



May 2021....

University of Edinburgh:

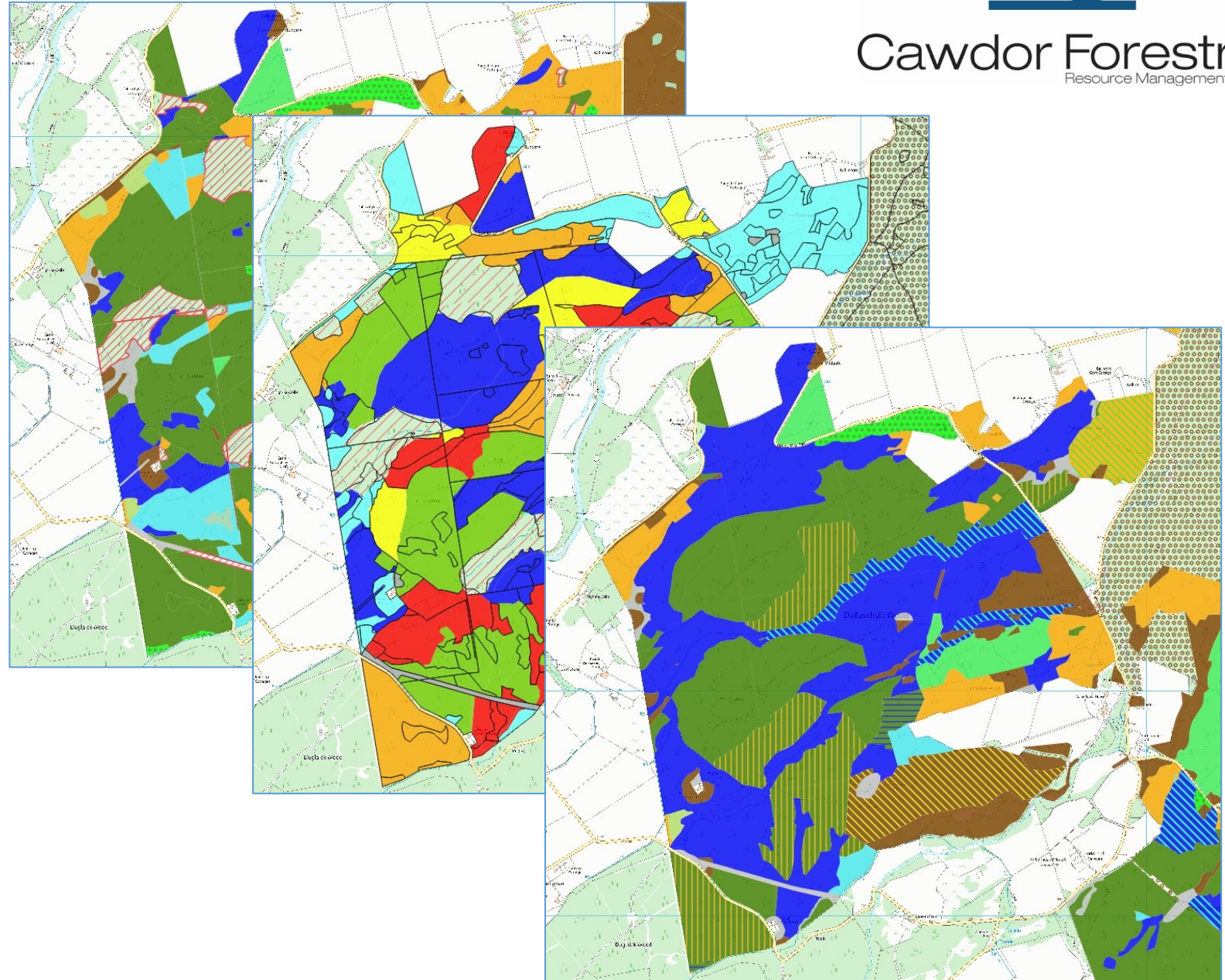
**Data visualisation for
professionals**

(online 12-week course)

- Opportunity to learn more about data visualisation design process
- Opportunity to use R
- Opportunity to explore how forestry spatial data is presented / used
- Opportunity to dodge bedtime story routine for 12 weeks

Spatial Data

- Long term forest plan (20-year plan)
- Current species distribution of forest
- Planned felling phases, phase = 5 years, long term retentions
- Restocking species distribution





Visualisation Design Concept

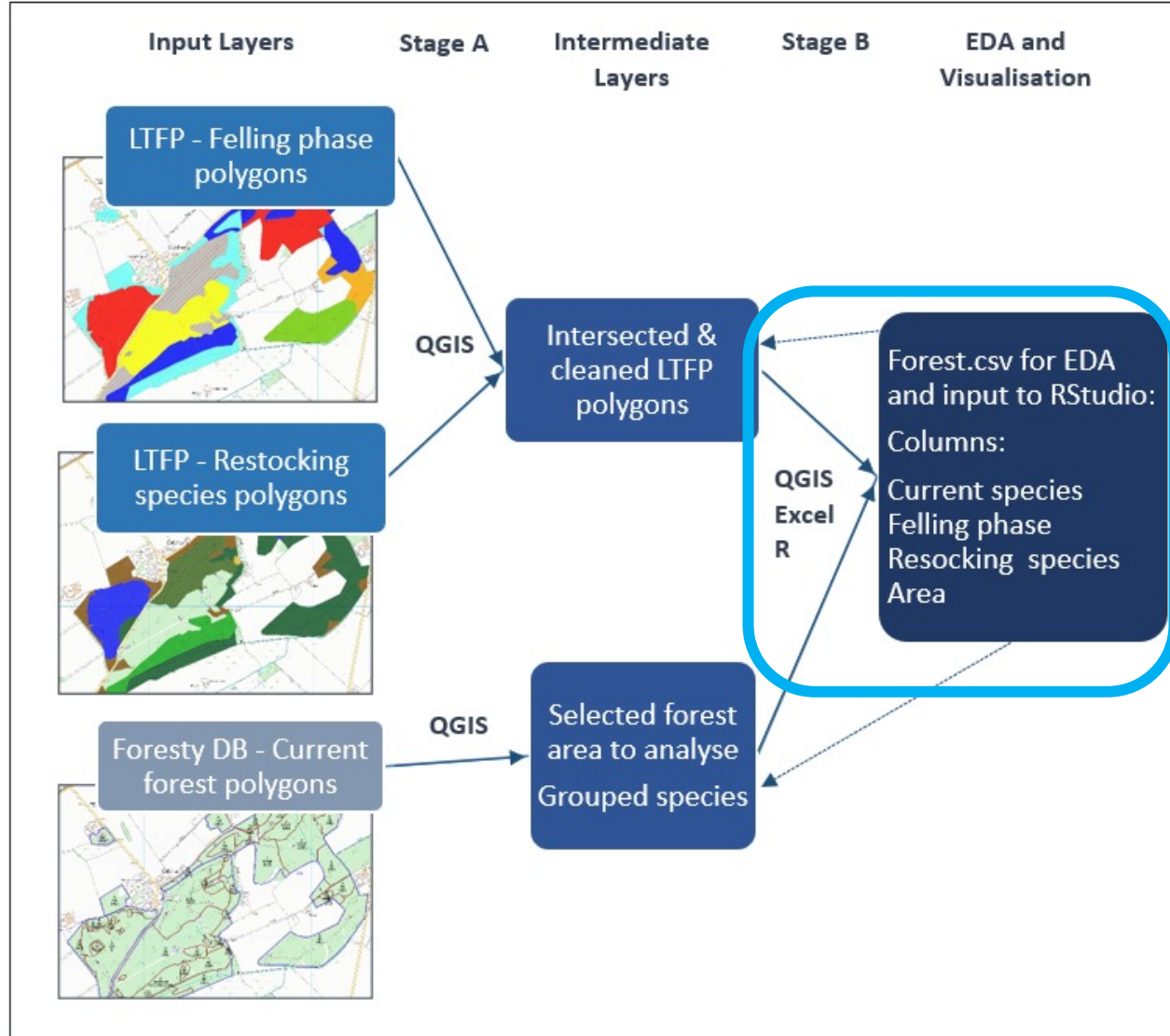
Summarise forest inventory and long term forest plan (LTFP) data in a concise, useful and (hopefully) interactive way

Explore change in forest composition over 20 years, and help explain rationale behind LTFP





Data preparation
Exploratory Data Analysis (EDA)



Visualisation Data

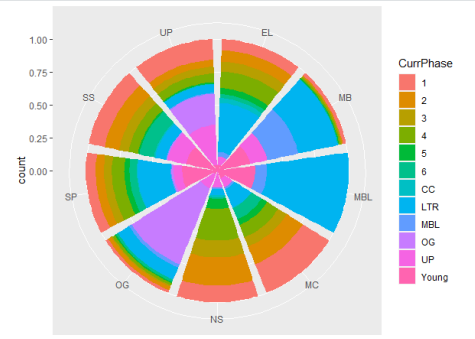
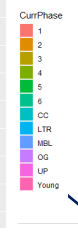
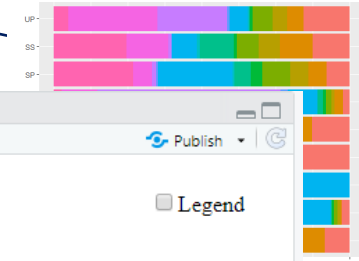
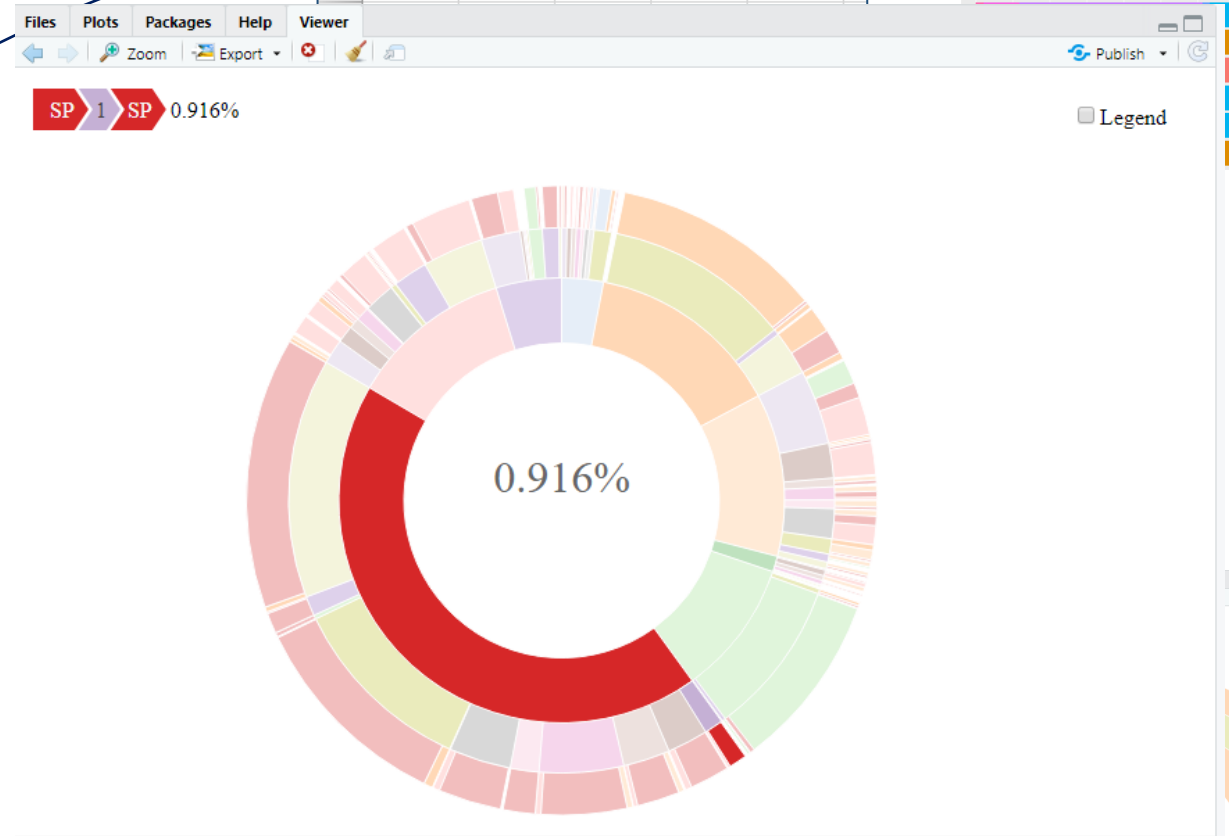
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1	ID	species	fellphase	restock	ha
4185	1106	UP	1	SS	8.51264
4186	3965	MB	LTR	MB	8.546087
4187	288	SP	DOG	SP	8.552089
4188	234	OG	DOG	OG	8.633533
4189	2861	SP	2	SP	8.686115
4190	3974	MB	LTR	MB	8.754654
4191	1744	SP	4	SP	8.789909
4192	2370	SS	5	SS	8.846679
4193	366	OG	DOG	OG	8.854494

EDA and Initial Design

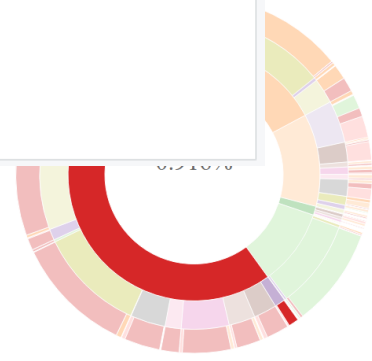


Cawdor Forestry
Resource Management

	A	B	C	D	E
1	ID	species	fellphase	restock	ha
4185	1106	UP		1 SS	8.51264
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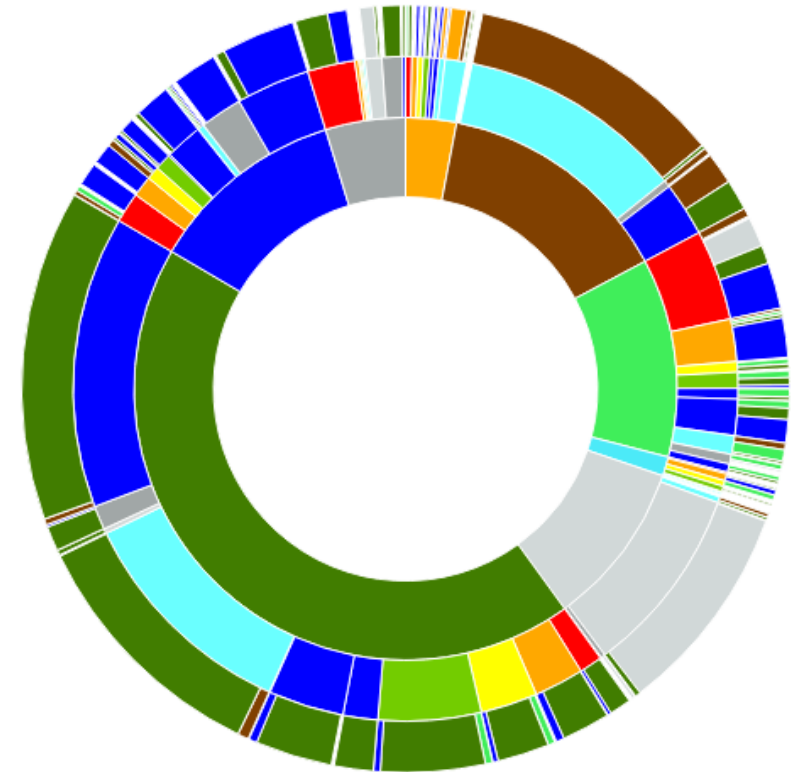
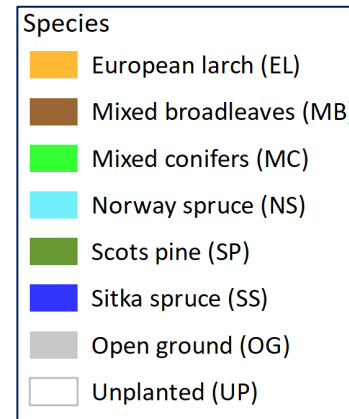
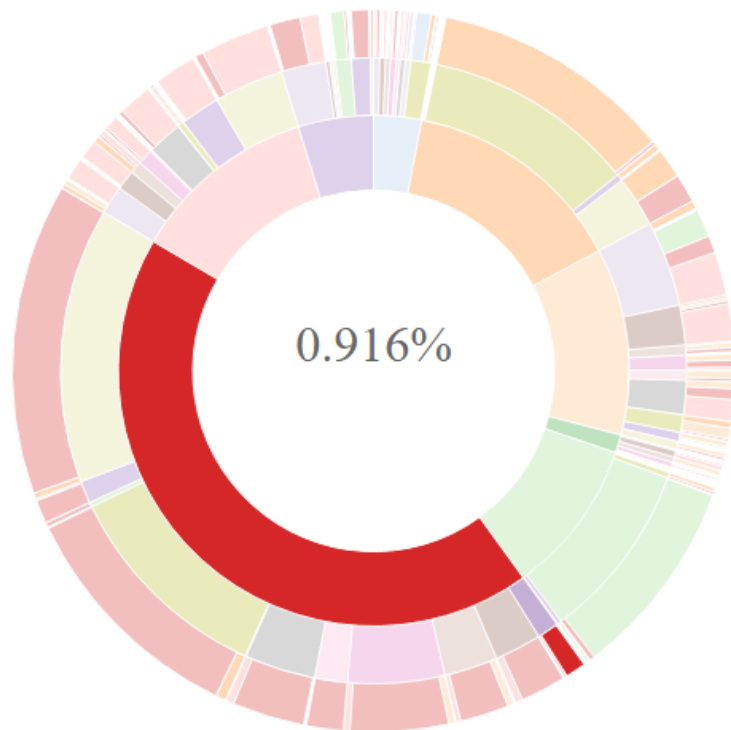
sunburstR



Stackexchange win - User defined segment colours

<https://stackoverflow.com/questions/57064828/how-can-i-change-colors-of-segments-in-trace>

Question: indigofera suffruticosa
Answer: Gilean0709

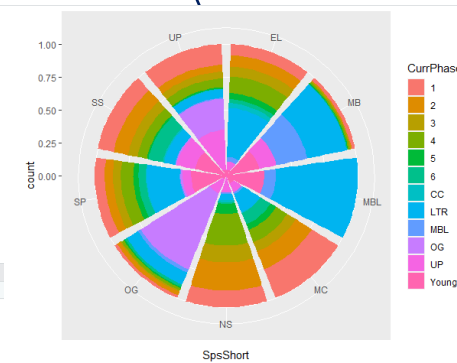
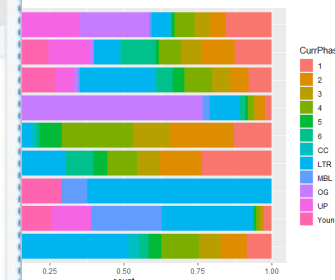
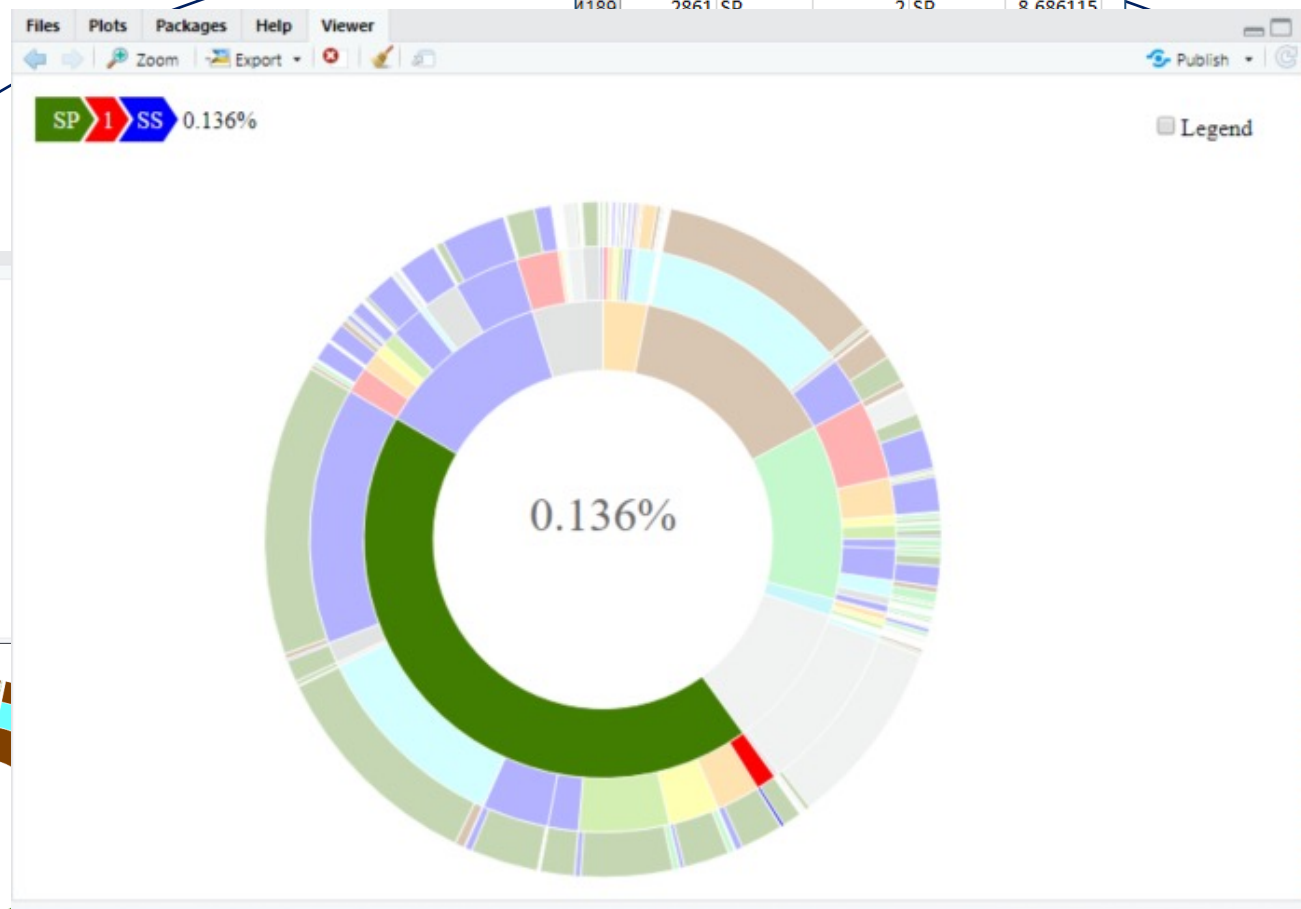


User Evaluation...

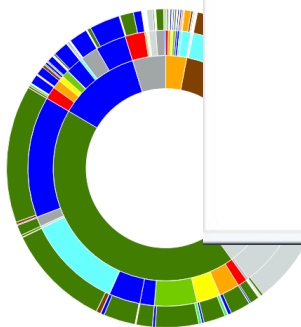
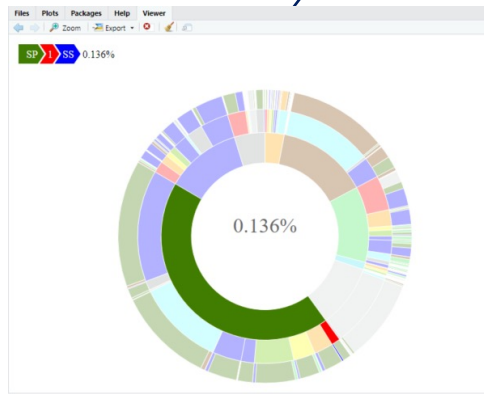


Cawdor Forestry
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4189	2861	SD		SD	8.686115



sunburstR



- Sitka spruce (SS)
- Open ground (OG)
- Unplanted (UP)
- Phase 4, 2031 - 2035
- Phase 5+, >=2036
- Designed Open Ground
- Long Term Retention

Stackexchange win No. 2 – Plotly zoomable sunburst

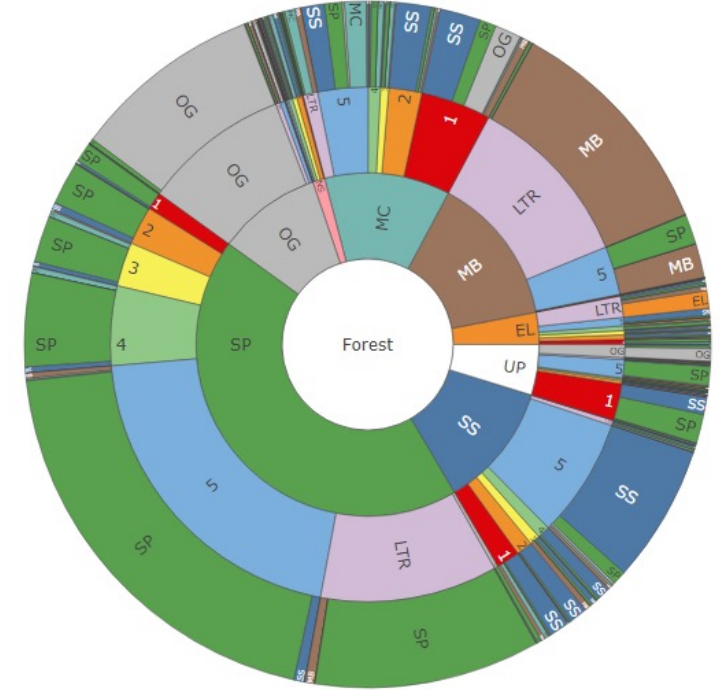
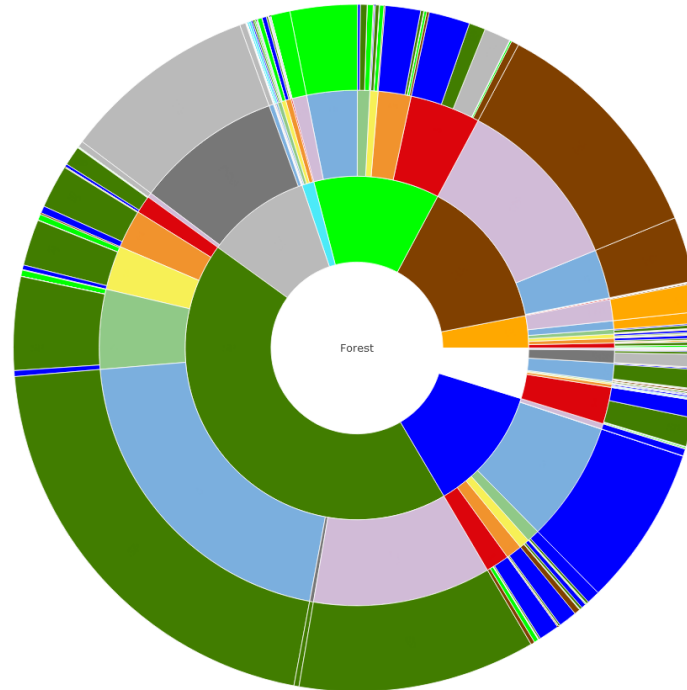
<https://stackoverflow.com/questions/57395424/how-to-format-data-for-plotly-sunburst-diagram/58481176>

Question: mtreg

Answer: ismirsehregal

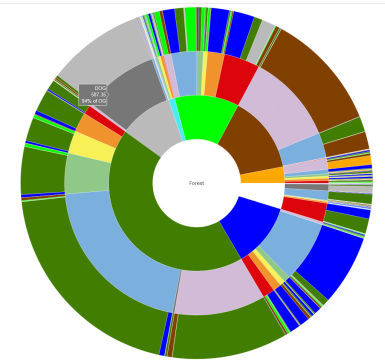
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38	MB	0.68	Forest - 1 - NS	Forest - 1 - NS - MB	#804000
39	MB	0.15	Forest - 1 - OG	Forest - 1 - OG - MB	#804000
40	MB	0.62	Forest - 1 - SP	Forest - 1 - SP - MB	#804000
41	MB	12.12	Forest - 1 - SS	Forest - 1 - SS - MB	#804000
42	MB	2.20	Forest - 1 - UP	Forest - 1 - UP - MB	#804000
43	MB	0.12	Forest - 2 - EL	Forest - 2 - EL - MB	#804000
44	MB	7.76	Forest - 2 - MC	Forest - 2 - MC - MB	#804000

Showing 37 to 45 of 246 entries, 5 total columns

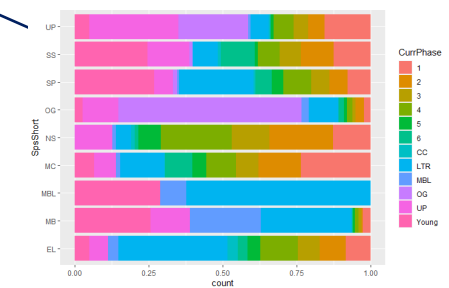


Final Design

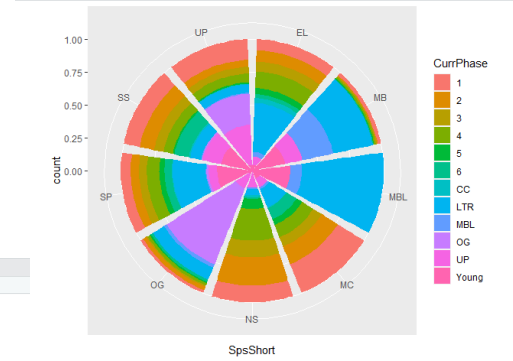
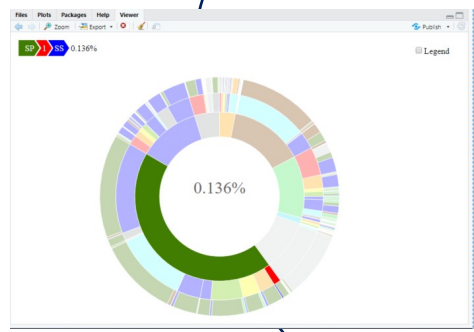
labels	values	parents	ids	colour
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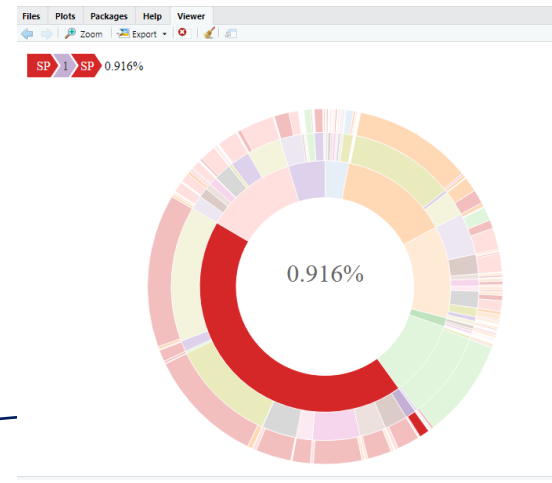


Plotly sunburst function

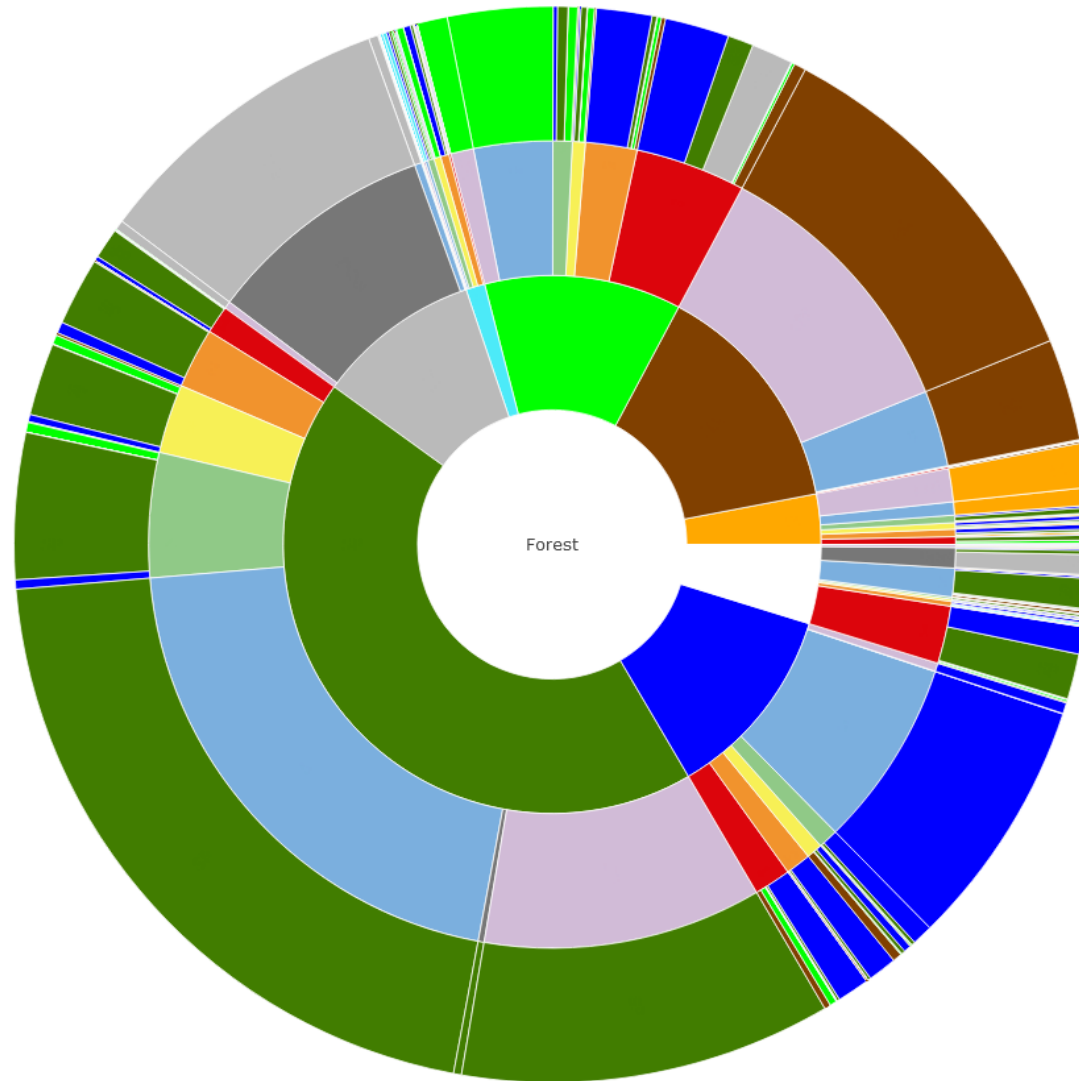


sunburstR

- Species**
 - European larch (EL)
 - Mixed broadleaves (MB)
 - Mixed conifers (MC)
 - Norway spruce (NS)
 - Scots pine (SP)
 - Sitka spruce (SS)
 - Open ground (OG)
 - Unplanted (UP)
- Felling Phase**
 - Phase 1, 2016 - 2020
 - Phase 2, 2021 - 2025
 - Phase 3, 2026 - 2030
 - Phase 4, 2031 - 2035
 - Phase 5+, >=2036
 - Designed Open Ground
 - Long Term Retention

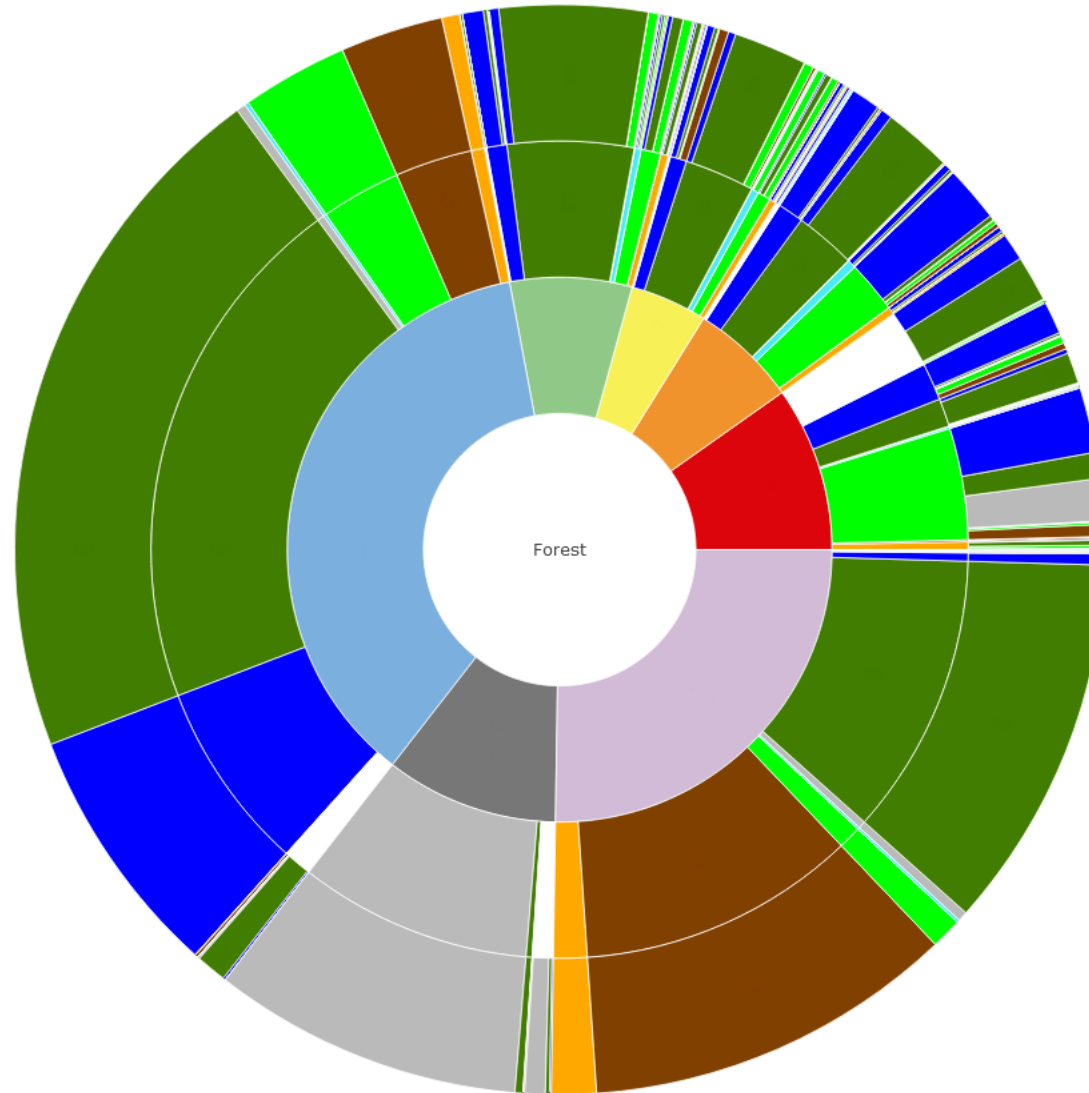


First Tree Ring – User evaluation feedback



Current species at
centre, final species
in outer ring.

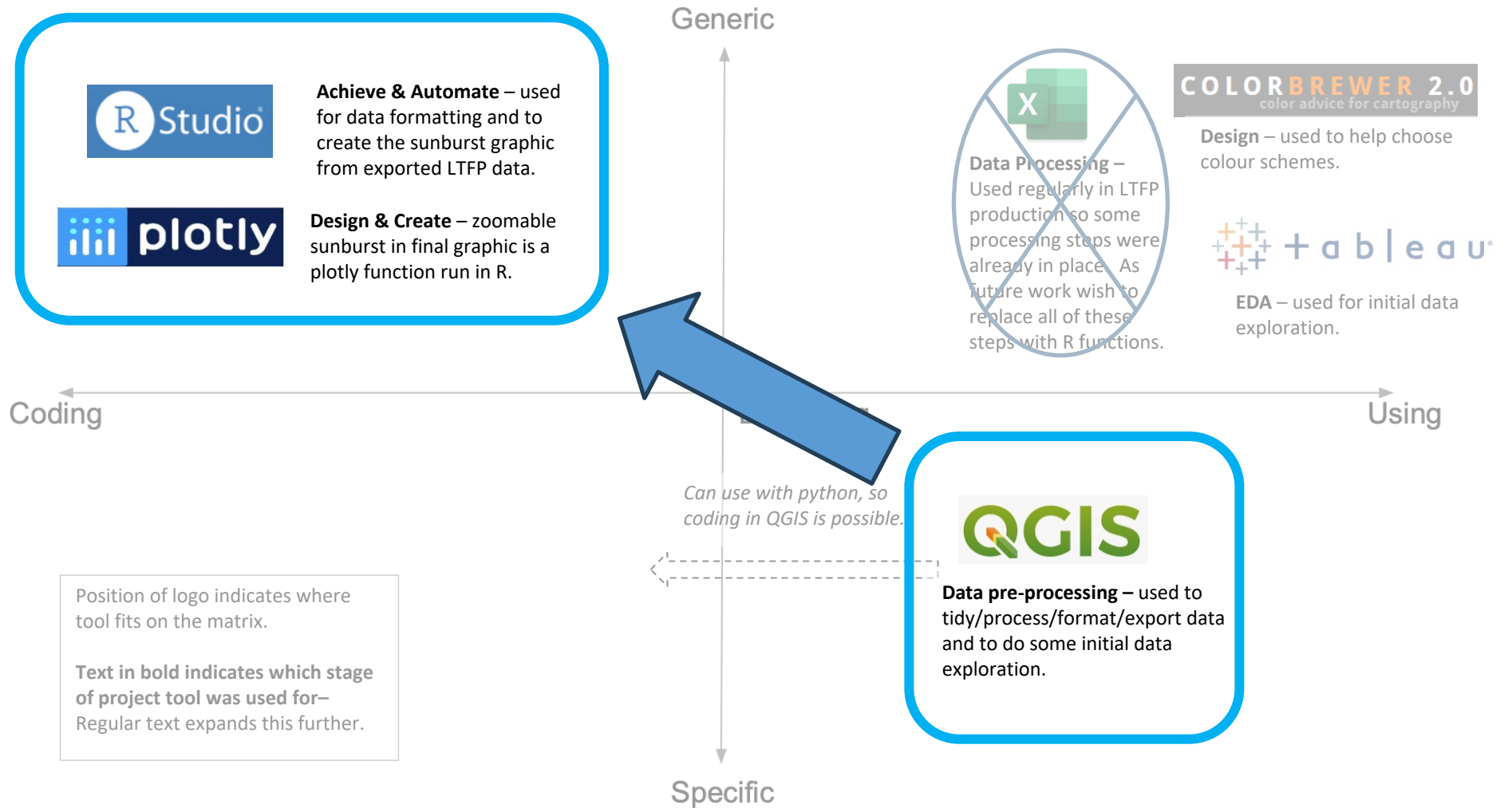
Second Tree Ring – Felling phase focus



Felling phase is focus,
current and restock
species in outer rings.

Future Thoughts...

- Use R for more processing
- Deal with species mixes
- Aggregate outer ring to show species before and after
- Automate extraction from QGIS spatial layer
- Link geom in...?





FOSS4GUK 2023

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Thanks to:

University of Edinburgh: Aba-Sah Dazie, Benjamin Bach
Stackexchange users: ismirsehregal, mtreg, Gilean0709,
indigofera suffruticosa
Cawdor Forestry
Doug Borthwick

