie Etherington
BSBI Finance Manager
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BSBI ANNUAL EXHIBITION MEETING 2021

Hundreds of people booked for the 2021 virtual Annual Exhibition Meeting and AGM in November. There was something for everyone to enjoy in the 24 exhibits: from plant ID sheets for beginners, the conservation of arable plants and how one woman is inspiring young people to engage with nature, right through to a new key to Elms, monitoring the health of UK habitats and academic posters on research funded by BSBI grants. Videos of the ten talks, and of the panel discussion on how we build a more diverse community of botanists, are available to view on the BSBI YouTube channel.

Links to all the exhibits and talks can be found on the Exhibition Meeting website: *aem.bsbi.org*.

At the end of the Meeting, BSBI Chief Executive Julia Hanmer announced that in future the event will be called the British & Irish Botanical Conference and the theme for 2022 will be 'A Festival of Plants'. If you are interested in offering an exhibit or a talk, please contact the Events & Communications Committee to discuss your idea: **meetings@bsbi.org**.

Louise Marsh

NEW YEAR PLANT HUNT

By the time you read this, BSBI's eleventh New Year Plant Hunt will be over, the results will be in and an analysis will have been carried out. You'll be able to find out more in the April issue of *BSBI News* but if you can't wait, please visit the New Year Plant Hunt webpage and follow the links for the Results map and the analysis. Many thanks to everyone who took part! Find out more on the webpage: *bsbi.org/new-year-plant-hunt*.

Louise Marsh

FIELD MEETINGS 2022

Distributed with this issue of *BSBI News* is the Yearbook for 2022. This has reports of field meetings held last year, along with the provisional programme for 2022. The reports give an idea of what you might expect from taking part in these meetings and show that they are often a voyage of discovery for all the participants. Do consider taking part in one or more if you can.

I hope that all the meetings will be able to go ahead, but there may be restrictions due to the Covid pandemic. Please follow whatever regulations are in force at the time, both in your place of

residence and at the location of the meeting. The regulations are likely to differ in detail between the countries, so do check with the meeting leader. We've included a few illustrations along with the text of the reports, but it wasn't possible to print the majority in colour. If you would like to see a fully illustrated version, in colour, there is a pdf of the reports, programme and B&IB abstracts in the Members' area on the web.

Also on the web, on the meetings page, you can find the full programme of meetings in a form that allows you to search for particular types of meeting. There are also links that allow you to email the organiser or to book for some residential meetings. We will keep the page updated throughout the season and may include meetings that missed the deadline for the Yearbook. Unfortunately, we cannot include all the local group meetings in this listing, so you will need to search through the v.c. pages for them.

An innovation in meetings this year has been our series of virtual winter talks, held via Zoom on the first Wednesday of the month at 7.30pm. The first talk visited Haiti to see cacti and there is a short account in the Yearbook. There are further talks planned on 2 February and 2 March, but if you missed earlier ones you can find recordings in the Members' area.

I would like to thank all those who organise field meetings, which are a benefit for members and supporters, both at national and local level. The recent membership survey shows that members do appreciate the opportunity to take part in field meetings and that there is demand for more of them. I hope that we will be able to satisfy it!

Jonathan Shanklin
BSBI Hon. Field Meetings Secretary
fieldmeetings@bsbi.org

BSBI PHOTOGRAPHIC COMPETITION

The 2022 BSBI Photographic Competition is now open for entries. The four categories in 2022 will be Plants in Winter, Spring, Summer and Autumn. The competition is online only but free to enter and open to everyone who is an amateur photographer. For further details and a link to the full competition rules, see the BSBI website: *bsbi.org/bsbi-photographic-competition*. The closing date for entries is 21 October 2022. A condition of the competition is that we may exhibit the entries and use them to promote the BSBI, including on our website and in *BSBI News*.

Congratulations to the three winners in the 2021 competition; in the Native category – Olesya Smart with her stunning Moss Campion (*Silene acaulis*) in Ross and two joint winners in the Alien category: Roy Sexton with Pitcherplant (*Sarracenia purpurea*) on Rannoch Moor and Liz Downey's Seaside Daisy (*Erigeron glaucus*) at Portland, which both received the same number of popular votes. See page 84 and the inside back cover of this issue for the winning photographs and a selection of the other images submitted.

Thank you to everyone who contributed entries to the competition, to Natalie Harmsworth who organised it, to Ryan Clark for producing the slide shows that were displayed during the breaks at the Scottish Botanists' Conference and the Annual Exhibition Meeting and, of course, to Summerfield Books who kindly provided the book token prizes.

All the 2021 entries can be viewed on BSBI Flickr (search for 'BSBI Flickr'), where you can also see all the entries for the previous six years.

Jim McIntosh
BSBI Senior Country Officer
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Moss Campion (*Silene acaulis*), Ross by Olesya Smart, winner of the 2021 BSBI Photographic Competition in the Native category (*see p. 84*).

PANEL OF VICE-COUNTY RECORDERS

Regretfully, one of our longest serving Recorders, Ken Adams, has resigned from the position of VCR for Essex (North and South). Ken had been in post for 47 years, and for much of this time enjoyed a long academic career as a principal lecturer and molecular biologist at the University of East London. Ken's *Essex Botany* publication is hopefully well-known to all, and distils in each edition decades of experience relevant far beyond the county boundaries. Especially useful are his keys formulated for a wide variety of 'difficult' groups of plants, as

well as more common taxa that have confusingly similar species, or segregates. A large band of recorders, educated, organised and inspired by Ken, have covered the vast majority of 1 km squares in both counties, with the aim of producing a 3rd Flora and Atlas of Essex Plants. Ken has contributed fully to recording for two atlases during his Recordership, and has been enormously helpful in the regular flow of enquiries that I have often sent his way. It's an impossible task for me to sum up in a few sentences just how much he has contributed to our Society, and we thank Ken for his many years of dedicated service.

Ann Sankey is retiring as VCR for Surrey after an exemplary 20 years in post. On top of everything else that Ann achieved during this time, her organisation of hundreds of well-attended field meetings alongside meticulously planned recording for the forthcoming atlas resulted in excellent coverage, and the annual updates I received on progress were, without fail, incredibly impressive. Ann has been a leading light in the recording and the conservation of Surrey's flora, and we thank her very much for all her many contributions.

In Wiltshire, Sharon Pilkington is stepping down after eighteen years as VCR for North and South Wiltshire. Sharon produced the excellent Wiltshire Rare Plant Register (*bsbi.org/wp-content/uploads/dlm_uploads/WiltsRPR2007.pdf*) in 2007, one of the first to be compiled and made publicly available, and is almost certainly the global expert on the chalk grasslands of Salisbury Plain! A pleasure to be with in the field, and wonderfully helpful for the atlas project, Sharon will be greatly missed as a VCR. Fortunately, Wiltshire seems to be a magnet for expert botanists, and Katherine Newbert now joins Richard Aisbitt as joint Recorder for the county. Thanks very much to Kat for volunteering for the role, and to Richard for his continued involvement. Our thanks are also due to James Common, who has recently volunteered to act as joint VCR with Chris Metherell for North Northumberland.

Michael Philip has been VCR for Lanarkshire (v.c. 77) for five years and has transformed recording in the county with a successful local network approach. This has involved many members and indeed non-members (appropriately, 77 recorders, so far) in local meetings, newsletters and even an annual end-of-year get together. It's a great achievement in an area previously thought to have a dearth of botanists. We were therefore delighted when he suggested he would like to try the same approach as VCR in Dunbartonshire (v.c. 99), vacant since 2019 – at least until a suitable successor VCR could be found, perhaps from the ranks of a local network. To allow him to devote more time there, and formalise the huge supporting role by Peter Wiggins (**pswiggins@gmail.com**) in v.c. 77, Peter has been appointed joint Recorder for Lanarkshire, alongside Michael. We are very grateful for the sterling work that both Michael and Peter are doing in west central Scotland.

Marion Moir was formally appointed as joint VCR for East Lothian (v.c. 82) in 2019 and Helen Jackson agreed to stay on as joint recorder to assist in the handover. After 40 years as VCR for the county, and with Marion now fully ensconced, Helen is stepping down. We are indebted to Helen for her enormous contribution to the BSBI, for her pivotal contribution to the ground-breaking *Plant Life of Edinburgh & the Lothians* project and the retrospective digitisation of its records, and of course for mentoring and supporting Marion in recent years.

I mentioned in September News that Rosaleen Fitzgerald, VCR for South Tipperary (v.c. H7), had a new email address, but the underscore within the address mysteriously vanished by the time the note went to press. Rosaleen's email is **rfitzger53_@outlook.com**, (the underscore is between the 3 and @, just in case it's not obvious here).

Vacancies: In England, there are vacancies for Buckinghamshire, Dorset (alongside Robin Walls), Essex (North and South), Surrey and East and West Sussex. In Scotland, there are vacancies in Argyll (alongside Gordon Rothero), Banffshire and Midlothian. And in Ireland, Cavan, and Waterford are currently without a VCR in post. If you, or someone you know, is interested in taking up the role of VCR (or perhaps first trying it out as a trainee VCR), and would like to discuss what is involved, then please do get in touch with me, or the relevant Country Officer, using the contact details given on the inside front cover.

Pete Stroh
BSBI Scientific and England Officer
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BRITISH & IRISH BOTANY 3: 3

The third issue of the 2021 volume of British & Irish Botany, BSBI's open access, online scientific journal, was published in September. You can view or download the papers free of charge, as well as previous issues and guidelines for submission, from the B&IB website: *britishandirishbotany.org/index.php/bib*. You can also phone us on 07725 862957 to discuss a proposal.

Ian Denholm & Louise Marsh
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British & Irish Botany Vol. 3 No. 3 (2021)

Snake's-head Fritillary *Fritillaria meleagris* (Liliaceae) in Britain: its distribution, habitats and status – *Kevin J. Walker*

The discovery of the local flora as reflected in BSBI vice-county datasets: a case study for Berwickshire v.c. 81 – *Michael E. Braithwaite*

Conservation of Britain's biodiversity: distribution and status of the Welsh endemic *Hieracium apheles*, Hepste Hawkweed (Asteraceae) – *Timothy C.G. Rich*

Sea Mayweed *Tripleurospermum maritimum* and Scentless Mayweed *T. inodorum* (Asteraceae) intermediates in Orkney – *John Crossley, Christopher A. Skilbeck*

Taraxacum dooguei and *T. dudmanianum* (Asteraceae): two new species from Britain and Ireland – *A.J. Richards*

Three new species of *Alchemilla* (Rosaceae) from northern Britain – *Mark Lynes*

Recording *Persicaria maculosa* and *P. lapathifolia* (Polygonaceae) – *Michael Wilcox*

The rise of *Vulpia myuros* (Poaceae) and the impact of cultivation-timing on plant community structure – *Michael J. Crawley*

The typification of the Linnaean name *Atriplex maritima* (Chenopodiaceae) revisited – *Duilio Iamonico*

Typification of *Vulpia attenuata* (Poaceae) – *Clive A. Stace*

MEMBER NOTICES

A new Flora of Sutton Park National Nature Reserve

The Botanical Society of Birmingham and the Black Country is currently completing a Flora of this remarkable thousand hectare medieval deer park set improbably within the Birmingham and Black Country conurbation. We hope to publish in spring or early summer in 2022. The publication is being supported by EcoRecord, the Biological Records Centre for Birmingham and the Black Country. The text will be richly illustrated with maps and photographs. There are chapters exploring the botanical interest, the vegetation, the history and archaeology of the site and checklists and introductions to the fungi and lichens.

You can register an interest in the Flora without obligation through the following link: *https://mailchi.mp/b71295daf251/the-flora-of-sutton-park* or by contacting EcoRecord at the Birmingham and Black Country Wildlife Trust, 42 Norman Street, Birmingham B18 7EP. This will entitle you to take up a pre-publication offer which has been generously subsidised by the Birmingham and the Sutton Coldfield Natural History Societies, the Wildlife Trust and other societies in the conurbation.

Ian Trueman
ianctrueman@gmail.com

The Discovery of the Native Flora of Britain and Ireland

Since publication of this in November 2017 a number of people have been kind enough to send in corrections and ideas. I expected the first, of course, and in a field where so much so many of the early records – those from 1500 up to say 1800 – is of some conjecture, given the almost complete absence of specimens, it is a pleasure to hear other views! I am extremely grateful to those who have corresponded with me and would welcome any other comments.

Some have said that it would be nice to have a new edition, possibly more lavishly illustrated than the first, but if I am being realistic I feel that this is unlikely. The economics would not stack up, and 95% of the book would be the same.

I have compiled a document of corrigenda and additions and this is available from me at the email address below.

David Pearman
dpearman4@gmail.com

An urban plant project in Hill Head, South Hampshire (v.c. 11)

In 2021 I carried out the first phase of a study of the flora of a small coastal town in southern Hampshire, using a transect method. If anyone would like more details, please contact me at the email address below.

Margaret Wonham
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COUNTRY ROUNDUPS

Compiled by Pete Stroh
peter.stroh@bsbi.org

ENGLAND

In the previous roundup, I mentioned recent discoveries for a number of glamorous species, including *Cephalanthera rubra* (Red Helleborine) and *Orchis simia* (Monkey Orchid). If the deadline for submission had been a couple of weeks later, I would have been able to also include good news about another rare species, one that was feared by many to be extinct in our area. In early September, rumours circulated about the appearance of a couple of flowering plants of *Gentianopsis ciliata* (Fringed Gentian) at its sole locality, near Wendover in Buckinghamshire (v.c. 24), where it was first discovered in 1873, and later re-discovered in 1982. The size of the Wendover population has fluctuated in the past forty years; it increased from 50 plants to a peak of 150 in 1987, but there then followed a subsequent decline, with about ten plants found in 1993, and only five plants in 2012. It had not been seen since, despite intensive searching each year. Happily, a total of four plants were recorded in 2021 in cattle-grazed turf, and were protected with wire guards to allow them the chance of setting seed. Precisely what factors were involved in its reappearance after such an apparently lengthy absence (i.e. the really interesting bit) remains unclear, though it's worth mentioning that the turf was species rich and in fairly good condition, thanks to management directed by the National Trust in recent years. Andy McVeigh made regular visits to the site to check for evidence of fruiting, and collected one capsule (under license) for the Millennium Seed Bank at Kew. After inspection, the capsule was found to contain about two-hundred viable seeds. A proportion of the material will be deposited in the bank, and the remainder propagated *ex situ*.

Cyperus fuscus (Brown Galingale), Walton Moor, Somerset. *Helena Crouch*

Statutory sites (SSSIs, NNRs) can often turn up surprises, and in North Somerset (v.c. 6) the Gordano Valley NNR revealed a first record of *Thysselinum palustre* (Milk-parsley). This species otherwise has a very restricted distribution in Somerset, at Catcott, Shapwick Heath, Westhay Heath and Ashcott Plot, although it can be quite abundant in places at those sites. The plants were found by Natural England staff in September 2020, and confirmed by Iain Diack (NE Senior Specialist for Wetlands) in July this year. Within the same NNR, at Walton Moor, *Cyperus fuscus* (Brown Galingale) teeters on the brink of extirpation but was happily still present in August 2021 when Helena Crouch located seven plants, some of them the biggest she had seen, and David Hawkins recorded *Eleocharis uniglumis* (Slender Spike-rush), a first record for the NNR for a species that has not been seen in the vice-county since 2009.

Following the rediscovery in 2017 of a single plant of *Physospermum cornubiense* (Bladderseed) for South Devon (v.c. 3), a second site has been found by Andrew McNeill within the same core area (near Braxton) where it was first recorded by T.R.A. Briggs in the 19th century. On the opposite side of the vice-county, Peter Greenwood recorded *Lathyrus aphaca* (Yellow Vetchling) as being locally abundant on cliffs behind beach huts at Seaton. Most Devon records are from East Devon between Sidmouth and Seaton, with the last record by Bill Tucker at Salcombe Mouth in 1980. The species has a befuddling mixture of native and introduced occurrences nationally, but is thought to be native at this coastal location. Revisiting promising places brings its own rewards, and in North Hampshire

Pyrola rotundifolia (Round-leaved Wintergreen), Bourley, Aldershot, Hampshire. *Caroline Reid*

(v.c. 12), Caroline Reid returned to the site of her excellent *Lythrum hyssopifolium* (Grass-poly) find (see September 2021 England roundup) at the army high-speed test track at Bourley and nearby located an even more exciting native species in good numbers, *Pyrola rotundifolia* (Round-leaved Wintergreen), new for Hampshire. Many hundreds of non-flowering rosettes were present amongst 49 flowering spikes. A visit two weeks later revealed a second site (perhaps better termed a subpopulation) close to the first, with 79 flowering spikes. Remarkably, it was later learnt that plants at this second area were also independently found by Fred Rumsey on the same day as Caroline, and two weeks previously by Dave Pearson and Helen Boyce.

There was also positive news from Surrey (v.c. 17), with George Hounsome and Caroline Bateman finding several colonies of *Clinopodium acinos* (Basil Thyme) in a 1970s housing development built on former chalk downland in the Epsom area. And in June 2021, several plants of *Anthemis arvensis* (Corn Chamomile) were recorded by Peter Wakeham among a crop of Field Beans in Northey Fields, near Ewell. Last recorded in the same field in 1961, these plants are almost certainly native to the site rather than originating from a 'wild flower' mix (which in any event is more likely to contain *A. australis*!) and, as such, are a rare occurrence in Surrey. But there was also disappointing news, with annual counts of *Herminium monorchis* (Musk Orchid) at its two better sites in Surrey showing severe declines. At one, just five flowering spikes were found (after a count in the recent past of 450), and the other site showed a similar pattern. The reasons for such a sharp decline in numbers are related to a continued loss of fine chalk turf to *Brachypodium pinnatum* agg. (Tor-grass), with the spread of this competitive grass almost certainly linked to under-grazing, the associated effects of atmospheric N deposition, and changing weather patterns (specifically, hotter and drier summers). It certainly sounds like the grazing management for these sites needs urgent revision.

Herminium monorchis (Musk Orchid). *Pete Stroh*

Anacamptis pyramidalis (Pyramidal Orchid) is not nearly as exacting as Musk Orchid, and has become common in many coastal sites in North Northumberland (v.c. 68), though it remains rare on the South Northumberland (v.c. 67) coast, with the only inland site having disappeared many years ago. However, the species has recently colonised carbonate soil-heaps by the Tyne at Prudhoe where it keeps company with other southern calcicoles such as *Clematis vitalba* (Traveller's-joy). Colt Crag reservoir, also in South Northumberland, continues to yield good finds (see January 2021 England roundup) and last summer *Carex viridula* (Small-fruited Yellow-sedge) was added to the list following sluice work that extended the drawdown zone. This is only the second vice-county record; the other one also on reservoir drawdown at Hallington.

Epipactis helleborine (Broad-leaved Helleborine) is another orchid 'on the up', and is now part of the urban scene (typically in large wooded gardens, or parks) in many parts of Britain, including Glasgow, Newcastle, Manchester, Leeds, Liverpool and doubtless most others north of Birmingham. It appears not to be able to cope with 'urban drought' experienced most summers in southern towns and cities, but on the Isle of Wight there has been

a noticeable increase in records in the past three years, notably in scruffy places such as secondary woodland, where there have been no previous records, and around supermarket car parks. Perhaps the climate here is moderated by its maritime position?

In Cumbria (Westmorland v.c. 69, and Cumberland v.c. 70), probably the best record of 2021 was actually found in West Lancashire (v.c. 60). A member of the Cumbria Facebook group recorded and photographed a strong colony of *Hypopitys monotropa* (Yellow Bird's-nest) at Dalton Crags. Sadly (for the Cumbrian VCRs), due to the differences between the administrative border of Cumbria and that of the botanical vice-county of v.c. 69, the site is technically in v.c. 60, and so whilst it can be recorded in any revised Flora of Cumbria and in the Cumbria RPR, it is not a plant of Westmorland. Fortunately, the VCRs can console themselves with the excellent discovery of a new site for *Pseudorchis albida* (Small-white Orchid) in the far north-east of v.c. 70, found by Joe Dobinson. This is a declining species in Cumbria and in England generally, so the discovery of this site in the sparsely inhabited 'wild borderlands', north of the Roman Wall, proved to be very satisfactory. In more good news, the first Cumbrian record of *Omalotheca sylvatica* (Heath Cudweed) in eleven years was found by Margaret and Jeremy Roberts at a traditional site in the Eden Valley (v.c. 70). The Cumbria RPR lists 31 post-1970 sites for this nationally Endangered species, but it has been re-found at only four of these since 2000. A more unwelcome find, at least as far as cereal farmers are concerned, is the discovery of *Bromus secalinus* by Roy Atkins when, while waiting for a farmer to vacate a minor road east of Carlisle (v.c. 70), he looked over the wall into a wheat field and saw hundreds, perhaps thousands of plants, towering over the wheat. This grass has spread rapidly across much of southern and central England in recent years, and though records from Cumbria have been in short supply previously, with two this century and only five in the previous two centuries, I have a feeling that there will be further records to report in the years to come.

Dactylorhiza × *hallii*, Leash Fen, Derbyshire. *Mick Lacey*

In Derbyshire (v.c. 57), *Dactylorhiza* × *hallii* (Heath Spotted-orchid × Southern Marsh-orchid) was found by Mick Lacey on Leash Fen in June 2021 with both parents, and confirmed by Ian Denholm as a new county record. The gametophyte of *Trichomanes speciosum* (Killarney Fern) was discovered by Tom Blockeel at Shining Cliff Wood on the underside of a large gritstone boulder. This is only the second record for this taxon in Derbyshire, and a welcome one too, as nationally the gametophyte appears to be very under-recorded this century. Last but not least, we head to North-east Yorkshire (v.c. 62), where Ambroise Baker has re-discovered a small colony of *Diphasiastrum alpinum* (Alpine Clubmoss) at Danby Beacon, later confirmed by Fred Rumsey. This is only the fourth record for the vice-county, and the first for 33 years.

As ever, thanks to all who have sent in contributions, and special thanks to John Richards for his musings about the spread of Broad-leaved Helleborine.

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WALES

In Monmouthshire (v.c. 35), surveys of arable fields by Steph Tyler and Elsa Wood have been rewarding, with new hectad or tetrad records for *Euphorbia exigua* (Dwarf Spurge), *Lamium amplexicaule* (Henbit Dead-nettle) – only the second post-2000 record – and *Stachys arvensis* (Field Woundwort), as well as a range of alien species such as the increasingly widespread *Bromus secalinus* (Rye Brome), *Panicum capillare* (Witch-grass), *Setaria verticillata* (Rough Bristle-grass) and *S. pumila* (Yellow Bristle-grass), mainly in maize crops. Lauri MacLean also found

the latter species by a dual carriageway between Raglan and Abergavenny as well as *Kickxia elatine* (Sharp-leaved Fluellen) and a host of other arable species. Julian Woodman recorded *Briza minor* (Least Quaking-grass) in a maize field near the River Usk, the first sighting in the vice-county since 2003.

A species new to Monmouthshire, *Laphangium luteoalbum* (Jersey Cudweed) was found by Lee Gregory in August, growing in a plant pot with a dying conifer at a school in Garndiffaith. Jersey Cudweed has undergone a population explosion in the last decade, having previously been on the verge of extinction in Britain in the 1980s, and is fast becoming a regular pavement weed. One plant of *Verbascum lychnitis* (White Mullein) turned up adjacent to a maize field down on the levels near St Pierre Pill; the only other site for it in the county is at Rogiet Country Park. *Chenopodium glaucum* (Oak-leaved Goosefoot) continues to turn up at inland as well as coastal sites. Steph Tyler and Elsa Wood found seven plants by a muck heap near Llangovan, one plant in the gateway of a farm near that village and many plants on the bare mud at the edge of a lake near Raglan, among hundreds of young plants of *Chenopodium rubrum* (Red Goosefoot). Elsa Wood and Adrian Wood found another site away from the coast. With more than ten locations now known, it no longer qualifies for the Rare Pant Register.

In Brecknockshire (v.c. 42), Julie Bell recorded *Lycopodium clavatum* (Stag's-horn Clubmoss) on Llangoed Common in October, and when the Brecknockshire Botany Group went to assess the population, they found a very large amount among *Ulex europaeus* (Gorse) under recently mown *Pteridium aquilinum* (Bracken). At least a hectare of the common in the area was found to have a high coverage of the plant.

Bromus secalinus (Rye Brome). *Pete Stroh*

In Carmarthenshire (v.c. 44) the 2020/21 *Taraxacum* (Dandelion) collections have been identified by Prof John Richards. John was able to determine 146 of the 178 specimens submitted, among which were first vice-county records of *T. chloroticum, T. semiglobosum, T. subheulphersianum* and *T. trilobatum*, bringing the total number of *Taraxacum* taxa recorded in v.cc. 44 to 154. The collections also included six new sites for the relatively newly described *T. chlorofrugale* which add to the five or so recorded previously, thus nearly doubling our knowledge of the taxon.

In Cardiganshire (v.c. 46), two plants of *Parentucellia viscosa* (Yellow Bartsia) appeared from the seed bank after an apparent absence of 14 years at the former Goginan metal mine, on a patch of ground disturbed by Japanese Knotweed clearance. It was originally introduced with a seed mix used in the c. 1991 'restoration' scheme at the mine; the scheme however, gave and took as it also rendered *Sabulina verna* (Spring Sandwort) extinct in the county. And in a wet field beside the Afon Dyfi at the Ynys-hir RSPB reserve, *Cotula coronopifolia* (Buttonweed), new for the vice-county, was found in abundance. Andy Jones reported that *Polypogon viridis* (Water Bent) is on the rampage in west Wales. Steve Chambers was the first to discover this alien grass in v.c. 36, finding it in some abundance near to Aberystwyth bus station at the beginning of May, and other plants were then found outside the Morlan Centre, along North Parade with *P. monspeliensis* (Water Bent) and lots of *Vulpia myuros* (Rat's-tail Fescue), in

flower beds on the Promenade under the Castle and elsewhere. It was also frequent in May along Church Street in Newquay and will almost certainly be found in other coastal towns – and probably inland. This increase and expansion in the range of *P. viridis* has been marked for some time elsewhere in Britain and the species might well have been expected in Cardiganshire some time. The west coast of Wales, and particularly Cardiganshire, stands out in the latest Atlas data as a gap in the species' range. The near-simultaneous occurrences this year, however, in several well-dispersed sites, is still remarkable. An excellent blog-post on the Botany in Scotland website *botsocscot.wordpress.com/blog-2* draws attention to its mysterious and little-understood dispersal but is probably right to suggest transport on car tyres. Nonetheless, as Steve Chambers points out (pers. comm.), its concentration along the base of walls could also be, at least locally, dog-distributed (sniffing at the base of walls)! Andy Jones found plenty of *Crassula tillaea* (Mossy Stonecrop), another species that has taken off in Britain over the past two decades, at Morfa Dyffryn where the footpath from the railway station enters the dunes and leads along an unmetalled road back to the airfield. It has possibly come from the airfield where it is well-established in tightly grazed dune grassland nearby. Arthur Chater and others found this small succulent recently at Llanrhystud and it seems to have turned up in other places around caravan parks.

In Montgomeryshire (v.c. 47), several dozen plants of *Viola* × *bavarica* (*V. reichenbachiana* × *V. riviniana*), a county first, were found by Lizzie Beare, and later

Viola × *bavarica*, Montgomery. *Lizzie Beare*

confirmed by Mike Porter, on a bank in Montgomery. A couple of flowering spikes of *Platanthera bifolia* (Lesser Butterfly-orchid) were discovered near Llanerfyl by Isobelle Griffith and later confirmed by Ian Denholm in what is probably now the only site in the county for this Priority Species in Wales. And three flowering spikes of *Dactylorhiza purpurella* (Northern Marsh-orchid) were located in a damp riverside meadow at the northern end of Vyrnwy by Gill and Peter Foulkes. This is a new site for a scarce species in Wales. There were numerous other notable discoveries in 2021, all of which are rare, scarce, or uncommon in Montgomeryshire, and most found at new sites. These included *Agrimonia procera* (Fragrant Agrimony), which Kate and John Thorne noted as being frequent along a green lane near Sarn; the first county record in 30 years for *Alopecurus aequalis* (Orange Foxtail), found by Ruth Dawes in a man-made pool on a local nature reserve at Llanfyllin; and only the second extant site for *Trocdaris verticillata* (Whorled Caraway) in v.c. 47, with at least a hundred flowering plants recorded by Gill and Peter Foulkes in a damp meadow at the edge of the Dyfi Forest.

From Caernarvonshire (v.c. 49), Wendy McCarthy wrote that Tim Rich visited the Great Orme to collect *Hieracium* seeds and kindly took away some pressed specimens for identification. *H. gentile* (Foreign Hawkweed) from Y Felinfeli is a first Welsh record, and *H. exotericum* (Jordan's Hawkweed) and *H. triviale* (Grey-headed Hawkweed) from Great Orme are new hectad records. Other new Welsh records include two non-flowering plants of *Salvia hispanica* (Chia) on waste ground near Conwy and four healthy clumps of *Agapanthus praecox* (African Lily) growing along a wall base in Llandudno. Two plants of *Catananche caerulea* (Blue Cupidone) were found growing on a sandy shore near the Little Orme, their attractive blue flowers thought to be Cornflowers from afar. Matt Sutton discovered a single clump of *Carex* × *luteola* (*C. lepidocarpa* × *C. distans*) confirmed by Mike Porter, while surveying at Glaslyn Marsh. This taxon is also new to Wales. The most curious county record was of *Cyperus eragrostis* (Pale Galingale), growing in tarmac at the side of a residential road. It has flowered and apparently set seed but is not expected to survive. New hectad records also include those of spreading species such as *Verbena bonariensis* (Argentinian Vervain), *Senecio inaequidens* (Narrow-leaved Ragwort) and *Polypogon viridis* (Water Bent). Less welcome were several spreading mats of *Acaena novae-zelandiae* (Pirri-

pirri-bur) around the edges of a car park at Surf Snowdonia, perhaps imported in car tyres.

Lizzie Wilberforce who is Editor of *Natur Cymru* and co-founder of the Initiative for Nature Conservation Cymru, was appointed Plantlife Cymru Lead in 2020; Lizzie has worked in conservation in Wales for the last 18 years, with a particular focus on nature reserve management. Robbie Blackhall-Miles from Llanberis, an active BSBI member in north-west Wales, has just been appointed Natur am Byth Vascular Plants Officer with Plantlife Cymru, a post which will see him deliver plant conservation projects for some rare and scarce Welsh Plants.

In Denbighshire (v.c. 50), recorders have been busy updating records for the scarcer taxa of the county, with many more records from urban areas, including *Polypogon viridis* (Water Bent), *Senecio inaequidens* (Narrow-leaved Ragwort), now found in more hectads along main roads, and *Conyza floribunda* (Bilbao's fleabane), a first for the county, found in a car park of the ATS garage in Denbigh. After a huge amount of work, the latest edition of the Rare Plant Register is available on the BSBI website, and printed copies are available on request from the VCR (see details on the county page of the website).

Several active botanists in Wales, namely Debbie Evans, Arthur Chater and Ray Woods, were involved with the recently published and very reasonably priced book titled '*White Moulds,* Ramularia *and* Phacellium *Anamorphs, in Wales and Britain: a Guide and Welsh Census Catalogue*'. This is the fifth volume in the series covering phytoparasitic microfungi by the Welsh Microfungi Group, is richly illustrated, and is a fantastic introduction to the fungal pathogens that infect a wide range of plants.

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Catananche caerulea (Blue Cupidone), Little Orme, Caernarvonshire. *Wendy McCarthy*

SCOTLAND

The Scottish Botanists' Conference (SBC) was held online again this year, and had the biggest attendance ever with 282 people attending at some point in the programme, and well over 200 for most of the day. Jim McIntosh, Scottish Officer, also reports that there were some great comments in the feedback like 'All the talks were of such a high standard: as good as one would expect at any international scientific meeting' and 'We were made to feel like we were in the room – it was one of the best online events I have participated in'.

The conference featured a wide range of interesting talks which are available to view online: *scottishbotanistsconference.org*. Sarah Watts gave an impressive presentation reviewing 40 years of rare plant monitoring on Ben Lawers NNR. She was followed by Jeff Waddell talking about a joint NTS/BSBI expedition to the remote West Affric Estate in July, following in the footsteps of a much earlier BSBI trip there led by Rod Corner in 1974. The weather was superb and they had many excellent finds, with new sites for several rarities including *Omalotheca norvegica* (Norwegian Cudweed) in Coire Ghaidheil, *Sagina saginoides* (Alpine Pearlwort) and *S.* × *normaniana* (Scottish Pearlwort) on Sgurr nan Ceathramhnan, and *Melampyrum sylvaticum* (Small Cow-wheat) which is plentiful on rock ledges and in gorges. They also refound *Luzula arcuata* (Curved Woodrush) on Sgurr nan Ceathramhnan (West Top), last seen there in 1947 and present in all three vice-counties that meet there.

This year the SBC included two excellent online workshops, on larches (*Larix* spp.) and polypody

ferns (*Polypodium* spp.), which are also available online. The second of these, given by Rob Cooke, covered the evolution, ecology and identification of our three native species as well as the various hybrids between them. Skye Botany Group is undertaking a project to record some of these polypodies, as well as two species of *Ophioglossum* (Adder's-tongues), notably *O. azoricum* (Small Adder's-tongue), which is quite widespread on Raasay but has only four known sites on Skye. They are doing this in conjunction with the Darwin Tree of Life Project; this ambitious project aims to sequence the genomes of all 70,000 species of eukaryotic organisms in Britain and Ireland, with a range of partners including Edinburgh University and the Royal Botanic Garden Edinburgh (RBGE).

SBC also featured a range of exhibits. These include one by RBGE showing some of the species sampled for the Darwin Tree of Life project. Others highlight interesting finds by vice-county recorders across Scotland, from bindweeds on Mull to aliens in Aberdeen, and from hawkweeds on Skye to the flora of cemeteries in Dundee and Easter Ross – do take a look – they can also be seen on the website at the address above.

Two remarkable finds at Corrour last summer were reported in one of the SBC exhibits. At the end of July, I received a photo from a neighbour of a puzzling plant with three large pink petals, seen on the edge of Loch Ossian. It proved to be *Baldellia ranunculoides* (Lesser Water-plantain) subsp. *repens*, the first record for Westerness. Further investigation by Corrour Estate Conservation Manager Sarah Watts and Richard Marriott (using his canoe) showed it to be widespread around the loch, though more frequent on the northern shore. Additional sites were found downstream in the River Ossian and Loch Guilbin. This subspecies is known from very few sites in Britain, but more sites surely await discovery.

But the excitement was not over. In September Sarah received a photo from the estate stalker of another new plant, this time from Loch Treig, a large reservoir just 5 km to the west of Loch Ossian. It was *Illecebrum verticillatum* (Coral-necklace), far beyond its known distribution in the south of England. Sarah discovered it to be hugely abundant at the southern end on sandy substrates in the drawdown zone (*see photograph on front cover of this issue*), and I later found it to be plentiful at the northern end near the dam (*photograph opposite*). Loch Treig forms part of the huge hydroelectric system constructed for aluminium production in Lochaber in the 1930s, and this summer the water was as low as anyone can remember, seemingly providing ideal conditions for this species, but how it came to be in Loch Treig is a mystery.

Two Special Areas of Conservation (SACs) on Islay, the Rinns of Islay and Duich Moss, are included in the CANN project (Collaborative Action for the Natura Network). The CANN Conservation Officer on Islay, Angharad Ward, discovered a new site there for *Spiranthes romanzoffiana* (Irish Ladies'-tresses) last summer. A total of 14 flowering spikes was recorded in a rather unusual habitat, scattered along a track for about half a kilometre. Although relatively frequent on Colonsay and several other Hebridean islands, this orchid is scarce on Islay, with only four small populations known previously.

There were some good finds in Shetland last year. The Nationally Scarce *Lycopodium annotinum* (Interrupted Clubmoss) was discovered as (possibly) new to the islands by Rory Tallack. It has since been found at 13 sites – all within or very close to the Viking Windfarm site in central Mainland. Interestingly it seems to grow on areas of recovering degraded blanket bog, where *Neottia cordata* (Lesser Twayblade) also seems to do well. I say 'possibly'

Baldellia ranunculoides subsp. *repens* (Lesser Water-plantain), Loch Ossian, Westerness. *Sarah Watts*

Illecebrum verticillatum (Coral-necklace), Loch Treig, Westerness. *Ian Strachan*

because Jim McIntosh tracked down a rather diminutive specimen named as this species from Shetland dated 1875 in Bolton Museum, of all places, via the excellent HerbariaUnited website.

Our other twayblade species *N. ovata* (Common Twayblade) is far from common on Shetland; indeed the first record was only made in 2016, beside a track to an isolated house at Cunningsburgh. Three spikes were found there again in 2021 by Joan Halcrow, though how it got there is unclear. It is common in Orkney and the north mainland coast but scarce in much of the Highlands. *Campanula rotundifolia* (Harebell) is another 'common' species that is rare in Shetland (and Orkney). Local Recorder Paul Harvey was pleased to report that it was rediscovered at one of its very few native sites (Islesburgh, north Mainland) – the first record this millennium, other than a 'rather suspicious clump' that appeared next to the main road between Lerwick and Scalloway.

On Orkney, John Crossley has been grappling with mayweeds. A joint paper in *British & Irish Botany* with Christopher Skilbeck (2021) describes their investigations into *Tripleurospermum maritimum* (Sea Mayweed) and *T. inodorum* (Scentless Mayweed) on the islands, and found a complex situation regarding hybrids, involving the northern subspecies of *T. maritimum*, subsp. *nigriceps*. Nothing's simple!

Following the production of a County Rare Plant Register (CRPR) for Midlothian, Barbara Sumner has followed Michael Braithwaite's admirable lead in Berwickshire by producing a Botanical Site Register. Unlike a traditional RPR, it presents the data ordered by hectad and then site. This makes the data more accessible for users such as conservation managers, and many others. Both versions are available on the Midlothian page of the BSBI website (*bsbi.org/midlothian*).

Finally, an apology. In the last Scotland Roundup (September 2021) there was a photograph purporting to be of *Carex vaginata*, that was actually *Carex pilulifera*. *Carex vaginata* was present but I supplied the wrong photograph.

Reference

Crossley, J & Skilbeck, C.A. 2021. Sea Mayweed *Tripleurospermum maritimum* and Scentless Mayweed *T. inodorum* (Asteraceae) intermediates in Orkney. *British & Irish Botany* 3(3): 297–323.

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IRELAND

It has been another busy period in Ireland since the last issue of *BSBI news*. We've wrapped up our projects for the year, hosted the Irish Autumn Meeting, and said goodbye to Paul Green as interim Ireland Officer when I returned from maternity leave. The first thing I'd like to say is a huge thank you to Paul for all his hard work over the last year! Of course, he isn't leaving us completely – he continues as joint VCR for Wexford and is sure to be involved in projects and training again in 2022.

The Irish Autumn meeting was held online again this year on Saturday, 25 September, with more than 80 people logging in to take part. There was a broad range of talks, starting with introductions from our new CEO, Julia Hanmer, and our new Fundraising Manager, Sarah Woods. This was followed by a talk on the cultural significance of plants by Kevin Whelan, two talks on Fragrant-orchids by Richard Bateman, an overview of the botany and wildlife of Castletown Demense by Rory Finnegan, and talks by Paul Green on rare plant recording and this year's Aquatic Plant Project and Irish Grasslands Project. Recordings of all the talks can be viewed on the BSBI YouTube channel and are linked at *bsbi.org/irish-autumn-meeting-agm*.

Speaking of projects, the Aquatic Plant Project has now been going for three years! We had another great season in 2021, with 8 field days and three webinars. Since it began, the project has included three in-person aquatic plant identification workshops, 41 field training days, five days of small group herbarium-based mentoring, five webinars and one interactive online workshop. In person 180 people have participated, with hundreds more joining online. The project has also contributed around 7500 aquatic plant records across 29 vice-counties. Huge thanks to the National Parks and Wildlife Service (NPWS), Centre for Ecological Data and Recording (CEDaR), Paul Green, Nick Stewart, and the many others who have contributed to this project over the years. If you'd like to know more or view our aquatic plant resources, check out *bsbi.org/aquatic-plant-project* or see our exhibit on from the Annual Exhibition Meeting at *aem.bsbi.org*. Also keep an eye out for updates as we're now planning year four!

The Irish Grasslands Project also had a successful second year which included 5 field days in Counties Cork, Kildare, Wexford and Laois. There were also a number of webinars and talks: 'Yellow members of the Daisy family', 'Introduction to Meadow-grasses and Bents', 'Introduction to Cinquefoils, *Potentilla erecta*, *reptans* and *anglica* and their hybrids' and 'Why and how Fragrant-orchids are split into three species'. Recordings of these talks, the talks from 2020, and other resources are all available to views at *bsbi.org/irish-grasslands-project*. Thanks to NPWS for support and to Paul Green, Fionnuala O'Neill, Brenda Harold, Richard Bateman, and everyone else who has contributed to the project this year.

It has been a good year for recording across Ireland. So far nearly 62,000 records from across Ireland have been added to the BSBI database for 2021, including almost 44,000 from the Republic and nearly 18,000 from Northern Ireland. While many more records have not yet made it to the DDb, what is there provides a good indication of some of the highlights.

Vice-county recorder Rory Hodd, mentioned a few highlights from Co. Kerry, including his discovery of a second population of *Stenogrammitis myosuroides*, the new fern species for Ireland that Rory first discovered in 2019. The new population was found in the Killarney National Park, in a remote woodland approximately 5km from the first population. Also in Co. Kerry, Helen Lawless of Mountaineering Ireland, found *Oxyria digyna* (Mountain Sorrel) and *Asplenium viride* (Green Spleenwort) on Mullaghanattin on the Iveragh Peninsula, neither of which had been seen in that hectad since 1977. An unwelcome species new to Kerry was *Crassula helmsii* (New Zealand Pigmyweed) from the Killarney National Park, reported by Daniel Kelly. The patch has since been eradicated by the park rangers and it is hopefully not present elsewhere in the National Park.

Asplenium viride (Green Spleenwort), Mullaghanattin, Co. Kerry. *Helen Lawless*

In news from the North, Tyrone VCR Ian McNeill highlighted several excellent records. Following on from his *Potentilla intermedia* (Russian Cinquefoil) find which was reported in the last BSBI News, Ian also found Bromus secalinus (Rye Brome) in 2021 at the edge of a cereal crop field at Grange. This species was last recorded in Co. Tyrone in 1896 and there are only 10 records of it across all of Northern Ireland in the DDb. Elsewhere in Co. Tyrone, Noeleen Smyth (University College Dublin), Matthew Jebb (National Botanic Gardens) and Abigail Kilgore (DAERA) revisited the only *Rubus chamaemorus* (Cloudberry) site in Northern Ireland, in the Sperrin Mountains in June 2021. They found a colony consisting of 141 leaves which even included two spent flowers! During this visit cuttings were taken, under NIEA licence, so that the NBG could study the colony and determine if it is all one male clone as previously thought. When the colony was first found in 1826 by Jones and Murphy it was in flower, but flowers had not been seen since.

Eoin McGreal has been making excellent headway as new Vice-county Recorder for West Mayo. In terms of rarities, Eoin recorded *Atriplex portulacoides* (Sea-purslane) at Carrigeenglass, Clew Bay, a county first for West Mayo, and a second vice-county record for *Ranunculus auricomus* (Goldilocks Buttercup) at Killawullaun, Killavally. He and Hazel Doyle re-confirmed *Sanguisorba officinalis* (Great Burnet) at two sites and *Spiranthes romanzoffiana* (Irish Lady's-tresses)

at one site at Lough Conn in 2021. Eoin also recorded *Spiranthes romanzoffiana* at Lough Mask and *Juniperus communis* (Common Juniper) at Garrow, Westport, both hectad firsts.

Ralph Sheppard (VCR for West Donegal) reported a first vice-county record for East Donegal, which is also a first county record for Donegal. Ralph found a fine patch of *Galium album* (Hedge Bedstraw)/ syn. *Galium mollugo subsp. erectum* (Upright Hedge Bedstraw) at Drumbarnet Lower. He first spotted it in July, but it continued to flower for much of the season.

Paul Green has been prolific in his recording of rarities as always, despite the extra time he was engaged with BSBI Ireland Officer business in 2021. Paul found a new native species for Wexford: *Carex punctata* (Dotted Sedge) at Ballyhack, on rocks above the tidal River Suir. He spotted the leaves in March, then returned in July to confirm the identification. Paul also recorded a number of rarities while conducting Clubmoss surveys in Galway and Mayo, including *Huperzia selago* (Fir Clubmoss), *Salix herbacea* (Dwarf Willow), *Sisyrinchium bermudiana* (Blue-eyed Grass), *Sparganium angustifolium* (Floating Bur-reed), *Diphasiastrum alpinum* (Alpine Clubmoss), *Sagina subulata* (Heath Pearlwort) and *Thalictrum alpinum* (Alpine Meadow-rue). Paul described all these finds in more detail in his talk for the 2021 Irish Autumn Meeting, which can be viewed on the YouTube channel.

We were delighted to resume field meetings in 2021, with six taking place across Ireland, giving people a chance to botanise together and explore different habitats. For example, VCR John Conaghan reports that at the field meeting at the Moycullen/Ross Lake area of Co. Galway, a variety of woodland and lake margin areas were explored. In addition to reconfirming populations of locally rare species such as *Neottia nidus-avis* (Bird's-nest Orchid) and *Rubia peregrina* (Wild Madder), new populations of *Luzula pilosa* (Hairy Wood-rush) and *Carex divulsa* (Grey Sedge) were found, both of which are very rare in West Galway. Field meeting reports will be included in the next issue of Irish Botanical News, and we are now planning an exciting schedule of field meetings and other events for the coming year. We hope to meet up with many members, new and old, throughout 2022!

Diphasiastrum alpinum (Alpine Clubmoss). *Paul Green*

Carex punctata (Dotted Sedge), Ballyhack, Wexford. *Paul Green*

Sisyrinchium bermudiana (Blue-eyed-grass). *Paul Green*

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OBITUARIES

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ANNE HORSFALL (1927–2021)

Anne Horsfall, who died on 24 June 2021, was a remarkable woman and respected amateur botanist. Perhaps because of poor health in her last decade, she had left the BSBI and she may now only be remembered by those who were her contemporaries, her family and many friends. However, her contribution to, and interest in, botany over her lifetime was great.

Anne came from a wealthy and high achieving background. Her father, Ewart, served in the Army and Royal Flying Corps in World War I in France, and was awarded both a Military Cross and a Croix de Guerre. He had won a Gold medal rowing in the 1912 Olympic Games in Stockholm, and after the war he won a Silver medal at Antwerp in 1920. Her mother, Myra, had a lifelong interest in travel and adventure. Anne inherited this stamina and 'wanderlust' from her parents. She was born on 27 March 1927 and grew up at the family home near Cheltenham, alongside her two older brothers. She went to Cheltenham Ladies' College, and then on to Oxford, where she read Botany at Lady Margaret Hall, graduating with a Class III degree in 1949.

Anne first joined the BSBI in 1946 and attended a field meeting in Glen Affric in 1947, held to survey an area threatened by hydroelectric development. The other participants included a host of distinguished (or subsequently distinguished) botanists, including Maybud Campbell, Mary McCallum Webster, Canon Charles Raven, John Raven, Noel Sandwith, Douglas Simpson, Tom Tutin, Eleanor Vachell, Ted Wallace, Max Walters, 'Heff' Warburg and Alfred James Wilmott. She recalled some of the party going into huddles and heard that they were discussing Rum, but it was only when Karl Sabbagh's book *A Rum affair* appeared in 1999 that she realised that they must have been discussing the remarkable Hebridean records emanating from Prof. J.W. Heslop Harrison and his team.

Anne Horsfall

After graduating, Anne taught overseas for many years, first in Canada and then, drawn to Africa, in Uganda, Malawi and finally Kenya. Her brothers were farming there, and her last teaching post was quite close to them. Anne went on safaris all over East Africa during these post-war years. Since climbing was her main and favourite pastime she joined the Mountain Club of Kenya and climbed the Ruwenzoris, Mount Kenya and Kilimanjaro – the highest peaks in Africa. She had great physical and mental stamina, was a strong walker yet, as a

botanist, she always took time to observe the plants at every altitude.

Returning to England in the 1970s, Anne settled in Stoborough near Wareham, Dorset, in a house she inherited from her mother. Anne always claimed that Dorset had more flowering plants than any other county in England. The hectad in which she lived, SY98, certainly had the highest number of native species in the BSBI's *New Atlas* survey, which appears to support her claim! Anne explored across the county, and soon became a recognised expert on the flora of Dorset. She was also a much-valued member of the Dorset Wildlife Trust (DWT), with which she was actively involved for over 40 years. She was on the DWT Committee, several of the DWT nature reserve management committees, and a leader of field excursions and surveys.

Anne's curiosity for the nature around her, and her energy in exploring new places and finding new plants, was insatiable. As an educator she believed in sharing her knowledge and encouraging others in her passion for plants. She accompanied Butterfly Conservation transect walks and played a valuable role as plant identifier. She carried out an extensive fieldwork project, revisiting many of the localities that Ronald Good had surveyed in the 1930s when writing *A Geographical Handbook of the Dorset Flora* (1948). Anne's observations of the changes in plants and habitats that had occurred in the intervening 40–50 years were published in a series of papers published in the *Proceedings of the Dorset Natural History and Archaeological Society* between 1981 and 1987, with a further paper on change in 1990. She also wrote papers on Dorset's Domesday and medieval woodland (1997, 1998), two books, *Names of wildflowers in Dorset* (1991) and *Discover Dorset: Woodlands* (1997) and the chapters on coastal and woodland habitats in the DWT publication *The Natural History of Dorset* (1997). She also contributed captions for many species of Scrophulariaceae to the *New Atlas* (2002).

Anne was a modest but talented artist, who preferred to work with watercolours. She was inspired by Mary Grierson, and possibly her great-great-grandmother, Dorothy Horsfall, a notable flower illustrator. Her botanical/flower paintings were wonderful and many adorned the corridors of her house. She enjoyed attending the amateur painting courses in the local village hall, and happily rose to all the challenges set by the tutor, while enjoying the company of the other participants.

Anne's home was immediately adjacent to Stoborough Heath NNR, and close to Hartland Moor NNR. The garden, though extensively planted with shrubs (rhododendrons, camellias, azaleas) and trees, with a pond, vegetable patch, and prized rockery, was latterly essentially left to be an extension of the heathland. The lawn was colonised by several species of orchid, which Anne loved, as well as ants that attracted Green Woodpeckers. As time passed and she was less able to get outside, the garden became even more wild. On one visit we counted eleven very large wood ant nests, and badgers had established a large sett. Once, when camping on her lawn, a mole made its presence known to us under the tent, and the churring of Nightjars finally brought sleep! While she was able Anne would delight in hunting for different fungi around the garden and identifying them all, and she kept an eye on the Dorset Heath (*Erica ciliaris)* and Marsh Gentian (*Gentiana pneumonanthe)* just beyond the fence. It was a naturalist's paradise.

Despite her very close attachment to Dorset, its wildlife and conservation, Anne did not give up her travels in search of new places and plants, until ill-health prevented it. Expeditions included Afghanistan, the Nepal Himalaya, Egypt and Arabia, and the Antarctic; not forgetting a visit to the Highlands of Scotland for her favourite arctic-alpines on Ben Lawers, and then north around Inverness, with Margaret Barron, then Recorder for Easterness.

Lastly, but by no means least, Anne was a caring sister, a no-nonsense aunt and cousin, full of fun and humour, happily sharing her knowledge and expertise throughout her life. She joined her family whenever possible; she bowled a mean ball at cricket, and when nearly 80, volunteered as goalie at one family Christmas football match. Remarkable indeed!

We thank the following for their contributions: Anne's family, her friends, David Pearman (for the paragraph on the Glen Affric meeting), Nigel Webb (Trustee and former Chairman of the Dorset Wildlife Trust) and Hannah Wiler (Dorset Wildlife Trust).

Ron and Lynnette Youngman

ROBERT DESMOND MEIKLE, OBE, LLB (1923–2021)

R.D. Meikle, always known as Desmond, was one of the most important botanists of the last hundred years and a remarkable character. His superb scientific abilities are confirmed by the colleagues and botanists he helped, while affectionate stories of his charm, wry humour, loyal friendship and mischievous (though always kind) sense of humour would fill a volume the size of Stace 4!

In writing this obituary, we have found ourselves overwhelmed with good material. Within Somerset alone we have countless memories and botanical records. In 2014 when Desmond made the decision (after a shaking fall in his precipitous garden) to move into sheltered housing, he was very clear about his wishes and remained very lively and engaged until a final year of repeated illnesses. When he moved he told Jeanne and Tim Webb, with one of his rather toothless grins, 'I intend to *linger*' and to all of our delight he did just this. So this piece will attempt to honour his memory on many levels, of science, achievement, history and affection. With restricted space everyone's favourite Meikle stories must be omitted but we have included brief quotations from the considerable correspondence we have received.

Desmond was born on 18 May 1923 in Newtownards, Co Down into a family with connections on both sides to the linen industry which was of major importance to Northern Ireland in the early 20th century – his father, George Mather Meikle, managed the Irish Tapestry Company which made household textiles. Sadly he died when Desmond and his twin brother Eric Alexander (younger by a couple of minutes) were only six years old, leaving them and their elder brother James Mather to be brought up by their mother Sydney (née Mulligan). She was an enormously beneficial influence in the lives of the boys. Part of her background was on the land, and after her husband's death she became quite reclusive, spending all her time with her sons. This led to a key event in Desmond's life. When he was nine Sydney took the twins to Kew Gardens for a holiday treat. Desmond was 'entranced', and afterwards called the gardens 'paradise'. His mother also started him gardening and looking at local wild flowers. He always carried in his wallet a tattered scrap of paper with a poem 'The Nature Lovers' written out (and authored?) by her, and his lifelong passion for plants clearly owes much to this early influence. All his life he seems to have used her way of thinking as a touchstone for good.

Desmond Meikle in the herbarium at Kew. *Loutfy Boulos*

He was tutored at home by an (obviously excellent) retired schoolmistress before going to the Royal Belfast Academical Institution and from there, in 1940, to Trinity College Dublin, achieving an entrance scholarship and a first class honours

degree. His subject in these years was law, and his excellent Latin already caused comment. In later years he was often called on to help more struggling linguists when they had to prepare the descriptions of new species. During the years in Dublin his plant interests also developed strongly through his contacts with the great A.W. Stelfox, and with Prof. H.H. Dixon who gave Desmond a privileged key to Trinity College Botanic Garden. After college he began work in the North as a solicitor, but started botanising in Co Fermanagh with three friends (also Ulstermen), Norman Carrothers, Jack Moon and Robert Davidson. This happy gang of musketeers explored the county flora for some twelve years, up to 1957, and they added some famously good plants to the county list, including *Ranunculus lingua*, *Vaccinium oxycoccos* and most notably *Cirsium heterophyllum*. 'The foursome set a standard [of recording] that has been hard to equal and impossible to surpass' according to Robert Northridge, though the 'sense of fun and freedom' given by the group's adventures in the post-war years is also mentioned.

The most significant shift in Desmond's life had come in 1946, when the gap he perceived between law and justice 'disgusted' him when working as a solicitor and he applied for an English Civil Service job. During the interview he was treated in an offhand, insulting way, and although he was offered the job shortly afterwards, it was too late – the guardian spirit of botany had intervened. Annoyed by his clash with bureaucracy, he went that afternoon to Kew to refresh his spirits in the gardens. There he met Ernest Nelmes (of sedge fame). They had corresponded and now talked. Nelmes, with supernatural foresight, said 'Why don't you get a job here?'. Edgar Milne-Redhead, then in charge of the Kew African Section, became involved and together they persuaded the Keeper of the Herbarium, Dr W.B. Turrill, to take Desmond on as a temporary assistant. He did not leave until his retirement in 1984!

Obituaries have appeared in various publications (including *The Times* and *Irish Naturalists' Journal*) all giving details of his career and achievements. A notably beautifully-written one is by Belyaeva & Brough (2021). It includes twelve meticulously collated pages listing Desmond's 96 publications (a very difficult task as Desmond himself said he couldn't remember how many papers he had written), the 71 new taxa he described and his 58 new combinations and replacement names, 48 new combinations and replacement names based on the names he published and 10 plants named in his honour (he laughed about these, saying the plant was always the ugliest in its genus). There are also three unpublished works – these were two papers which exist as typescripts in the library at Kew, but the third is more important in this story.

Desmond wrote a fascinating, and in places outrageous, account of his life which he called *Tantus Amor Florum*, distributed to a few close friends with the warning that it must *never* be published. Of course it 'escaped' over the years, and after his death a surprising number of people told us about it and sent us the document. The Webbs, as his executors, decided to obey his wishes, so no extracts will appear here except for his mention in the introductory paragraph of his 'love-affair with flowers', and his statement 'Deprived of flowers I should unquestionably die'. Mercifully he never lost their company, and one of the most touching elements of his memorial lunch was a 'parish bunch' assembled in the hall from different flowers brought by those attending.

His first big Kew task was to go to Nigeria to research the distribution and properties of *Strophanthus sarmentosus*, a vine containing chemicals thought to be of great medical value and also reported to be used by indigenous peoples as an arrow poison. Significant botanical discoveries were made but the research was finally aborted, leaving Desmond with 'unfinished business' which nagged him for the rest of his life. Back in England he was put in charge of the Europe and Orient (Middle East) section of the Herbarium. This first involved a rather unsatisfactory experience with a tricky sponsor for a Flora of the Greek island of Chios, but led eventually to the *Flora of Cyprus*, appearing in two volumes, the first in 1977 and the second in 1985. This flora is still praised and admired as a superlative work. Eric

Clement says that 'the descriptions … are some of the best in any Flora' and Arthur Chater regards it as 'the model and best of what [such a work] should be'. Former Cypriot colleagues, including Dr Charalambos Christodoulou, told us that the two volumes are 'definitely the Bible' for them, 'accomplished through the extensive knowledge, the hard work and the persevering insistence of Mr Meikle (qualities of his Irish DNA?)'.

These qualities also made a huge contribution to *The Flora of County Fermanagh* (2012) by R.S. Forbes and R.H. Northridge. Robert Northridge has written to us saying that the 'thoroughness and accuracy of the [foundation] work of Desmond and his colleagues cannot be exaggerated'. Desmond's mantra was always 'Habitat, habitat' habitat' – an essential principle for all field botanists, and this fine Flora clearly confirms its importance to everyone involved.

The book best known to most of us is of course BSBI Handbook No 4 *Willows and Poplars* (1984). There have been considerable taxonomic developments since then, often involving Desmond himself collaborating with Dr Belyaeva and others, and naturally we all look forward to an eventual re-issue, but for nearly 40 years this has been a most notable prop and stay as we struggle with this difficult group.

As well as these major achievements Desmond was intimidatingly productive! He wrote many papers, edited the 'Kew Series' of handbooks, and was an important contributor as a member of the Editorial Committee of the International Code of Botanical Nomenclature. 'To understand the taxonomic view of a scientist one must know the way of scientific thinking of that person and read between the lines of their publications. Desmond understood that taxonomy could not exist without nomenclature' (Belyaeva & Craig, 2021) and many of his published papers utilise this understanding and knowledge.

His personal life was always more private. He married Carola Dickinson, the algologist at Kew, in 1960. After her death in 1970 he continued commuting between Kew and Wootton Courtenay until retiring in 1984. His garden was always a great pleasure and interest, and he played an active part in Somerset botanical recording, contributing both to *The Atlas Flora of Somerset* (1997) and the national 'Atlas 2000' scheme. Throughout his retirement years his unstinted kindness and knowledge were

Top: Desmond Meikle botanising on a Cumbrian bog, June 2003. Bottom: with *Cirsium eriophorum* near Selworthy, Somerset. *Jeanne Webb*

shared at every opportunity, whether identifying a garden plant for a neighbour, teaching Jeanne willow knowledge for Somerset botanists to draw on in the future, or hosting a gloriously cheerful 90th birthday party with plenty of CAKE!

After Desmond's death on 5 February 2021 there was a memorial lunch in Wootton Courteney – a lunch for botanist friends and colleagues and most importantly for his village neighbours – Desmond's final party. It was a joyful occasion with good food, drink and flowers, and an evocative display of photographs, books and memorabilia. For the booklet given to participants Jeanne Webb wrote an excellent account of his life, and the structure of this obituary is based on this. When RF was given her copy she thought of how in Ireland a memorial event programme is ironically referred to as 'the race-card' and was sure Desmond would have enjoyed that.

The appreciative words used by our many correspondents would fill a thesaurus. Both Keith Ferguson and John McNeill, speaking at the memorial lunch, praised his generosity to them when they were starting out as shy new bugs at Kew. We can only end with our own gratitude for the years we knew him, full of laughs and wisdom. As Alan Leslie summed him up in an email 'He was something of a legend, a real character and a fine botanist'. Thank you, Desmond!

Our thanks to Irina Belyaeva, Charalambos Christodoulou (with other Cypriot colleagues), Arthur Chater, John David, Gemma Douglas, Keith Ferguson, Georgios Hadjikyriakou, Nicholas Hind, Alan Leslie, Charles Nelson (remembering 'uproarious lunches at Glasnevin'), Robert Northridge and Chris Preston.

Reference

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Ro FitzGerald and Jeanne Webb

OBITUARY NOTES

Since we compiled the last Obituary Notes, news has reached us of the death of the following members or former members. We send our sympathy to their families and friends.

Revd Michael H. Atkinson of Ilkley, West Yorkshire, a member for 36 years.

Miss Anne Horsfall of Stoborough, Dorset (see obituary in this issue).

Dr David R. Larner of High Peak, Derbyshire, a member for 47 years.

Mrs Yvonne Leonard of Mildenhall, Suffolk, a member from c. 1990 to 2008.

Dr Norman K.B. Robson of Oxted, Surrey (and the Natural History Museum, London), a member for over 70 years, an honorary member since 1988 and referee for the genus *Hypericum*.

Mr Anthony H. Vaughan of Ottery St Mary, Devon (formerly of Builth Wells, Powys), a member for 65 years.

Mr Howard W. Wallis of Epsom, Surrey, a member for 2 years.

Chris D. Preston, Obituaries Editor
Assisted by the Membership Secretary, Gwynn Ellis. Date of compilation 26 November 2021.

REVIEWS

Compiled by Clive Stace, Book Reviews Editor
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Broomrapes of Britain & Ireland. A Field Guide to the Holoparasitic Orobanchaceae
Chris Thorogood & Fred Rumsey
Botanical Society of Britain and Ireland, BSBI Handbook No. 22, Durham, 2021; pp. ii + 150, c. 120 photographs, 18 maps, 24 black & white drawings; sbk, £17.50.
ISBN 9780901158598

Broomrapes (*Orobanche* and *Phelipanche*) are among the most fascinating and curious plants. They are beautiful, rare, interesting, and surrounded with mystery. Many field botanists avoid these parasitic plants because they are very difficult to identify. So it is very welcome that Chris Thorogood and Fred Rumsey have written one of the first books about these problematic genera, a comprehensive identification guide to the native and alien broomrapes of Britain and Ireland. The two British species of the related holoparasitic genus *Lathraea* (toothworts) are also included.

The book starts with several introductory chapters, where the family of the broomrapes (Orobanchaceae) is explained, including their taxonomy. Worldwide the family comprises about 90 genera and about 1,600 species of annual and perennial herbs and shrubs, since the holoparasitic genera in recent years have been merged with the semi-parasitic former Scrophulariaceae such as *Euphrasia* and *Rhinanthus*. There are probably about 150 species of *Orobanche* and *Phelipanche* worldwide. Especially in the last ten years, many new *Orobanche* species have been described, in particular from the Caucasus.

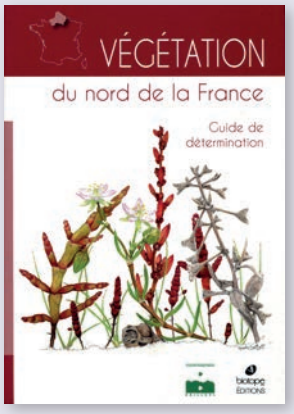
A chapter is devoted to the hosts of these plants because as parasites broomrapes rely to a high degree on other plants. There are chapters about molecular phylogenetic analyses, life cycle and biology, habitats and ecology, taxonomic history, and the identification of the individual taxa. Also, and very important, a key to the species of Britain and Ireland is provided.

Then there are the species accounts. Each taxon has six pages devoted to it, represented by a systematic part which comprises the English name, Latin name, conservation status, remarks, description, key distinguishing features, similar species, host, habitat and distribution and variation, along with a black and white drawing of the inflorescence and the curve of the corolla tube, which is a very important distinguishable character. For each species a distribution map is given (5 km^2 in three time periods, pre-1930, 1930–1999 and 2000–2020). The whole is complemented with on average five colour pictures. Most of the pictures are very good, but some could be better. The problem is that many were taken in full sunshine. As a result, the images are sometimes not entirely sharp, and the flowers often show harsh shadows. In such cases, it is better to use a flash to get the flowers sharper and more evenly lit. In the British Isles nine native species exist, including the commonest species, *O. minor*, which is represented by two subspecies and six varieties. In addition, the book gives details of four introduced species, such as *O. crenata* (an increasing pest of leguminous crops), and also the extinct *Phelipanche ramosa*.

The book ends with a section about hybrids between *Orobanche* species, which are extremely difficult to identify (none has been confirmed for Britain), and with a glossary of terms, references and an index.

The design of the book looks somewhat old fashioned. The text was clearly formatted by Microsoft Word, and the book would have looked more pleasing if more attention had been given to the layout. This could not have been an easy book to write, especially as only very few books exist about this genus. Let's hope many botanists will buy it and that it will deepen the interest in this family.

Karel Kreutz



Végétation du Nord de la France: Guide de Détermination

Emmanuel Catteau, Julien Buchet and ten others

Éditions Biotope, Mèze, 2021; pp. 400, 9 photos and figures, c. 400 maps; sbk €50.

ISBN 9782366622522

Most BSBI members will know of the National Vegetation Classification (NVC). As a tool for recording and classifying plant communities (phytosociology) it owes much to the system proposed a century ago by Braun-Blanquet, and still used, with refinements, over much of mainland Europe. In both approaches, data are drawn from sample plots, recording cover of taxa in each sample and taxon frequency across all samples. The key Braun-Blanquet classification element is the 'Association'. In a large geographical region, there may be many similar Associations influenced by local environment and cultural practices; Braun-Blanquet proposed a hierarchy of generalisations to bring together Associations with common constituents, based on Class (the most general), Order, Alliance. The NVC favours 'Communities' which relate approximately to Associations (plus lower-level variants), but it eschews higher levels and the rather abstruse Braun-Blanquet naming conventions.

This work is an identification handbook for plant communities in the five Hauts-de-France départements, plus Seine-Maritime and Eure. The 'Généralités' chapter sets out project motivations, concepts and methods well, along with the organisation and conventions of the rest of the book. An informal higher category is used; unlike the NVC it follows life forms of the characteristic species and community structure, rather than broad habitat lines. Thus, *Salicornia* communities rub shoulders with open communities of disturbed dry ground and seasonally wet water margins.

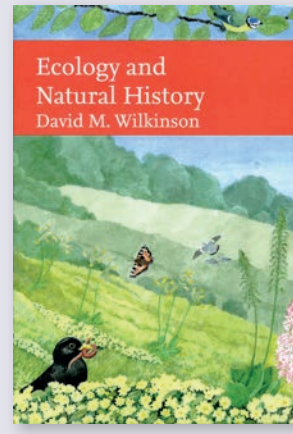
The key to Classes is organised by these categories. Although communities are defined purely on taxon representation in them, they often correlate to environmental factors. These are helpfully included in the key, along with notes on community dynamics and typical transitions. For example, an English user who arrives at couplet 30 in the key will have little difficulty in recognising the first option as a typical lowland seasonally inundated riverine pasture or water meadow, and the second as the drier community into which it often grades.

The Class treatments include a general description, a key to Alliances, and for about 60% of the Classes a floristic table setting out taxon frequencies for their Associations. It also gives data sources and the number of contributing samples – useful in warning against over-reliance on the table alone. The account for each Association and informal grouping gives diagnostic species, ground cover, species richness and phenology. A table of Ellenberg values is supported by a description of the environmental context, and a département-level distribution map is supplemented by broader biogeographical information.

While browsing I have noticed few, mostly typographical errors; but given the many references throughout the text, a glaring error is the missing Bibliography! As with many Biotope books, the production quality is high, and the design is both attractive and functional.

Is this a book worth getting? Clearly, only if one reads French. The region's vegetation has enough similarity to south-east England that, with caution, it can often be related to familiar communities here; and the accompanying potted information is more swiftly accessed than the discursive accounts in the NVC manuals.

Martin Rand



Ecology and Natural History

David M. Wilkinson

HarperCollins Publishers, London, New Naturalist Library 143, 2021; pp. xiii + 368, with many coloured photographs; hbk £65. ISBN 9780008293635

As BSBI members we are all involved in at least one

branch of natural history, and most of us are interested in other groups of organisms as well as higher plants. Most of us are, or at least should be, interested in ecology, as some knowledge of ecological processes helps us to find the species we are interested in and to understand what happens to them. We botanists naturally tend to view ecology from a plant-based perspective, but this can be a very biased approach. In *Ecology and Natural History* Wilkinson gives a remarkably broad and detailed view of the living aspects of the natural world, based primarily on about a dozen well-known sites but ranging very widely beyond these. He gives the history of ecological studies at each site, from Darwin at his 'entangled bank' and Gilbert White at Selborne to the Rothamsted Park Grass and Godwin's Plots at Wicken. As new ecological concepts are developed, they are helpfully explained, their origins traced, their application discussed with reference to plants, animals, fungi, bacteria, etc., and their validity evaluated. Such concepts include population ecology, competition, allogenic and autogenic engineering of the environment, mixotrophy and syntrophy, environmental filtering, biotic and abiotic factor separation, the intermediate disturbance hypothesis, the wood-wide web, metapopulations, niches, Gaia, rewilding and many others. Each chapter, almost each page, contains intriguing and often, to this reviewer at least, unfamiliar facts and connections.

Consideration of Duckweed for example leads to a detailed exposition of population ecology, bringing in Selborne's Swifts, Malthus's ideas, factors influencing Heron populations, the Black Death, and the problems of defining an individual in plants that are clonal. The chapter *Cooperation in the Cairngorms*, after a discussion of the cooperative nature of lichens and their primary colonisation of rock surfaces, goes on to consider the cooperative or competitive aspects of the clonal growth of plants such as White Clover and Bracken, mycorrhizae and the wood-wide web. Discussion of the Rothamsted grassland experiments leads to helpful comments on the values and disadvantages of very long-term monitoring, the trade-off between unrepeatable length of study-time and the recent improvements in monitoring techniques. The effects of climate change are of course described and discussed. Near the end of the book there is a very reasoned discussion of conservation, and the difficulties of assessing the nature and implications of rewilding projects. Errors seem very few, though presumably include the statement that *Wolffia* is naturalised (and our reviews editor tells me that Wilkinson is in error over the size of a rugby pitch).

As we become familiar with plant species, we get increasingly able to find them by narrowing down their apparent requirements: coastal, limestone, sheltered, moist, shaded, no competitors – *Adiantum capillus-veneris* should be there, but at this site it isn't. What other factors have we not taken into account? Why is it so rare, when the niche it seems to favour is so much more common? There is no simple or general answer, but this book will increase our chances of understanding these matters. The inclusion of numerous relevant anecdotes and the author's personal experience of the sites make the book extremely readable, in spite of the amount of technical discussion of various concepts and practices. I especially liked the account of Dan Janzen's purchase of an avocado that turned out to be rotten; instead of angrily returning it to the shop, he was set thinking about the significance of the smell produced by the microbes decomposing it and developed wide-ranging and very complex ideas as a result. This book will be of great interest to all members, whatever their specialisms, and is strongly recommended.

Arthur Chater

Wildflowers of the Sefton Coast
Philip H. Smith
Lancashire & Cheshire Fauna Society, Rishton, 2021; pp. 110, with 165 illustrations, 1 map and 3 tables; sbk £12.99.
ISBN: 9781916903401

The Sefton coast lies between the Ribble and Mersey estuaries in Lancashire and includes the largest area of sand dune in England as well as extensive tracts of saltmarsh. It is recognised as one of the most important 'soft-coast' sites in NW Europe and boasts many national and international conservation designations. It has been the focus of considerable natural

history survey and ecological research, much of it carried out by the author of this very attractive and informative book.

Philip Smith has devoted over 50 years to the study and conservation of the Sefton Coast and his depth of knowledge and experience is clear throughout, whether it is the detailed historical descriptions of vegetational changes at both habitat and species levels brought right up to date with current survey results, or the wide insight demonstrated when discussing the driving forces which influence the dynamics of species over time. His lucid, direct style expertly conveys a tremendous amount of information in a relatively slim volume.

About 40% of the book is devoted to a very readable and interesting account of the characteristic flora of the main habitats (saltmarsh to sand dune). There follows a relevant and informative section on the increasing influence of alien species, including invasives such as Japanese Rose (*Rosa rugosa*), medium-impact species such as Hungarian Mullein (*Verbascum speciosum*) and a surprisingly wide variety of innocuous horticultural escapees. Despite being indigenous to the east coast of Britain, Sea Buckthorn (*Hippophae rhamnoides*) is an unwelcome introduction on the Sefton Coast and receives ample attention here with some excellent insight into control measures.

120 hybrid taxa are reported from the Sefton Coast and examples such as Don's Willow *(Salix* × *doniana*) and two hybrids involving the rare Baltic Rush (*Juncus balticus*) are expertly considered. Seven Sefton specialities are given detailed attention, including the endemic Isle of Man Cabbage (*Coincya monensis* subsp. *monensis*) as well as Dune Wormwood (*Artemisia crithmifolia*) at its only known British site.

Almost 20% of the book is devoted to pleasing descriptions of 13 key Sefton sites with helpful notes on the best times and places to visit. This is followed by a concise but accomplished overview of historic land-use changes along the Sefton Coast, brought up to date with an informative section on threats and conservation, providing plenty of experienced, ecological insight into scrub control, livestock management, turf-stripping and mowing. Finally, the value of survey and monitoring is highlighted and the role of volunteers, including BSBI members, is stressed.

Common or vernacular names are used throughout with scientific names being confined to an appendix. There are some omissions in the appendix (*Vulpia fasciculata*, *Solidago canadensis*, *Clematis vitalba*, *Symphyotrichum* spp., *Orobanche minor*, *Dryopteris carthusiana*) and the last is confusingly named Lesser Buckler Fern in an image caption on p. 81. Another caption error occurs on p. 88 where the images of Triplet Lily (*Triteleia laxa*) and Common Broomrape (*Orobanche minor*) are swapped. On p. 24 the subtitle, 'Fixed-dunes' is incorrectly positioned. The map of the Sefton Coast would benefit from having a scale attached. The use of the terms 'nationally scarce' and 'nationally rare' needs clarification.

These few quibbles aside, this publication is a triumph and will have a very wide appeal, not least for the inclusion of so many of the author's fine illustrations. The book is well conceived, expertly written and attractively presented.

Nigel Brown

Lathyrus: The Complete Guide

Greg Kernicer & Roger Parsons

Royal Horticultural Society, Peterborough, 2021; pp. 511, with over 900 illustrations; hbk £40.

ISBN 9781911666127

I have been a fan of the genus *Lathyrus* for almost all my botanical and gardening life and have been fortunate enough to see most of the European and Turkish species in the wild. We grow a mass of Sweet Peas each year, several of the perennials, especially the intriguing *L. neurolobus*, and also a few of the annuals, such as *L. sativus* and *L. tingitanus*, though Cornwall is not hot enough to save ripe seed every year, and I cannot keep the lovely *L. belinensis*. Whilst there have been books on Sweet Peas, including one by the joint author, I know of nothing substantial covering the rest of the genus. Sylvia Norton, a former holder of a National Plant collection, produced a little taster (*Lathyrus, Cousins of the Sweet Pea*, 1996), but something more substantial was needed. This work has been long in gestation and eagerly awaited.

There are interesting introductory chapters covering classification, morphology and distribution, as well as breeding and cultivation. A brief key is

given, covering only 15 species – the rest of the key leads one to groups, which are then not keyed further. I would have preferred something more comprehensive. There is a list of regional Floras that do have decent keys, but success there depends on having those mainly expensive works. They do, however, cover almost half of the known species, with Turkey particularly being the stronghold.

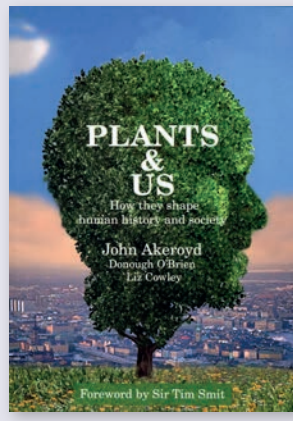
This heavy glossy work covers all the 150 or so wild species, many with full colour photographs, with short descriptions of each. Some, but not many, have full taxonomic descriptions in a tabular form, which is easy to read but takes up a lot of space. I would have preferred full details for more, linked to a better key.

A particular strength and joy is the treatment of the American species, which are scarcely known here. The lead author did his PhD on those from South America, where there are around 23 species, including several that would be really exciting to grow.

Almost half of the book covers the Sweet Peas, cultivars of *L. odoratus*. This is both a strength and a weakness, although, given that the RHS is the publisher, this was probably inevitable. Just under 700 cultivars are described and pictured, some at half-page size, and these are supplemented by a list of epithets covering around 1200 names, with a further 6000 available online. A further 20 pages cover those breeders who have raised new cultivars. I'm sure this is all very interesting to the Sweet Pea fraternity, who must greatly outnumber those interested in the rest of the genus; I would like to know how many are added each year, and the availability of most of even the chosen 700.

This emphasis on Sweet Peas almost makes me wonder if there is material here for two books. Perhaps that is to cavil; it is beautifully produced and properly bound, with photographs almost all of a very high standard and a great introduction to the genus.

David Pearman



Plants & Us. How They Shape Human History and Society

John Akeroyd, Liz Cowley & Donough O'Brien

GB Publishing Org, 2021; pp. xvi + 416, with many illustrations; hbk £22.99, sbk £14.99. ISBN 9781912576753 (hbk), 9781912576760 (sbk).

A few years ago, I visited the Eden Project in Cornwall with my wife and some non-botanical friends. I had been a bit sceptical about the hype for the project, but I was totally converted, as were my wife and friends. This is truly a showcase of the plants of the world, especially of plants used by man. What Sir Tim Smit and his team did for real in Cornwall is neatly mirrored on paper in *Plants & Us*, and it is fitting that Smit should have written the Foreword. The authors' concept, dreamt up over a few glasses of rosé in a French café, is to select about 200 topics from the immense range of uses man makes of plants and to write between one and three pages on each. The resulting book is around 400 pages, with a page size 16.5 × 24 cm, which is comfortable to read, though it handles a little heavy due to the quality of the paper chosen.

Topics include: 'Citrus fruit and scurvy', Tea and treachery', 'Wood and aircraft' with de Havilland's wooden Mosquito fighter plane, 'Olives and the fatal spittlebugs', 'New Zealand and the Silver Fern', 'Hops and the pleasures of beer', 'Quinoa – a new life for the Inca's grain', 'Blackberries and the mind of a child' (with a poem by Cowley which is a delight), 'A new Eden in Cornwall', 'Derek Jarman and his shingle beach garden' (a quirky garden now owned by a charity), 'The American Wildness' with the contributions of Henry Thoreau, John Muir and Rachel Carson to habitat conservation in America, 'John Clare, the botanist poet' and 'William Morris and his flowery wallpaper'.

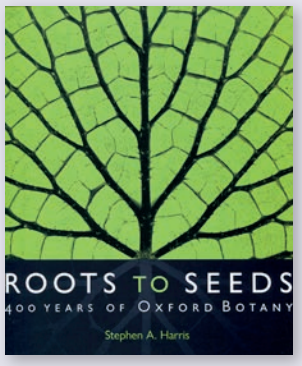
Akeroyd writes well and knows how to entertain, but some of the topics are overladen with facts. Much of the material he uses is readily available on the web. The book is profusely illustrated; these images are effective though many are postage-stamp size. The landscape in the authors' introductory note is unintelligible. By design, there is nothing on the discovery and habitats of Britain's flora, nor on taxonomy. Linnaeus is not in the index but he is referred to, with a portrait, under Giant Hogweed. English names are used for the plants with the Latin ones in brackets; the latter are not indexed.

There seem to be 200 topics divided into 12 sections, plus some closing words 'What of the Future?', but only 197 topics

are listed in the Contents. A different 195 are listed in tables at the beginning of each section. Each page has a 40 mm header with 'Plants & Us', sometimes as 'Plants and Us', as 8 mm text. The section heading, such as 'Plants on Parade' has 3 mm text in an 8 mm footer. Catherine, Duchess of Cambridge, has three portraits but only one is indexed, and on one occasion she is mistakenly referred to as Princess Catherine. Large-leaved Lime should be *Tilia platyphyllos* rather than *Tilia platyphylla*. There are numerous minor formatting errors that do not detract from the book.

The authors have clearly enjoyed writing this book and their enthusiasm is infectious. It might appeal particularly to a family who had just visited the Eden Project, or had been inspired by plants elsewhere, and wished to learn more. It is good value for money.

Michael Braithwaite



Roots to Seeds. 400 years of Oxford Botany
Stephen A. Harris
Bodleian Library, Oxford, 2021; pp. 239, numerous illustrations; hbk £40.00. ISBN 9781851245611

Written to accompany an exhibition to celebrate the 400th anniversary of the founding of Oxford Botanic Garden in 1621, this book explores the diverse heritage of botanical sciences in the university, including the rich manuscript and rare book collections in the university's various libraries. As might be expected, it is sumptuously illustrated and contains much that will be of interest to BSBI members. After all, the history of Oxford botany forms a good part of the history of botany in the British Isles.

The book is intended for the interested lay person, so technical details of the various botanical sub-disciplines are kept to a minimum. The aim has been to present 'snapshots reflecting the types of contributions that Oxford-based botanists have made' to the study of botany, and the author stresses that the review is not intended to be comprehensive. Nevertheless, a huge amount of information is presented and the author is to be congratulated in assembling it all in a digestible fashion as he successfully weaves a path through the mass of detail that might otherwise overwhelm the reader. In the course of this narrative, the highs are duly highlighted but, commendably, the author is not afraid to be critical in places.

One of the challenges faced by any historical account is how to avoid the 'one thing after another' approach, although there is indeed a helpful timeline to document just this. The author solves this otherwise difficult problem by adopting a plant metaphor for the structure of the book. Thus his seven chapter headings are Root (origins), Stem (collections), Leaf (collectors and collecting), Bud (naming and classifying), Flower (experimental botany), Fruit (applied botany) and Seed (training). Mostly the metaphor works well but sometimes it is rather more opaque.

Interspersed with the narrative are short biographies of 20 men and one woman with links to Oxford who are judged to have made noteworthy contributions either to science or to the study of the subject at Oxford. In a few cases some of this material is also presented in the main text, along with mention of many other personalities. The biographical information is sometimes tantalising. For example, of G.C. Druce we read that he was a 'complex character who was exalted and reviled in equal measure', but with no further detail. Similarly, C.D. Darlington was 'opinionated and iconoclastic', but the author does not elaborate. The reader must discover the juicy bits elsewhere, and there is indeed a wealth of references that lead to further information on this and much other material.

Also interspersed with the main narrative are 'biographies' of seven plant species, selected because they have some sort of link to Oxford, either through discovery, research or being illustrated by an Oxford-related botanist. As a set, they look a strange bunch: Mandrake, Hemp, Victoria Water Lily, Carrot, *Primula auricula*, Yew and, of course, the Oxford Ragwort.

In summary, this is an excellent, detailed and beautifully illustrated account of Oxford botany, a book that can be read straight through or dipped into with equal pleasure.

R.J. Gornall

LETTERS

BIODIVERSITY CONSERVATION – SPECIES DATABASES ARE UNDER-EXPLOITED

Dave Trudgill's letter, and Kevin Walker's response, in *BSBI News* 148 rang a few bells for me, but over a somewhat wider field, hence my rewording of the title. My interest in this topic dates back to 1975 when the New Zealand Government sent me to learn the lessons of biological recording in the UK where atlas work had resulted in a step change in the knowledge of species distribution. I was based at the Biological Records Centre at Monks Wood and hosted by the late Franklyn Perring but I visited many of those, throughout the UK, collecting the records and potentially using them.

In my subsequent report (*Biological recording in Britain and its lessons for New Zealand*), I praised the approach whereby the voluntary efforts of naturalists were coordinated by applied scientists and stimulated by the production of distribution maps. However, I found that the actual efforts of the expert amateur recorders were focused on sites much smaller than 10 km squares, and that this detail was lost in the collection and summarising of the records. This greatly impeded work on a fine scale, tracking change, correlative and quantitative assessment, and answering practical questions on precise sites. Another difficulty was a focus on the accurate documentation of interesting and rare species, with much less care and attention paid to most of the species found. I saw that many species were not well documented because they were not rare or interesting and had already been found elsewhere in the huge recording square. Finally, only a few people noted abundance and even those employed poor methods. The citizen scientists, then, were happy discovering interest and describing distribution across the map but many users and potential users I met had found the limitations of the data an insuperable barrier. Therefore, I recommended that recording in New Zealand be based upon small sites of uniform 'habitat' (biotope), with grid square maps employed as just one product. I reported the success of the New Zealand work in 1981 (*Plant recording at Tongariro National Park, a report on the success of the trial*).

When I worked in nature conservation planning for London local government between 1983 and 2006, I found the same difficulties with the utility of most biological records for application beyond grid square mapping. In 1987, with Dr Meg Game, I wrote a note for the National Federation of Biological Recording on how to we might overcome this (*Biological survey for nature conservation planning*), but little changed.

In retirement, in 2010, I revealed my true colours as a citizen scientist, enjoying the 10-year project for a new London flora. However, I was frustrated to find that, for all but rare and interesting species, the focus was on recording from one-kilometre squares. I knew that these small squares were nevertheless too big for other users and that smart mathematical modelling could not overcome the problem of geographic imprecision. So, I piloted ways to help. Building on the work of others, I developed a simple measure of abundance applicable to all species, which I described in 2014 (*Recording plant species abundance: plants per hour*: that's another story which I will not dwell upon here). I did all my recording in small, relatively homogeneous sites, split, where needed, by Vice-county or grid square boundaries. I designed a checklist recording form with the 400 most common species in my quarter of London and space for extras, which allowed the efficient collection of that additional abundance information on every species found.

My 10-years' pilot proved the utility of the abundance measure and of documenting small sites fully, enabling better evaluation of sites, and many other uses. I got plenty of fun finding new things and much healthy exercise, but there were costs. A bit more work was needed to define and document sites (around 10 of them per kilometre square) and

it's tedious entering data on multiple occurrences of the few species that are found in most sites.

Collecting records in better detail will not be for everyone, but I urge readers not to assume that the failure of others to make full use of BSBI records is solely because of limitations on supplying the data or shortage of time to work with users. I contend that another major impediment remains a focus on rare and interesting species and the coarse nature of the data on all the other species. This greatly limits potential use: in 2007, Kevin Gaston and Richard Fuller (reference?) emphasised the need to document common species, the decline of which is a major conservation challenge, and Daniel Simblerloff concluded in 1997 that threatened species make bad indicators (reference?). Sir John Lawton's conservation themes of joining up special sites and working at a landscape scale mean that we need good data on more than special sites. Yes, we have schemes dedicated to collect data on some of these issues but we can also help through our routine recording. Also, there are applications where there is no dedicated scheme (an example of this is facilitating the evaluation of sites subject to planning proposals).

Kevin Walker agreed with Dave Trudgill that the BSBI should be more ambitious in providing its data to others. I agree, but add that the limited detail available to potential users can be enhanced with a little extra attention. At the least, I would advocate the promotion of routine recording of full species lists with estimates of abundance from each visit to each small site. Then, those who want their records to have wider use will have the option of helping. Those wedded to simple square bashing, and focusing on interesting species and places, would retain the option to continue as usual.

Dave Dawson
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BSBI Photographic Competition 2021 (*see p. 57*)

Winners: *Above:* Moss Campion (*Silene acaulis*), Ross by Olesya Smart, winner in the Native category; *Below:* Pitcherplant (*Sarracenia purpurea*) on Rannoch Moor by Roy Sexton and Seaside Daisy (*Erigeron glaucus*) at Portland by Liz Downey, joint winners in the Alien category.

A selection of other entries: *Opposite page (left to right, top to bottom):* Pipewort (*Eriocaulon aquaticum*), Corraun Mayo by Mary Sheehan (Native); Sea-milkwort (*Glaux maritima*), Isle of Tiree by Pauline Wood (Native), Saw-wort (*Serratula tinctoria*) meadow by Clay Jones (Native), Wood-sorrel (*Oxalis acetosella*), West Yorkshire by Alex Shuttleworth (Native), Tree Lupin (*Lupinus arboreus*), Walberswick by Nicholas Barber (Alien), Foxglove (*Digitalis purpurea*), Inverasdale phone box by Duncan Donald (Native).

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But to ensure we continue to advance the cause of botany, we need to invest.

- Invest in a future generation of trained, engaged, diverse botanists.
- Invest in the technology and systems that allow us to gather and interrogate high quality data to address biodiversity loss.
- Invest in sharing our findings, work and passion with policy makers, conservationists and our communities at large.

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