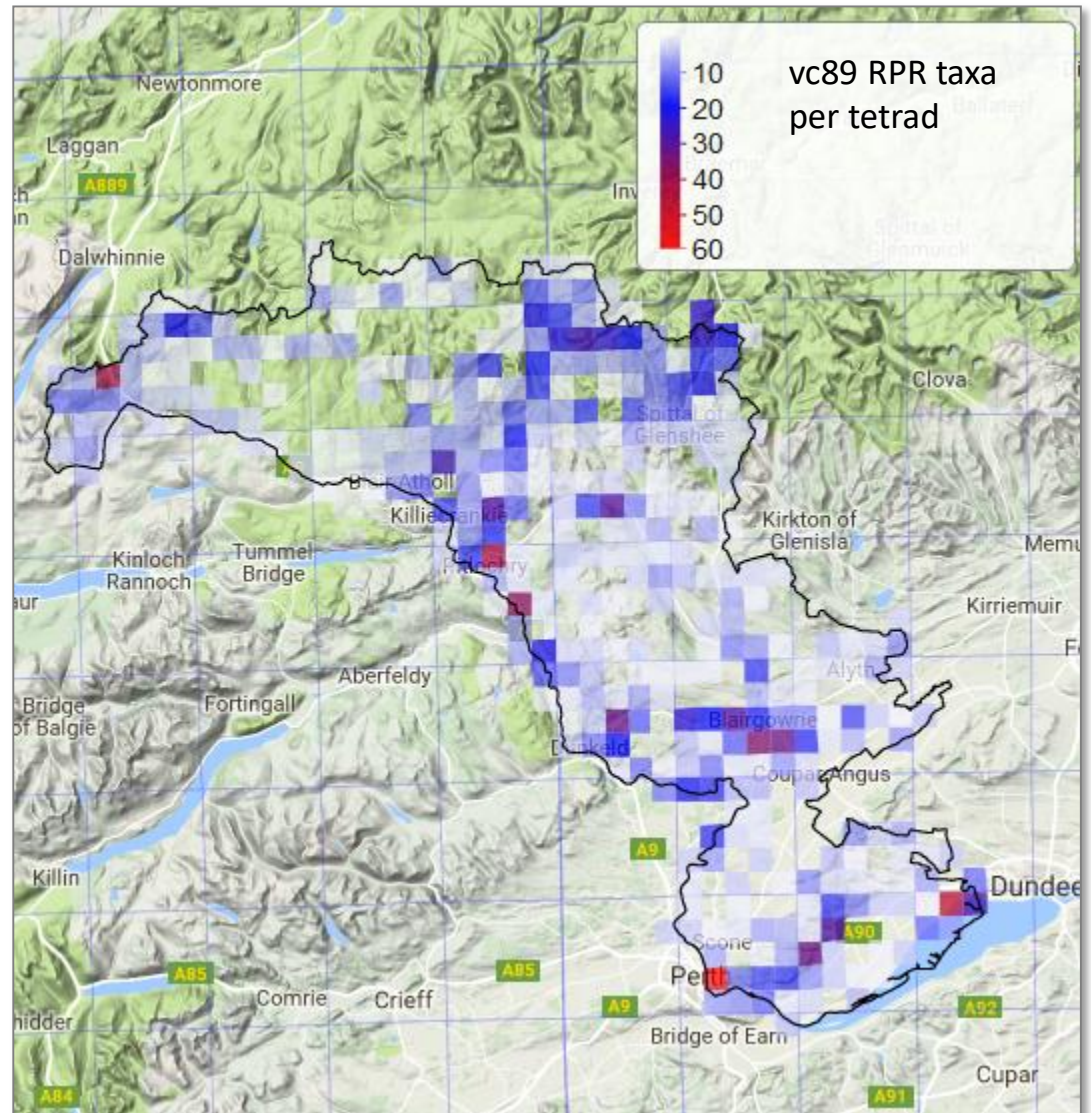


# Rare Plant Registers & Atlas 2020

Andy Amphlett



## Guidance & Resources

- 1<sup>st</sup> RPR in 1978 Cardiganshire (Chater)
- 1<sup>st</sup> (?) BSBI guidelines:
  - Farrell & Perring (1995). *Guidelines for the preparation of county rare plant registers*.

Links to published RPRs are at <http://bsbi.org/rare-plant-registers>

The current *County Rare Plant Registers guidance document*. (Alex Lockton, Sarah Whild & David Pearman 2001; Amended and updated to May 2005, Bob Ellis & David Pearman) can be downloaded from the same page.

- Guidance is a bit dated (no mention of the DDb or of GIS)


Polly Spencer-Vellacott (BSBI Welsh Officer) gave a talk at the Annual Exhibition meeting (2016) on *Rare Plant Registers as aids to recording* – pdf of her slides can be downloaded from <http://bsbi.org/annual-exhibition-meeting>

New RPR guidelines due to be published shortly

## RPR criteria for qualifying taxa (Scotland)

All Native & (selected) Archaeophyte taxa in the following categories:

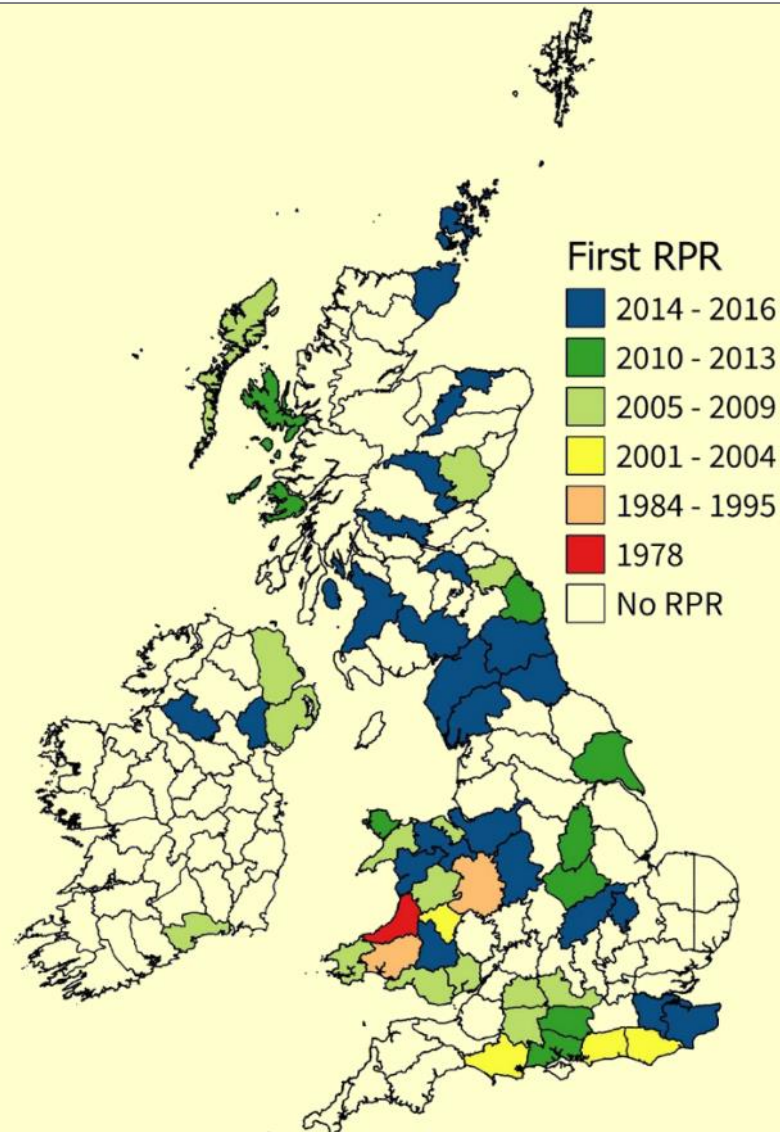
Category	Type
Scottish Endemic	Endemism
GB Endemic	
Internationally 'Rare' (Bern Convention, Habitats Directive)	Political
Scottish Biodiversity List	
GB Red List (Near Threatened and above)	IUCN threat criteria
GB Rare	Spatial frequency
GB Scarce	
VC Rare (1 – 3 'sites')	
VC Scarce (4 – 10 'sites')	
VC Declining	Temporal trend
VC Extinct (not recorded since xxxx)	No longer present in vc

 Vice-county Recorder responsibility to assess

## RPRs - Progress (1978 – 2016)

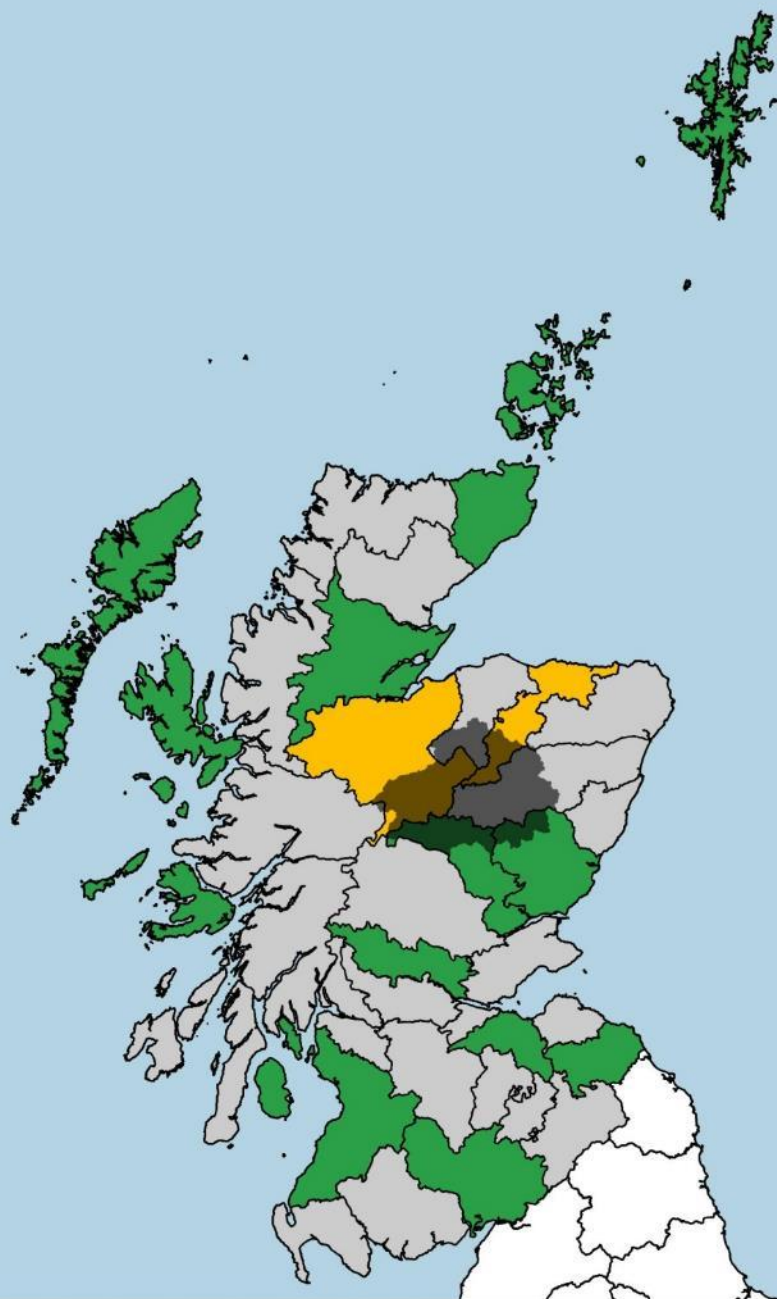
### County Rare Plant Registers

Counties with Registers in Britain and Ireland



## Scotland - Rare Plant Registers at February 2017

-  RPR List
-  None
-  Published RPR
-  Cairngorms National Park RPR





## RPR qualifying taxa - identifying vc Rare and vc Scarce


*“The original proposal by Farrell & Perring is that a species should be defined as ‘locally rare’ if it was known to be present within three or fewer ‘sites’ within a vice-county. In this context a ‘site’ (also known as a Wells site) is a discrete area within a moveable kilometre square, which seems at first glance to be slightly vague but in general is fairly easy to apply in practice.”*




Actually, in practical and computational terms defining and calculating the number of such ‘sites’ is fraught with difficulties! Much easier (pragmatic) is this approach:




Category	Definition (must meet all 3 criteria)
VC Rare	Recorded in 1 – 3 hectads AND in 1 – 3 tetrads AND in 1 – 3 monads since xxxx
VC Scarce	Recorded in 4 – 10 hectads AND in 4 – 10 tetrads AND in 4 – 10 monads since xxxx




Not perfect but easy to calculate.



## Identification of vc Rare and vc Scarce taxa (run 3 DDb queries)

search for  Records (specimens or observations) ▼


county/region  East Perthshire,  




date recorded  from 1987 from ▼ for vague record date ranges use start date ▼  




group by  species (excluding higher ranks) ▼  




distinct  hectads ▼ 



more options ▼

search for  Records (specimens or observations) ▼


county/region  East Perthshire,  




date recorded  from 1987 from ▼ for vague record date ranges use start date ▼  




group by  species (excluding higher ranks) ▼  




distinct  tetrads (including nulls) ▼ 



more options ▼

search for  Records (specimens or observations) ▼

county/region  East Perthshire,  

date recorded  from 1987 from ▼ for vague record date ranges use start date ▼  

group by  species (excluding higher ranks) ▼  

distinct  monads (including nulls) ▼ 

more options ▼

# Identification of vc Rare and vc Scarce taxa – Adoxa in Scotland example

(from DDb 6<sup>th</sup> Feb 2017; records from 1987 ->)

K552 $\text{f}_x$ $\text{=MAX(D552,F552,J552)}$						
A	C	D	F	J	K	L
species	vcs	Hectads	Tetrads	Monads	MAX	vc Rare or Scarce
Adoxa moschatellina	72	21	32	10	32	
Adoxa moschatellina	73	23	49	42	49	
Adoxa moschatellina	74	4	6	5	6	Scarce
Adoxa moschatellina	75	22	20	10	22	
Adoxa moschatellina	76	8	5	2	8	Scarce
Adoxa moschatellina	77	8	18	19	19	
Adoxa moschatellina	78	7	9	8	9	Scarce
Adoxa moschatellina	79	6	11	10	11	
Adoxa moschatellina	80	21	59	49	59	
Adoxa moschatellina	81	18	60	78	78	
Adoxa moschatellina	82	6	21	24	24	
Adoxa moschatellina	83	10	31	42	42	
Adoxa moschatellina	84	3	11	16	16	
Adoxa moschatellina	85	10	1	0	10	Scarce
Adoxa moschatellina	86	8	14	12	14	
Adoxa moschatellina	87	8	11	8	11	
Adoxa moschatellina	88	25	57	45	57	
Adoxa moschatellina	89	13	20	22	22	
Adoxa moschatellina	90	14	13	6	14	
Adoxa moschatellina	91	6	10	11	11	
Adoxa moschatellina	92	4	3	3	4	Scarce
Adoxa moschatellina	93	9	11	12	12	
Adoxa moschatellina	94	20	39	51	51	
Adoxa moschatellina	95	19	60	62	62	
Adoxa moschatellina	96	12	15	17	17	
Adoxa moschatellina	97	1	1	1	1	Rare
Adoxa moschatellina	98	27	46	40	46	
Adoxa moschatellina	99	7	22	26	26	
Adoxa moschatellina	100	14	54	97	97	
Adoxa moschatellina	101	12	8	3	12	
Adoxa moschatellina	105	1	1	1	1	Rare
Adoxa moschatellina	106	10	26	29	29	
Adoxa moschatellina	107	2	2	2	2	Rare
Adoxa moschatellina	108	1	1	1	1	Rare
Adoxa moschatellina	109	1	0	0	1	Rare



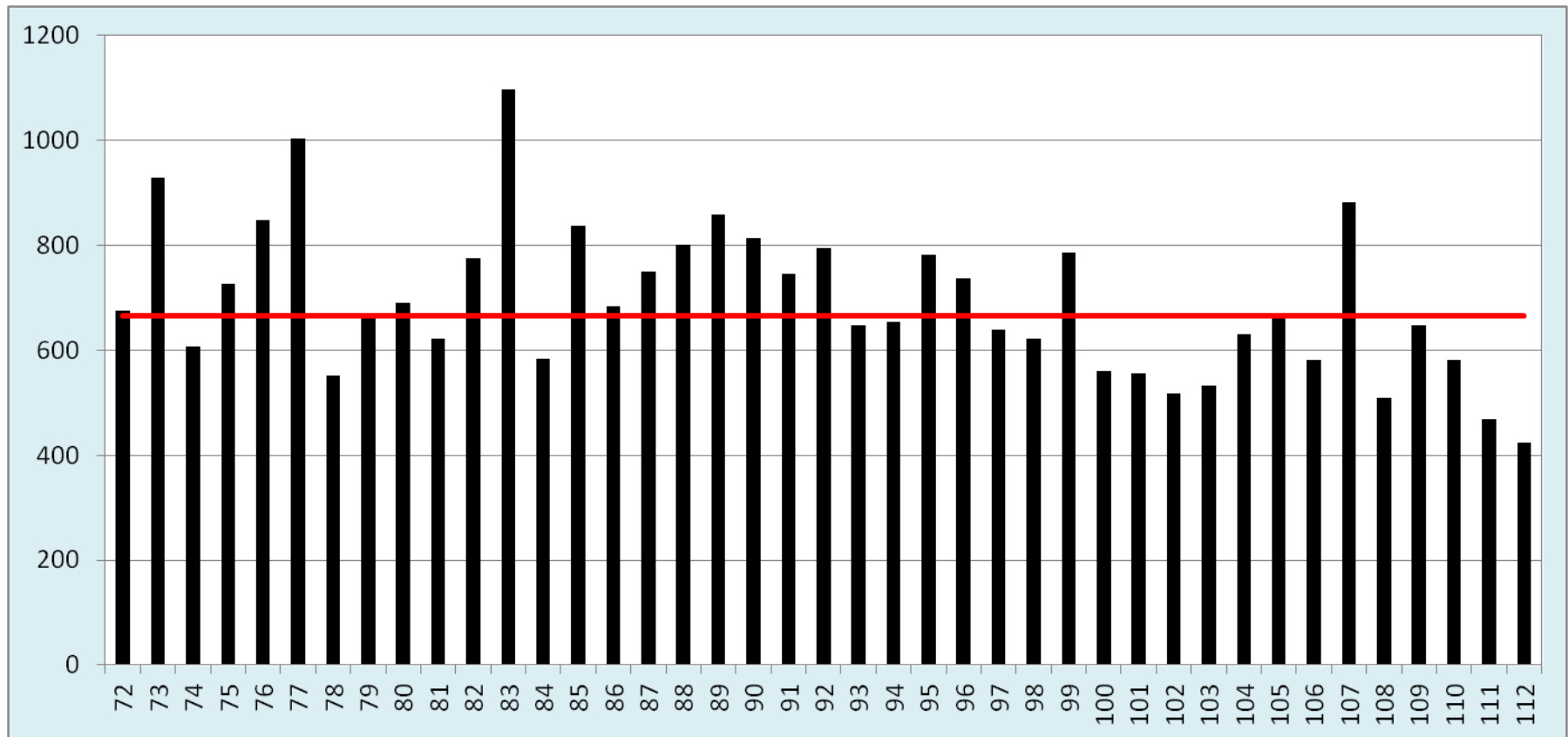
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Adoxa moschatellina	107	2	2	2	2	Rare
Adoxa moschatellina	108	1	1	1	1	Rare
Adoxa moschatellina	109	1	0	0	1	Rare

Probably not scarce

Number of vc Rare & vc Scarce species & hybrids (native & alien) in Scottish vcs.  
(from DDb 6<sup>th</sup> Feb. 2017; records from 1987 ->)



Median = 666 (red line)

Identification of vc Rare and vc Scarce taxa, using this method now listed on DDb via  
more options > attributes > estimate rare/scarce classification

## Automating creation of lists of taxa qualifying for inclusion in a vc RPR

- Ideally (draft) lists would be automatically created via the DDb, updated (say) monthly to reflect import of new records to DDb, and
- Lists would be automatically available to use in DDb queries
- This would ensure that all vcs had a RPR list, and that each list was created using consistently applied criteria
- Lists could be used by VCRs (if they wish) to create a more detailed RPR for their vc

But, this is not yet possible (though technically feasible)

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An Excel file, using a series of DDb queries, to create a vice-county Checklist, with frequency of species and hybrids and listing of candidate Rare Plant Register taxa is available (next slide)

# Vice-county Checklist: frequency of species and hybrids and listing of candidate Rare Plant Register taxa – download from <https://bsbidb.org.uk/forum/viewtopic.php?f=1&t=155> – or contact direct

Checklist frequency & candidate RPR list (vc88 example) Version dated 19 Jan 2015 [Read-Only] - Microsoft Excel non-commercial use

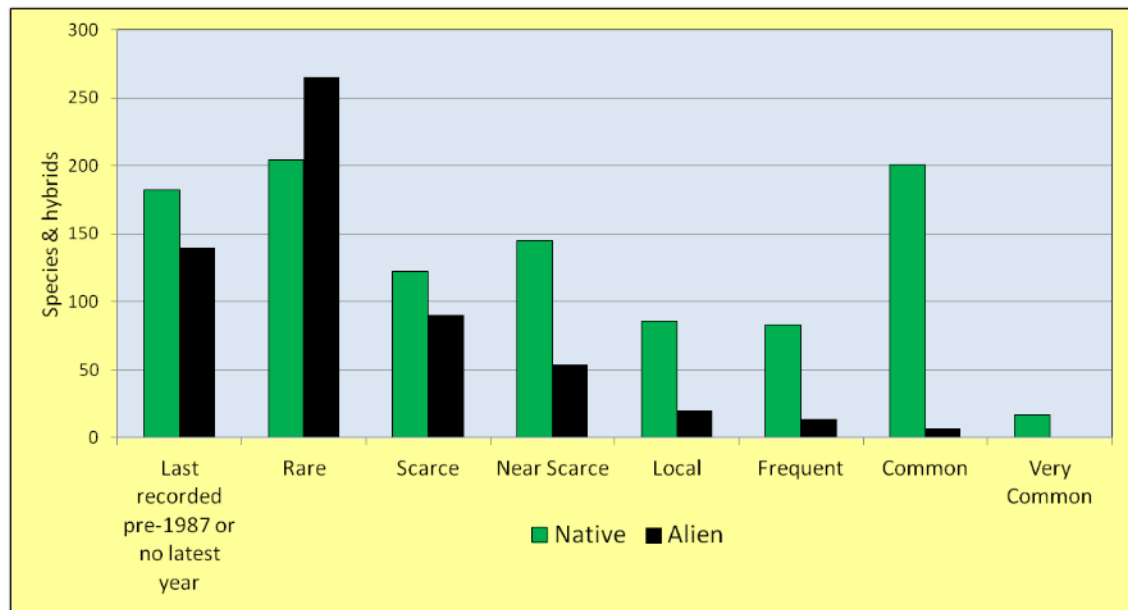
Species or hybrid	Native or Archaeophyte (from VCCC)	VC Frequency	Caveat applies	VC Frequency	ALL species & hybrids	Percentage	NATIVE species & hybrids	Percentage	ALIEN species & hybrids	Percentage
Abies alba		Near Scarce								
Abies grandis		Near Scarce		Last recorded pre-1987 or no latest year	322	19.8%	182	17.5%	140	23.7%
Abies procera		Near Scarce		Rare	469	28.8%	204	19.6%	265	44.9%
Acaena anserinifolia		Rare		Scarce	212	13.0%	122	11.7%	90	15.3%
Acaena inermis		Rare		Near Scarce	199	12.2%	145	13.9%	54	9.2%
Acaena ovalifolia		Rare		Local	106	6.5%	86	8.3%	20	3.4%
Acer campestre		Scarce		Frequent	97	6.0%	83	8.0%	14	2.4%
Acer palmatum		Rare		Common	208	12.8%	201	19.3%	7	1.2%
Acer platanoides		Local		Very Common	17	1.0%	17	1.6%	0	0.0%
Acer pseudoplatanus		Common								
Achillea distans		Rare		Total	1630		1040		590	
Achillea millefolium	NATIVE	Common								
Achillea ptarmica	NATIVE	Common								
Aconitum lycoctonum		Rare								
Aconitum napellus		Near Scarce								
Aconitum napellus x variegatum = A. x stoeckianum		Scarce								
Acorus calamus		Rare								
Adoxa moschatellina		Local								
Aegopodium podagraria	Archaeophyte	Common								
Aesculus carnea		Rare								
Aesculus hippocastanum		Local								
Aethusa cynapium	NATIVE	Rare								
Agrimonia eupatoria	NATIVE	Near Scarce								
Agrimonia procera	NATIVE	Scarce								
Agrostis canina	NATIVE	Common								
Agrostis capillaris	NATIVE	Common								
Agrostis castellana		Rare								
Agrostis gigantea		Rare								
Agrostis stolonifera	NATIVE	Common								
Agrostis vinealis	NATIVE	Local								
Aira caryophylla	NATIVE	Near Scarce								
Aira praecox	NATIVE	Frequent								
Ajuga pyramidalis	NATIVE	no most recent year								
Ajuga reptans	NATIVE	Common								
Alchemilla alpina	NATIVE	Common								
Alchemilla conjuncta		Rare								
Alchemilla filicaulis	NATIVE	Frequent								
Alchemilla glabra	NATIVE	Common								
Alchemilla glomerulans	NATIVE	Rare								
Alchemilla mollis		Near Scarce								
Alchemilla vulgaris		Near Scarce								
Alchemilla wickstrae	NATIVE	Scarce	Check							
Alchemilla xanthochlora	NATIVE	Frequent								

Taxa categorised as both Archaeophyte and Native ('ArchaeophyteNATIVE' in column F) 0 taxa

Vice-county Checklist: frequency of species and hybrids and listing of candidate Rare Plant Register taxa – download from <https://bsbidb.org.uk/forum/viewtopic.php?f=1&t=155>

Excel file (using 7 DDb queries) creates a vc Checklist, assigns vc Frequency values, and identifies taxa qualifying for inclusion in a RPR. **BUT:**

- Identification of Native and Archaeophyte taxa is imperfect (c.90-95% match) – needs careful checking
- vc Frequency is based on number of tetrads. Where number of hectads or monads suggests a different Frequency value is appropriate, this has to be manually edited.
- Does not include other RPR criteria, eg Red List, GB Rare etc.. These have to be added manually.
- Only works using a fairly recent version of Excel (2007 or later)
- Must read the instructions carefully.
- Need familiarity with spreadsheets.



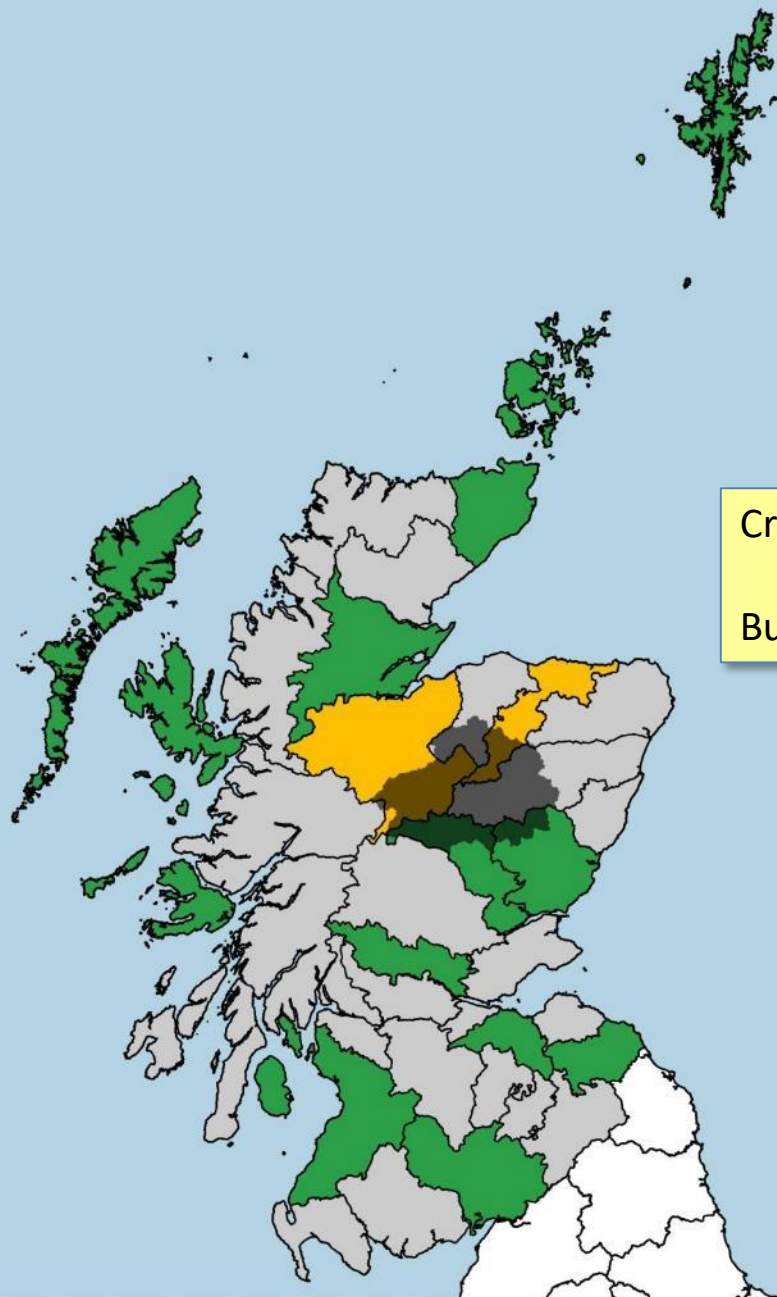


## Scotland - Rare Plant Registers at February 2017

-  RPR List
-  None
-  Published RPR
-  Cairngorms National Park RPR

Creating full RPRs for all remaining vcs is a tall order.

But, creating RPR lists for all vcs is more achievable ...



	Full RPR (published / pdf)	RPR List (on DDb)
Who is it aimed at?	Print / pdf Excel GIS	All DDb users, including Agencies and NGOs with DDb access
Time to create?	Several weeks (minimum)	2 days
How useful to target audience?	Only useful if correct version is available to intended user	Very useful to DDb users N/A to others
How quickly out of date?	Very quickly (as soon as new field survey is undertaken)	Slowly (as new qualifying taxa are recorded, and as new records change vc frequency category)
Commitment to update.	A few days per year, up to a month for full re-write of version heavy on text and detailed records	A couple of hours per year

- A RPR list is a necessary step towards a full RPR, and is worthwhile in its own right.
- RPR taxon lists for all vcs in Scotland with published RPRs are available on the DDb to use in queries.

## So just what is rarity? – another take on the topic

Population Size		Geographic Range			
		Large		Small	
	Somewhere Large	Common (Not rare) Locally abundant over a large range and in several habitats	Locally abundant over a large range in a specific habitat type	Locally abundant in several habitats, but restricted geographically	Locally abundant in a specific habitat, but restricted geographically
	Everywhere Small	Constantly sparse over a large range and in several habitats	Constantly sparse in a specific habitat, but over a large range	Constantly sparse and geographically restricted in several habitats	Constantly sparse and geographically restricted in a specific habitat
		Broad	Restricted	Broad	Restricted
Habitat range					

From Rabinowitz, D. (1981). **Seven forms of rarity.**

In, Synge, H. (ed) The Biological Aspects of Rare Plant Conservation. John Wiley & Sons Ltd.

Graphic based on - <http://alexazizkhan.blogspot.co.uk/2014/02/seven-rarity-and-one-abundance-deborah.html>

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	Everywhere Small	Constantly sparse over a large range and in several habitats	Constantly sparse in a specific habitat, but over a large range	Constantly sparse and geographically restricted in several habitats	Constantly sparse and geographically restricted in a specific habitat
		Broad	Restricted	Broad	Restricted
Habitat range					

Included in RPR

- Rare Plant Registers tend to omit taxa with large geographic ranges, but which are 'rare' in other ways, ie. combinations of restricted habitat and / or small populations. (Unless included in RPR as endemic, on a statutory list, IUCN red list, or declining).
- Taxa with restricted habitat ranges, including those with large geographic ranges, may be axiophytes.

# Rare Plant Register Lists

## Demonstration and Practical session

The screenshot displays a web-based search interface for the Rare Plant Register. The interface includes a top navigation bar with a 'checklist/linked attribute' dropdown menu. The 'checklist' dropdown is open, showing a list of categories: 'uncategorised', 'PLANTATT', 'Native status', 'Identifier', 'Distribution', 'County Rare Plant Registers', 'Conservation status', and 'Axiophytes'. The 'County Rare Plant Registers' option is selected, and a list of registers is displayed on the right. The main search area contains a 'bounded area' dropdown menu with 'any area type' selected, and a 'place name' dropdown menu with 'broad match' selected. A 'more options' button is also present. The search results area is currently empty, displaying a message: 'no search filters are set yet'. Below this, there is a section titled 'searching for records' with 'Search hints' and 'Grouping' sections. The 'Search hints' section includes a list of tips: 'Try to constrain searches as much as possible - smaller', 'Search using grid-references rather than place names if possible', 'Filter data to exclude misplaced or suspect records, unless you are sure', 'Limit by date-range, the database has records from ~1700', and 'If you are plan to run a large number of similar repetitive searches'. The 'Grouping' section states: 'The standard search output is a list of individual records. Grouped results are available for some searches'.

checklist/linked attribute

bounded area

place name

more options ▾

no search filters are set yet

Use the search form to narrow down your query, leaving blank areas where appropriate. Multiple copies of most search fields can be added by clicking on the '+' icon. Other types of search filter can be added by clicking on the 'more options' button.

searching for records

**Search hints**

- Try to constrain searches as much as possible - smaller
- Search using grid-references rather than place names if possible
- Filter data to exclude misplaced or suspect records, unless you are sure
- Limit by date-range, the database has records from ~1700
- If you are plan to run a large number of similar repetitive searches

**Grouping**

The standard search output is a list of individual records. Grouped results are available for some searches

checklist

any area type

broad match

VC96 East Inverness-shire Rare Plant Register

VC94 Rare Plant Register

VC90 Angus Rare Plant Register

VC89 East Perthshire

VC87 West Perthshire Rare Plant Register

VC83 Midlothian Rare Plant Register

VC81 Berwickshire Rare Plant Register

VC75 Ayrshire Rare Plant Register

VC72 Dumfriesshire Rare Plants Register

VC67 Rare Plant Register

VC52 Anglesey Rare Plant Register

VC51 Flintshire Rare Plant Register

VC50 Denbigshire Rare Plant Register

VC49 Caernarvonshire Rare Plant Register

VC48 Merionethshire Rare Plant Register

VC47 Montgomeryshire Rare Plant Register

VC45 Pembrokeshire Rare Plant Register

VC43 Radnorshire Rare Plant Register

VC42 Breconshire Rare Plant Register

VC41 Glamorgan Rare Plant Register

VC35 Monmouthshire Rare Plant Register

VC112 Rare Plant register

VC111 Orkney Rare Plant Register

VC110 Outer Hebrides Rare Plant Register

VC109 Caithness Rare Plant Register

VC106 East Ross & Cromarty Rare Plant Register

VC104 North Ebeudes Rare Plant Register

VC103 Mid Ebeudes Rare Plant Register

VC100 Bute Rare Plant Register

VC100 Arran Rare Plant Register

Cairngorms National Park RPR taxon list