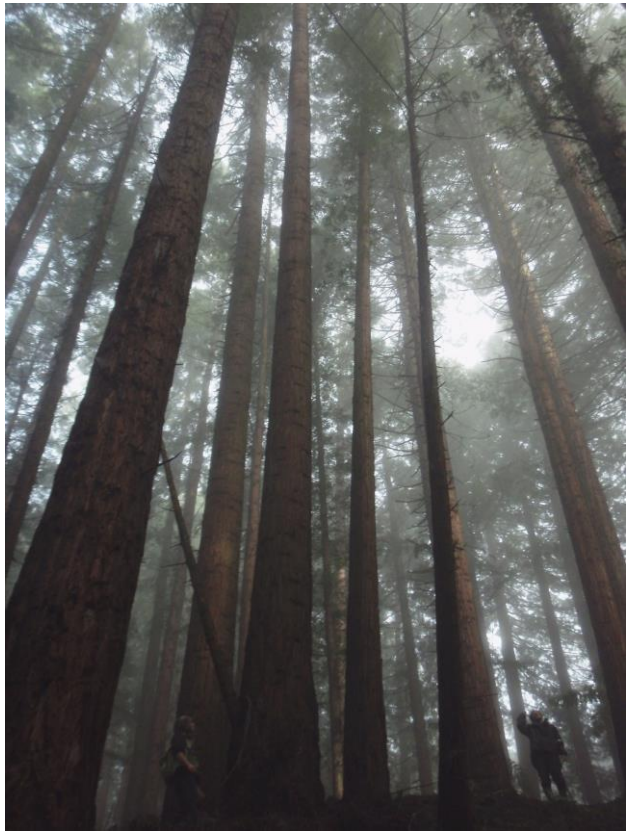
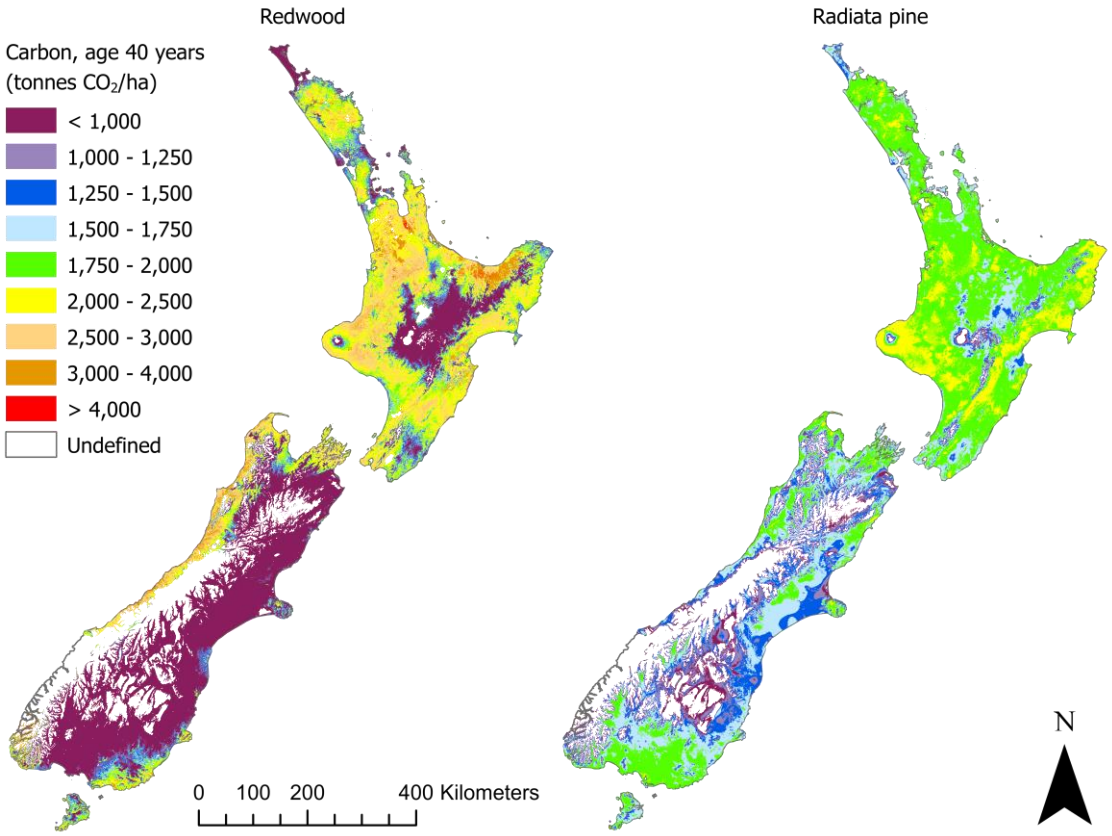
Spatial comparisons of carbon and volume for radiata pine and 10 alternative exotic species using recently developed tools

Michael Watt, Jamie Heather





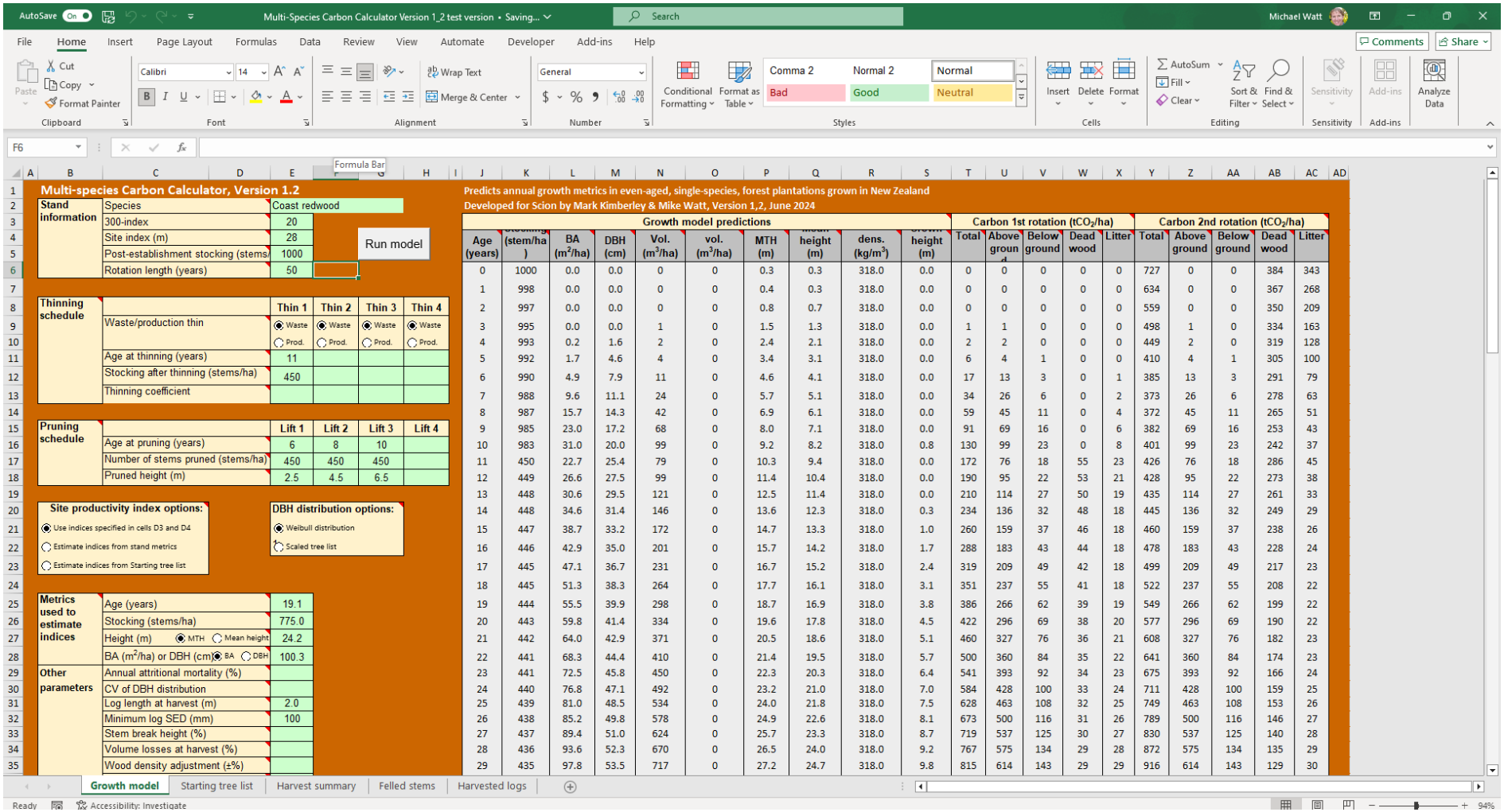
Multi-species carbon calculator and dashboard

- Multi-species carbon calculator developed by Mark Kimberley and Michael Watt
- Can be used for predictions of volume, carbon for 11 common plantation species – including radiata pine, redwood, two cypresses; five eucalypts, Douglas-fir and blackwood
- Can be run off either plot data or 300 Index and site index
- Can be downloaded from:

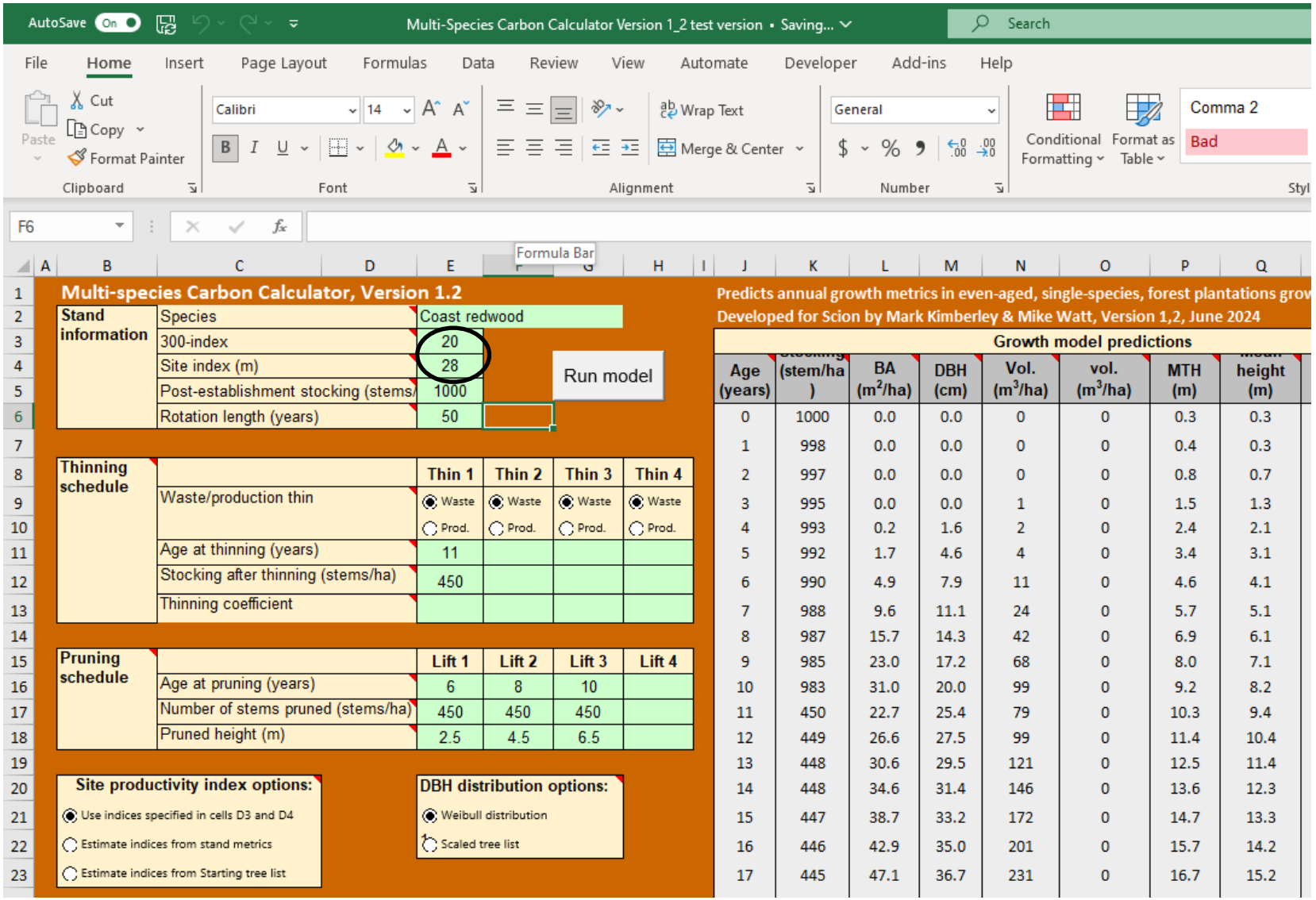
  https://fgr.nz/tools/multi-species-carbon-calculator/

  Help file available at same site
- Recently a multi-species dashboard has been developed from the multi-species carbon calculator, which is the main subject of this presentation

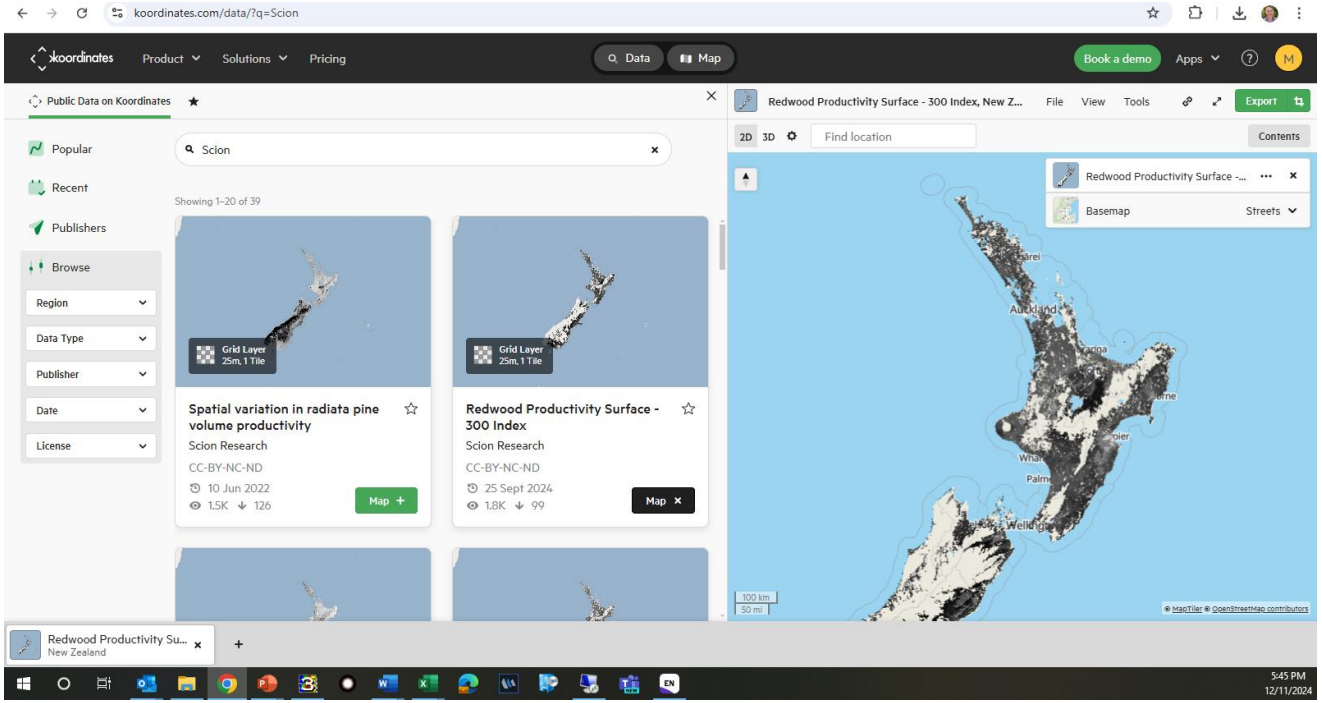
Multi-species carbon calculator



Multi-species carbon calculator



Site estimation of 300 Index and site index - koordinates



Redwood 300 Index and Site Index

https://scion.koordinates.com/layer/105758-redwood-productivity-surface-300-index/

https://scion.koordinates.com/layer/109623-spatial-variation-in-redwood-site-index/

Radiata pine 300 Index and Site Index

https://scion.koordinates.com/layer/107990-spatial-variation-in-radiata-pine-volume-productivity/

https://scion.koordinates.com/layer/108095-spatial-variation-in-radiata-pine-height-productivity/

***C. lusitanica* 300 Index and site index**

https://koordinates.com/from/scion.koordinates.com/layer/113229-spatial-variation-in-cupressus-lusitanica-volume-productivity/

https://koordinates.com/from/scion.koordinates.com/layer/113228-spatial-variation-in-cupressus-lusitanica-height-productivity/

***C. macrocarpa* 300 Index and site index**

https://koordinates.com/from/scion.koordinates.com/layer/113225-spatial-variation-in-cupressus-macrocarpa-volume-productivity/

https://koordinates.com/from/scion.koordinates.com/layer/113226-spatial-variation-in-cupressus-macrocarpa-height-productivity/

Regional estimates of 300 Index and site index also available through help file

	Auckland	Waikato/ Taranaki	Bay of Plenty	Gisborne	Hawkes Bay/Southern NI	Nelson/ Marlborough	Canterbury/ Westland	Otago	Southland		North Island	South Island
300 Index (m^3/ha/yr)												
Blackwood	12.7	16.7					3.4				13.5	3.4
Cupressus lusitanica	17.8	14.2	14.6	15.3	13.3	7.6	4.8	4.0	4.3		14.6	5.0
Cupressus macrocarpa	12.5	16.3	17.4	20.6	15.9	14.0	10.2	9.1	10.5		15.8	10.7
Douglas-fir (500 Index)		22.4	18.3	18.3	14.6	18.9	19.5	19.7	21.8		17.6	19.1
Eucalyptus delegatensis		10.5									13.5	20.4
Eucalyptus fastigata	15.0	22.1	21.4		21.5						20.8	
Eucalyptus nitens	20.3	17.4	22.2					19.0	25.5		18.8	20.5
Eucalyptus regnans		30.7	40.1		25.5						32.5	
Eucalyptus saligna	19.7		18.1								19.0	
Radiata pine	26.9	29.6	29.9	31.0	30.1	24.0	20.3	19.2	23.6		29.4	21.3
Redwood	28.3	29.2	30.0	25.2	28.0	14.7	11.7	5.6	13.5		28.3	11.3
Site Index (m, base age 30)												
Blackwood	26.3	27.5					17.7				26.9	17.7
Cupressus lusitanica	27.3	25.1	25.5	26.1	23.8	21.7	13.3	8.1	13.3		25.1	13.8
Cupressus macrocarpa	25.0	27.5	27.5	29.5	27.1	25.6	21.9	19.8	23.8		27.0	22.5
Douglas-fir (base age 40)		32.8	32.8	32.8	28.2	32.7	31.5	30.6	30.9		31.0	31.7
Eucalyptus delegatensis		35.6									36.1	34.4
Eucalyptus fastigata	34.2	44.3	44.2		39.8						41.7	
Eucalyptus nitens	39.9	41.2	45.7					39.9	40.7		41.5	40.1
Eucalyptus regnans		51.2	48.2		43.4						49.5	
Eucalyptus saligna	40.7		39.6								39.9	
Radiata pine (base age 20)	30.0	31.1	31.9	30.6	29.5	26.9	25.5	21.2	22.7		30.3	24.2
Redwood	34.5	30.9	33.8	30.5	30.9	23.2	18.8	15.5	21.5		31.9	19.3

However, this system has just become a lot easier with the development of the multi-species dashboard…….

Acknowledgements

- Funding from Scion SSIF and MBIE Transforming Tree Phenotyping programme
- Danielle Gatland for co-developing the dashboard
- Mark Kimberley for input around dashboard development

multispecies.nz