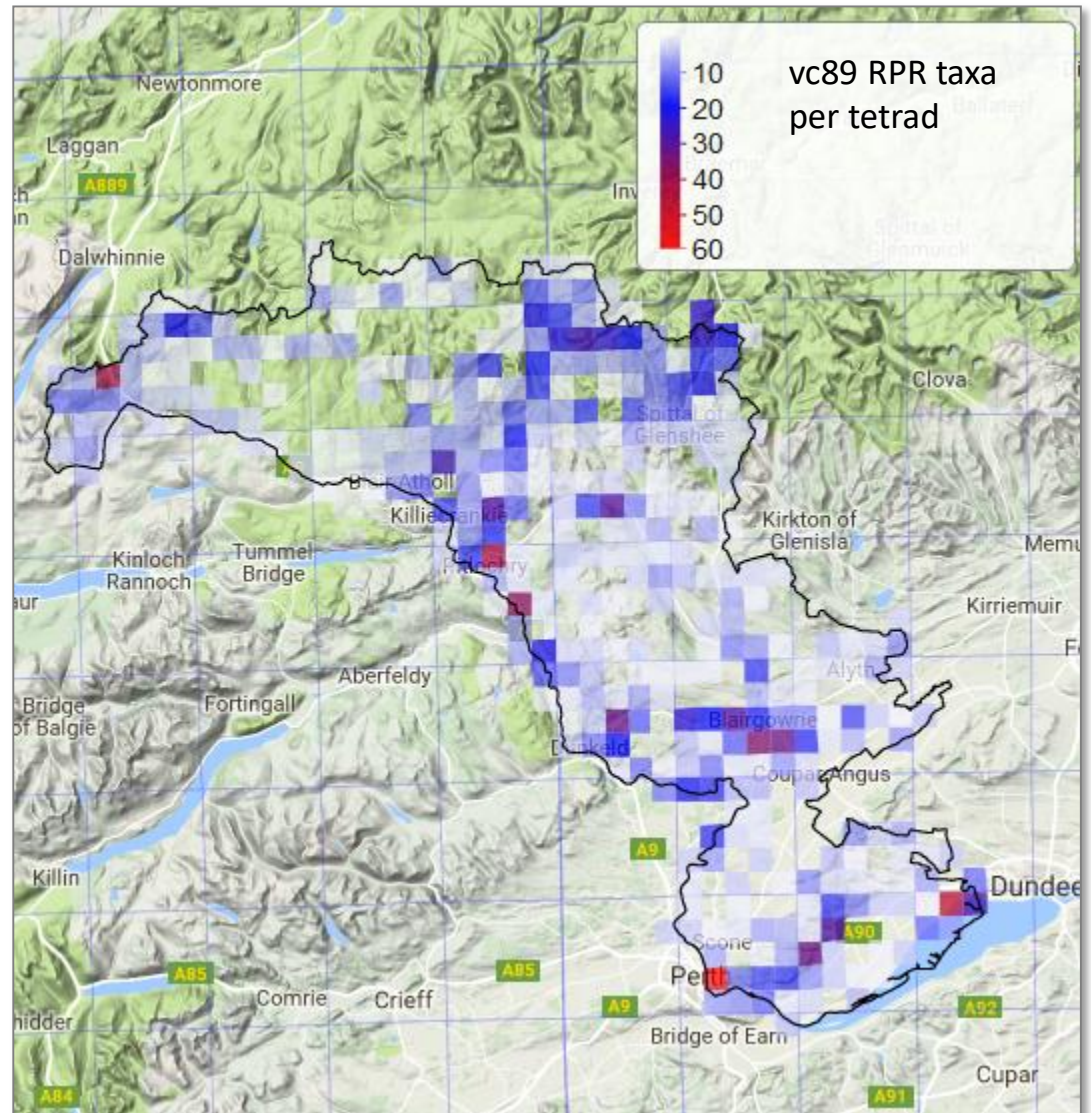# Rare Plant Registers & Atlas 2020

Andy Amphlett

Guidance & Resources

- 1st RPR in 1978 Cardiganshire (Chater)
- 1st (?) 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)

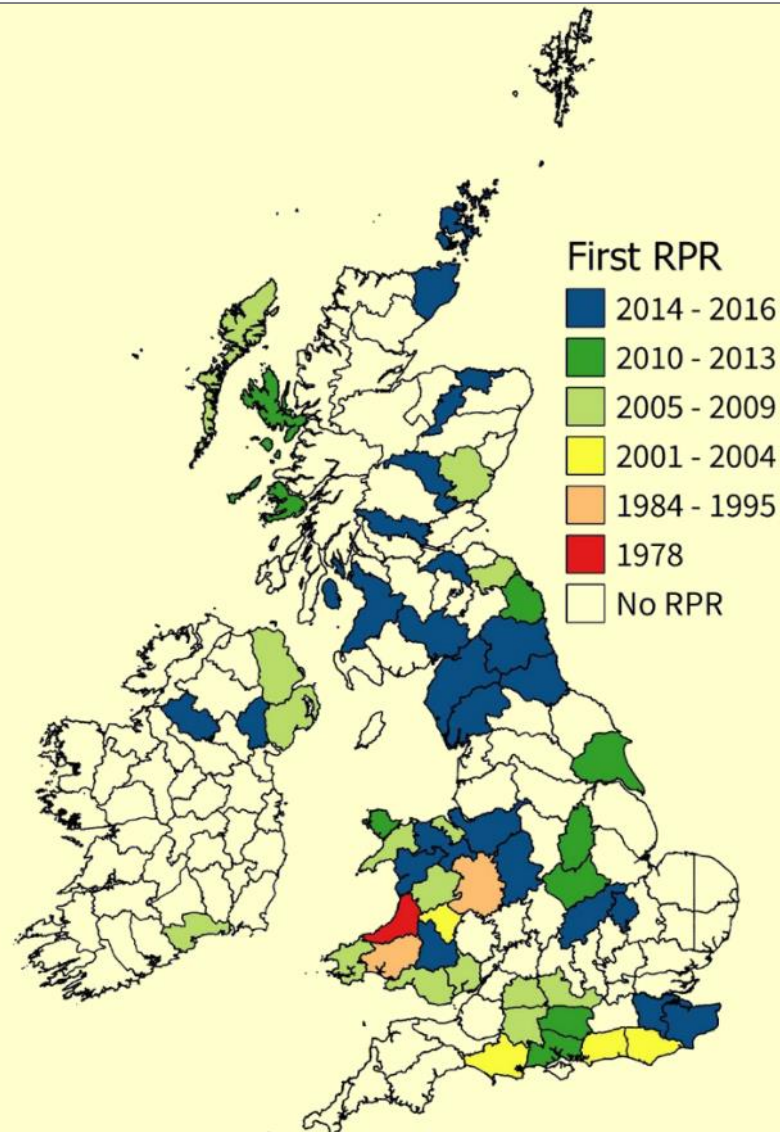All Native & (selected) Archaeophyte taxa in the following categories:

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

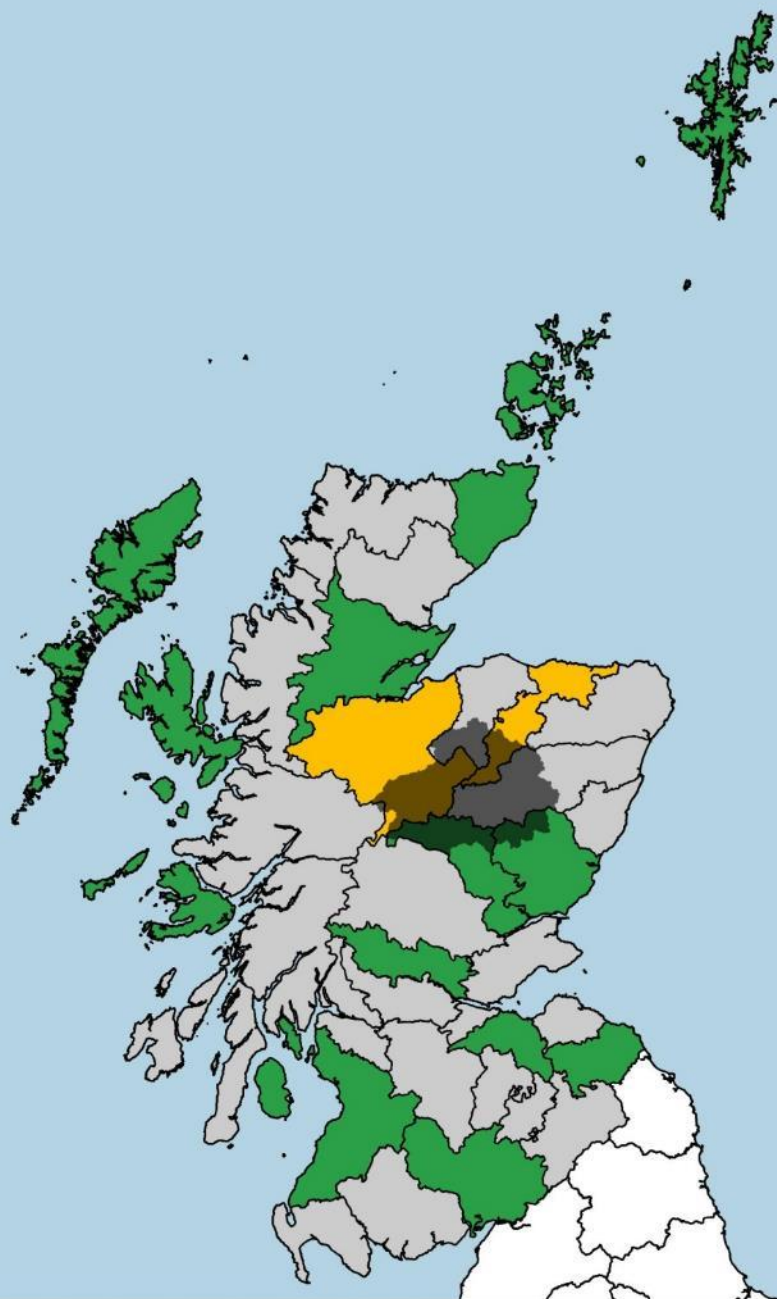Vice-county Recorder responsibility to assess

RPRs - Progress (1978 – 2016)

County Rare Plant Registers

Counties with Registers in Britain and Ireland

First RPR
- 2014 - 2016
- 2010 - 2013
- 2005 - 2009
- 2001 - 2004
- 1984 - 1995
- 1978
- No RPR

Shetland (2002) missing from map

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 6th Feb 2017; records from 1987 ->)

| K552 | | | fx | =MAX(D552,F552,J552) | | | | | |

| 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

Identification of vc Rare and vc Scarce taxa – Adoxa in Scotland example
(from DDb 6th Feb 2017; records from 1987 ->)

K552	f_x	=MAX(D552,F552,J552)					

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Adoxa moschatellina	84	3	11	16	16	
Adoxa moschatellina	85	10	1	0	10	Scarce ← Probably not scarce
Adoxa moschatellina	86	8	14	12	14	
Adoxa moschatellina	87	8	11	8	11	
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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

Number of vc Rare & vc Scarce species & hybrids (native & alien) in Scottish vcs.

(from DDb 6th Feb. 2017; records from 1987 ->)
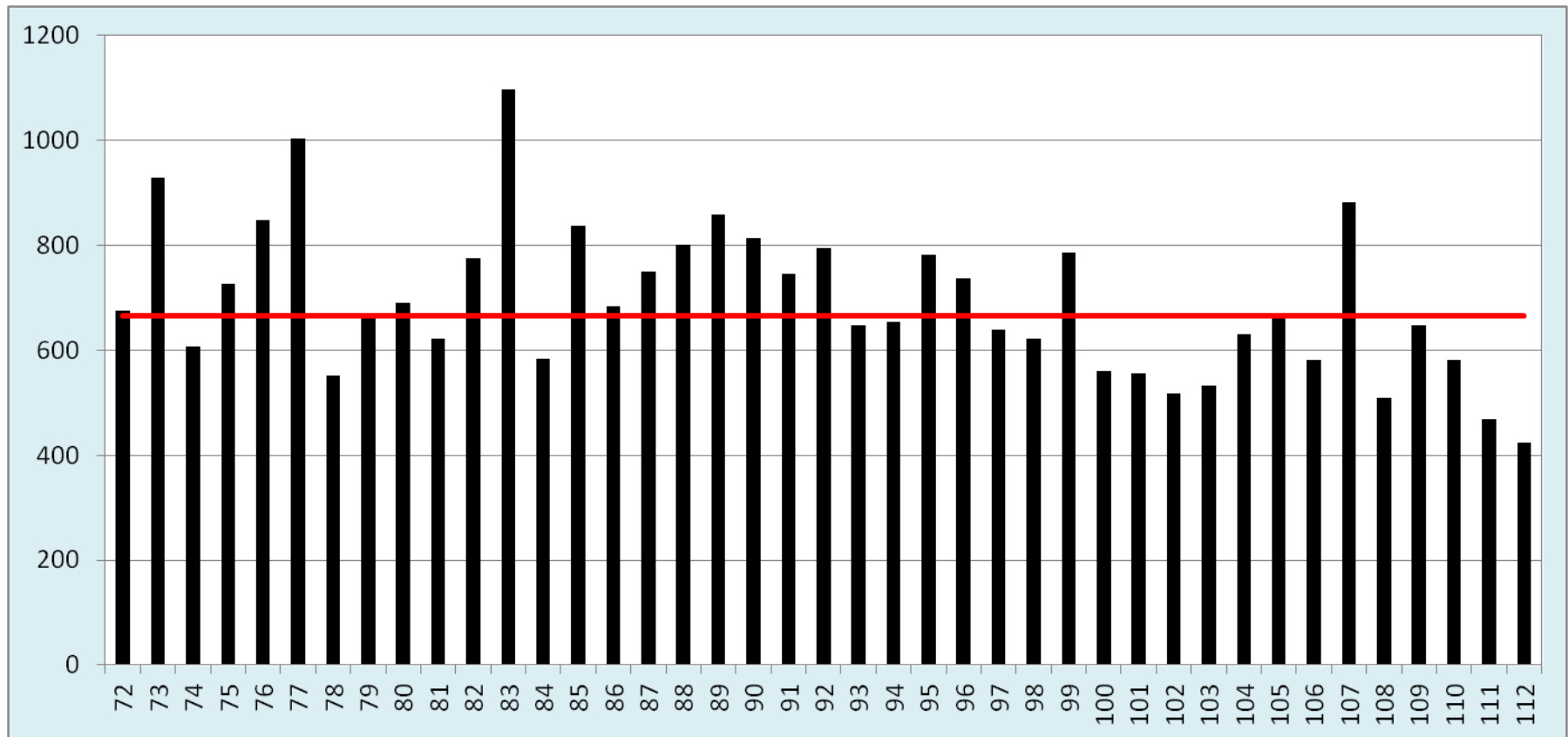
Median = 666 (red line)

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)
•vc status of taxa (Native or Alien) is problematic and incomplete using available checklists, ie, VCCC and Atlas 2000

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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

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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 Archaeophte 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)

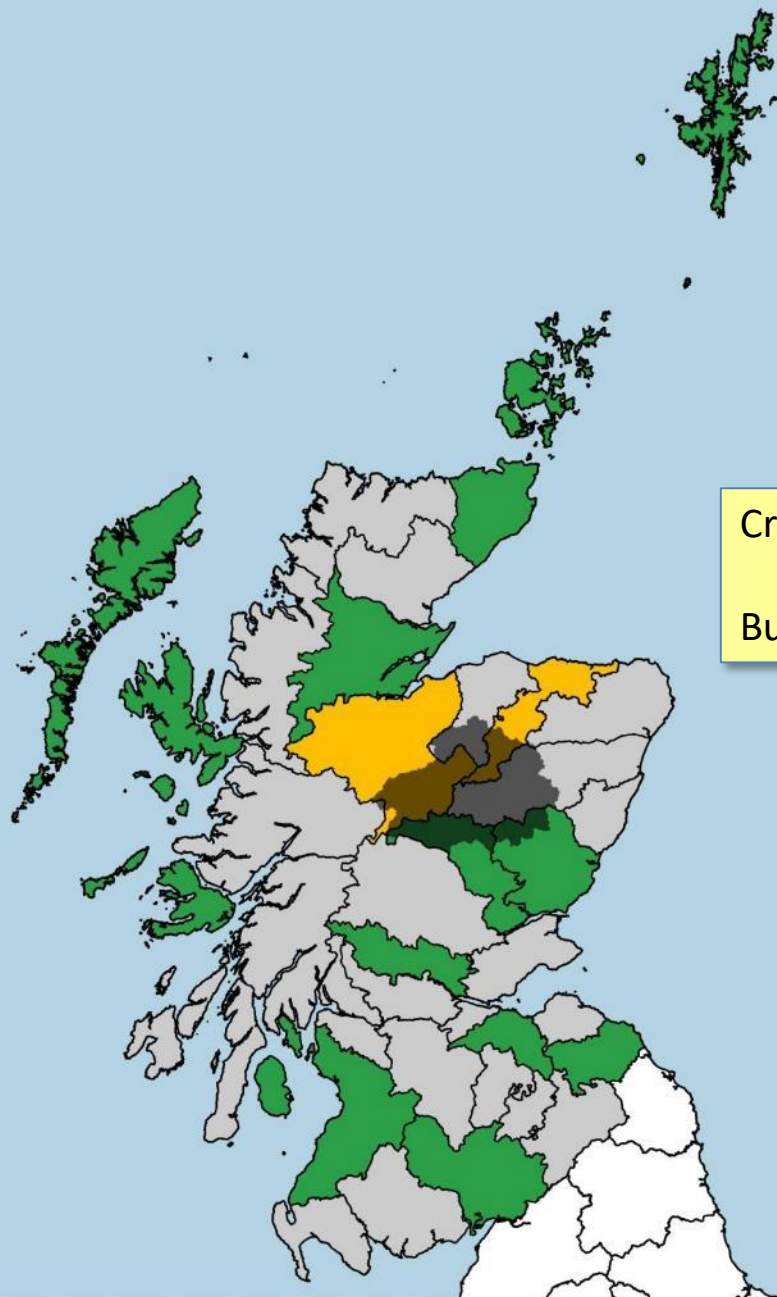➢Must read the instructions carefully.

➢Need familiarity with spreadsheets.
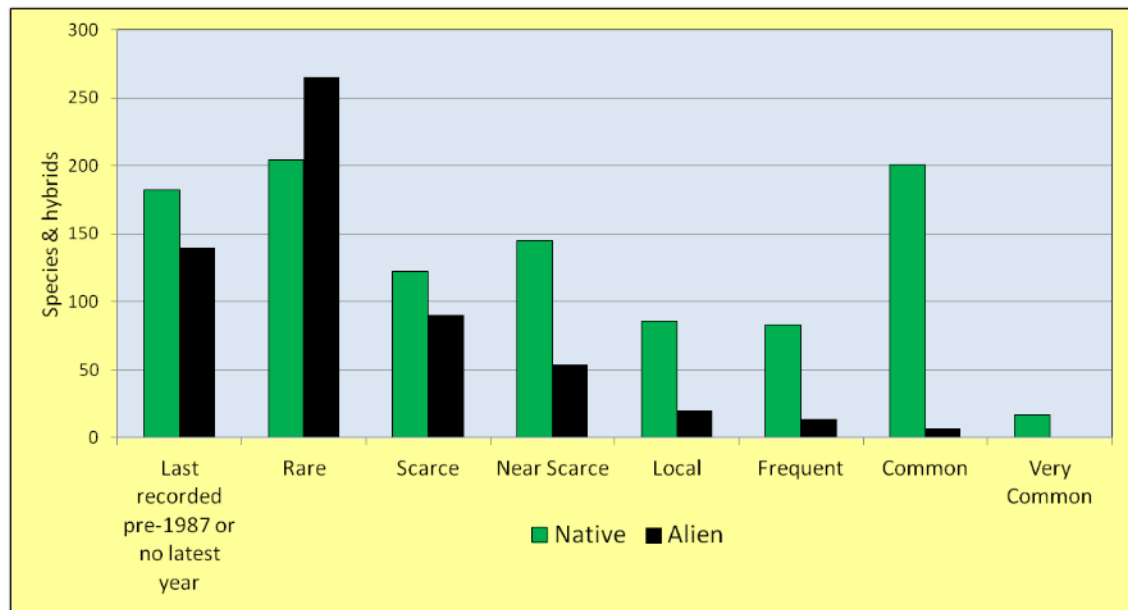
Scotland - Rare Plant Registers at February 2017

- 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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		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