



Plant community assembly and trait evolution in the South African Greater Cape Floristic Region



Steven Augustine



Simcelile Chenge



Jeannine Cavender-Bares



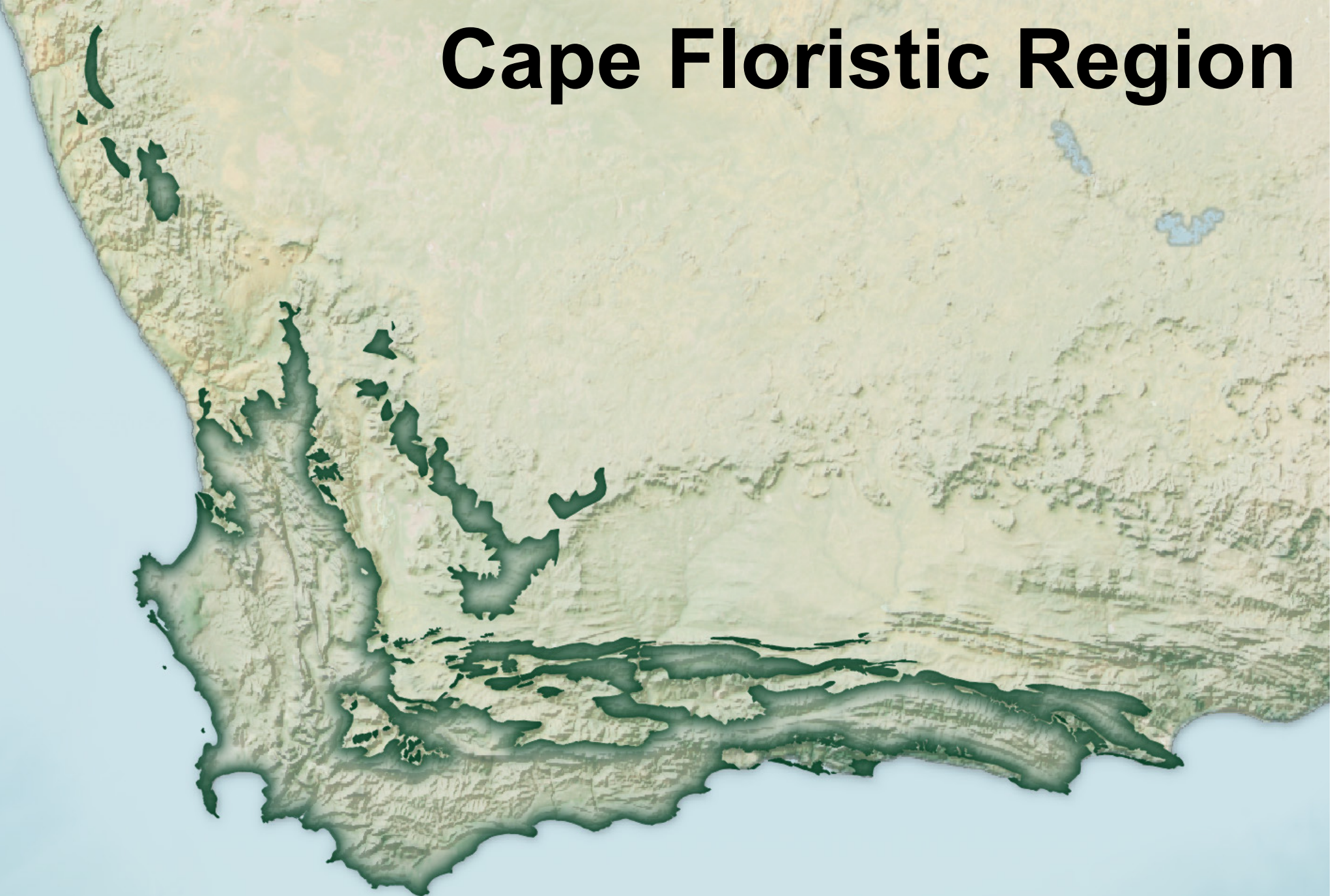
Phil Townsend



Jasper Slingsby



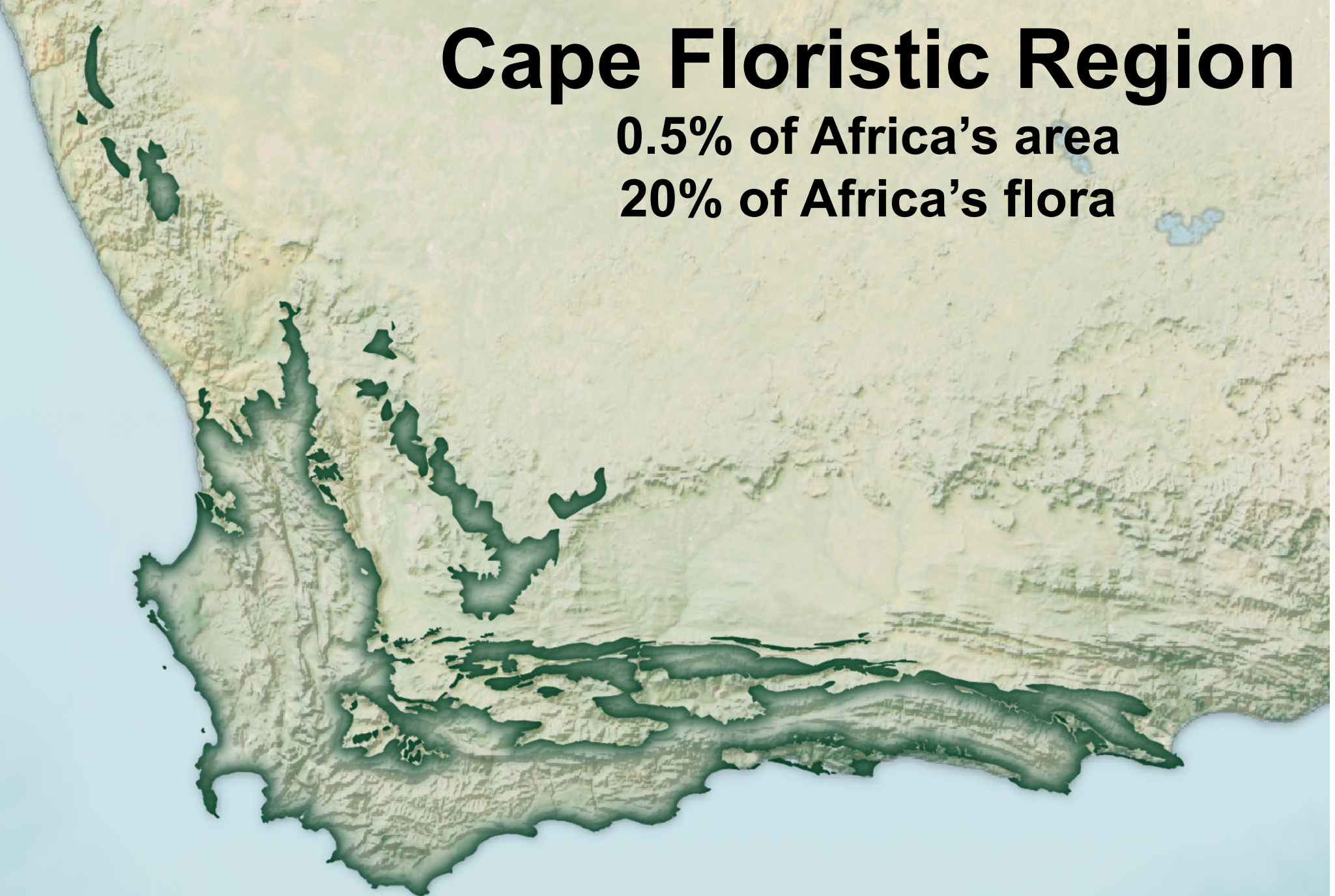
Cape Floristic Region



Cape Floristic Region

0.5% of Africa's area

20% of Africa's flora

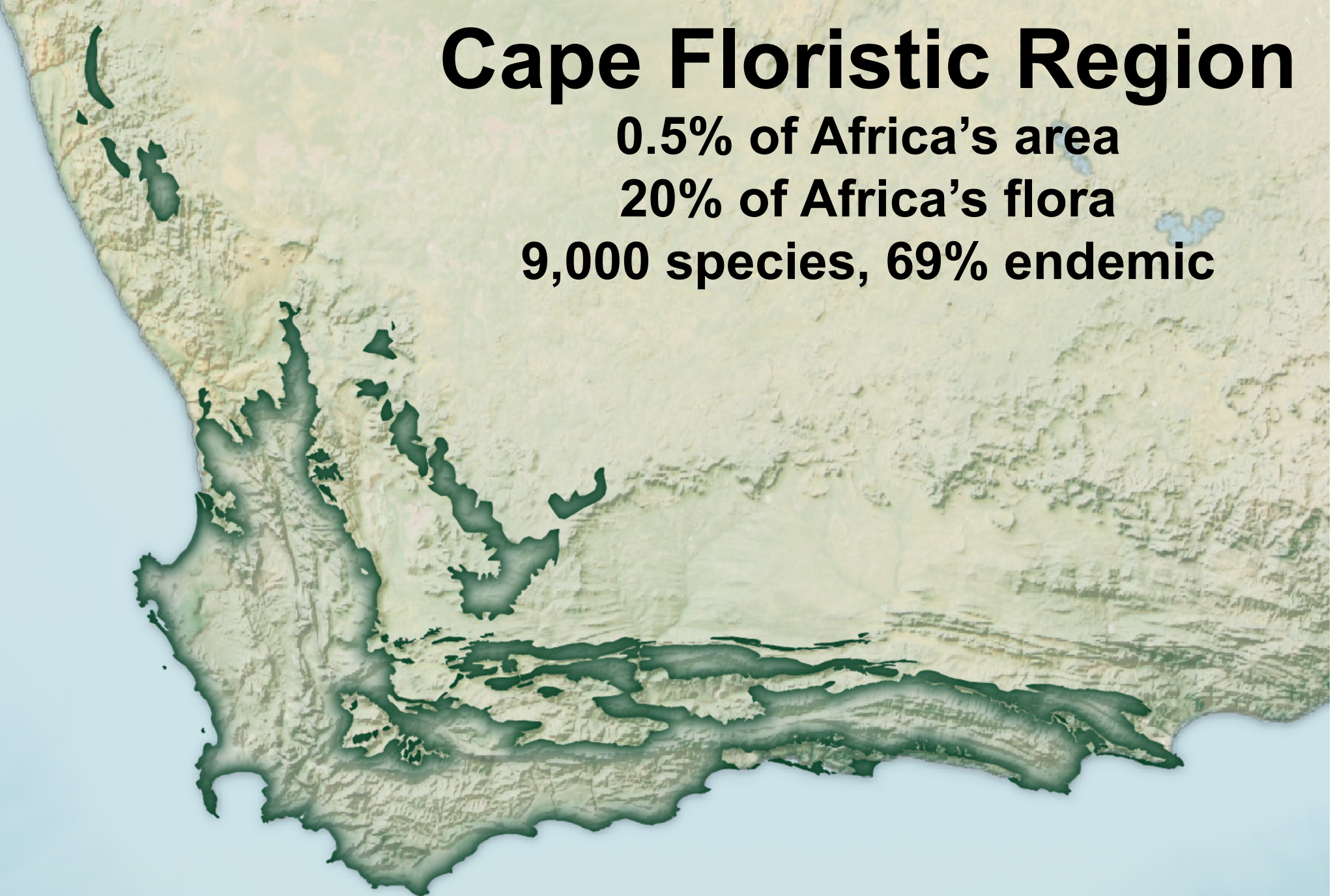


Cape Floristic Region

0.5% of Africa's area

20% of Africa's flora

9,000 species, 69% endemic



	Family	Total species	Number endemic (% of total species)	Total genera (number endemic)	Species/genus
1.	Asteraceae	1036	655 (63.2)	121 (33)	8.6
2.	Fabaceae	761	629 (82.7)	37 (6)	20.6
3.	Iridaceae	677	540 (79.8)	28 (6)	24.2
4.	Aizoaceae	659	524 (79.5)	76 (18)	7.5
5.	Ericaceae	657	637 (96.9)	1 (0)	657
6.	Scrophulariaceae	414	297 (71.7)	33 (7)	12.5
7.	Proteaceae	329	319 (97.0)	14 (9)	23.5
8.	Restionaceae	318	294 (92.5)	19 (10)	16.7
9.	Rutaceae	273	257 (94.1)	15 (6)	18.2
10.	Orchidaceae	227	138 (60.8)	25 (2)	9.1
11.	Poaceae	207	80 (38.6)	61 (3)	3.4
12.	Cyperaceae	206	101 (49.0)	29 (4)	7.1
13.	Hyacinthaceae	191	83 (43.5)	14 (0)	13.6
14.	Campanulaceae	183	140 (76.5)	13 (6)	14.1
15.	Asphodelaceae	157	81 (51.6)	8 (0)	19.6
16.	Geraniaceae	157	91 (58.0)	3 (0)	52.3
17.	Polygalaceae	141	122 (86.5)	3 (0)	47.0
18.	Rhamnaceae	137	127 (92.7)	5 (1)	27.4
19.	Crassulaceae	134	35 (26.1)	5 (0)	26.8
20.	Thymelaeaceae	125	94 (75.2)	4 (1)	31.3
		$\Sigma = 6989$	5244 (77.0)	514 (112)	

PLANT DIVERSITY OF THE
CAPE REGION OF
SOUTHERN AFRICA¹

Peter Goldblatt² and John C. Manning³



Fire Relations

Resprout



Serotinous



Photos from iNaturalist

Shrublet



Shrub



Tree



Photos from iNaturalist

Stature

Pollination

Bird



Bird and insect pollinators differ in specialization and potential pollination services along disturbance and resource gradients

Alexander Neu^{1,2} | Huw Cooksley³ | Karen J. Esler⁴ | Anton Pauw⁵ | Francois Roets⁶ | Frank M. Schurr⁷ | Matthias Schleuning⁸

Rodent



Rodent pollination in *Protea nana*

A. Biccard*, J.J. Midgley
South African Journal of Botany 75 (2009) 720–725

Beetle



Evidence for beetle pollination in the African grassland sugarbushes (*Protea*: Proteaceae)

Sandy-Lynn Steenhuisen · Steven D. Johnson
Plant Syst Evol (2012) 298:857–869

Needle-Like
Width < 2mm



Cordate
Width > 160mm

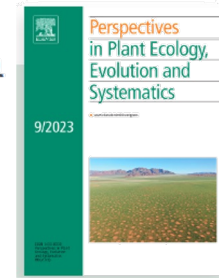


Photos from iNaturalist

Leaf Form

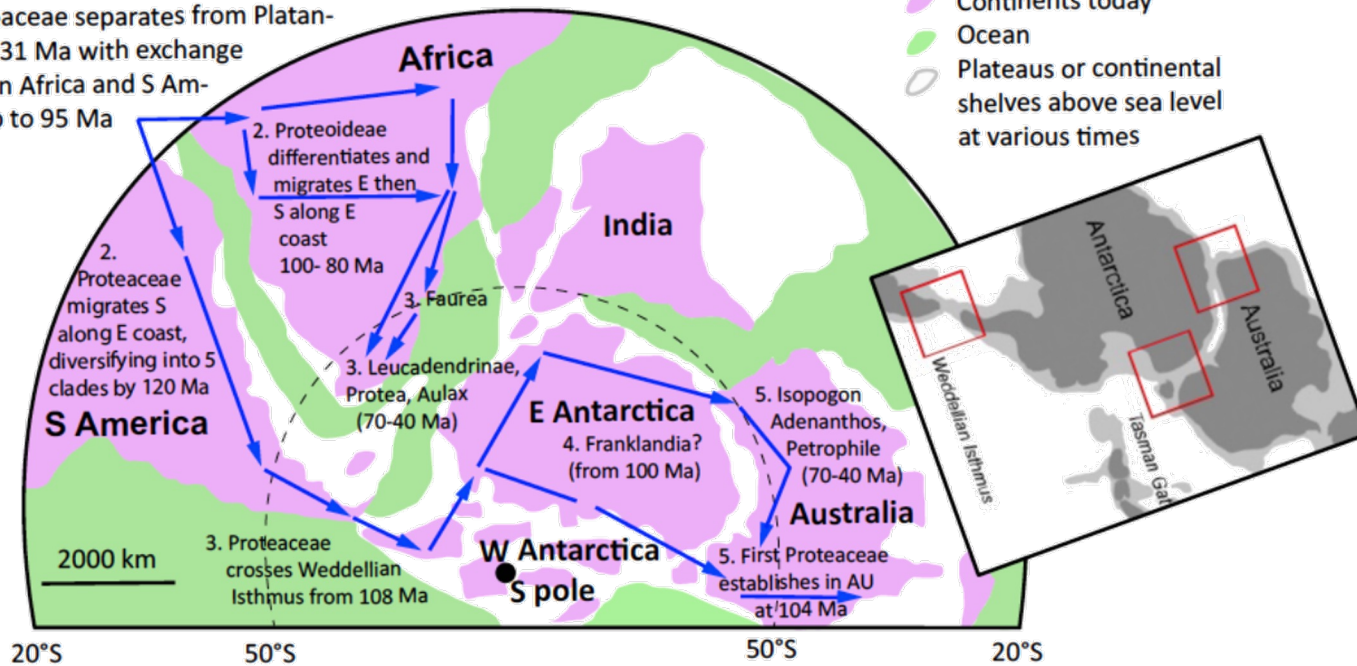
Out of Africa: Linked Continents, Overland Migration and Differential Survival Explain Abundance of Proteaceae in Australia

Byron Lamont, Tianhua He, Lynne Milne, Richard Cowling



Annals of Botany XX: 1–10, 2023
<https://doi.org/10.1093/aob/mcad055>, available online at www.academic.oup.com/aob

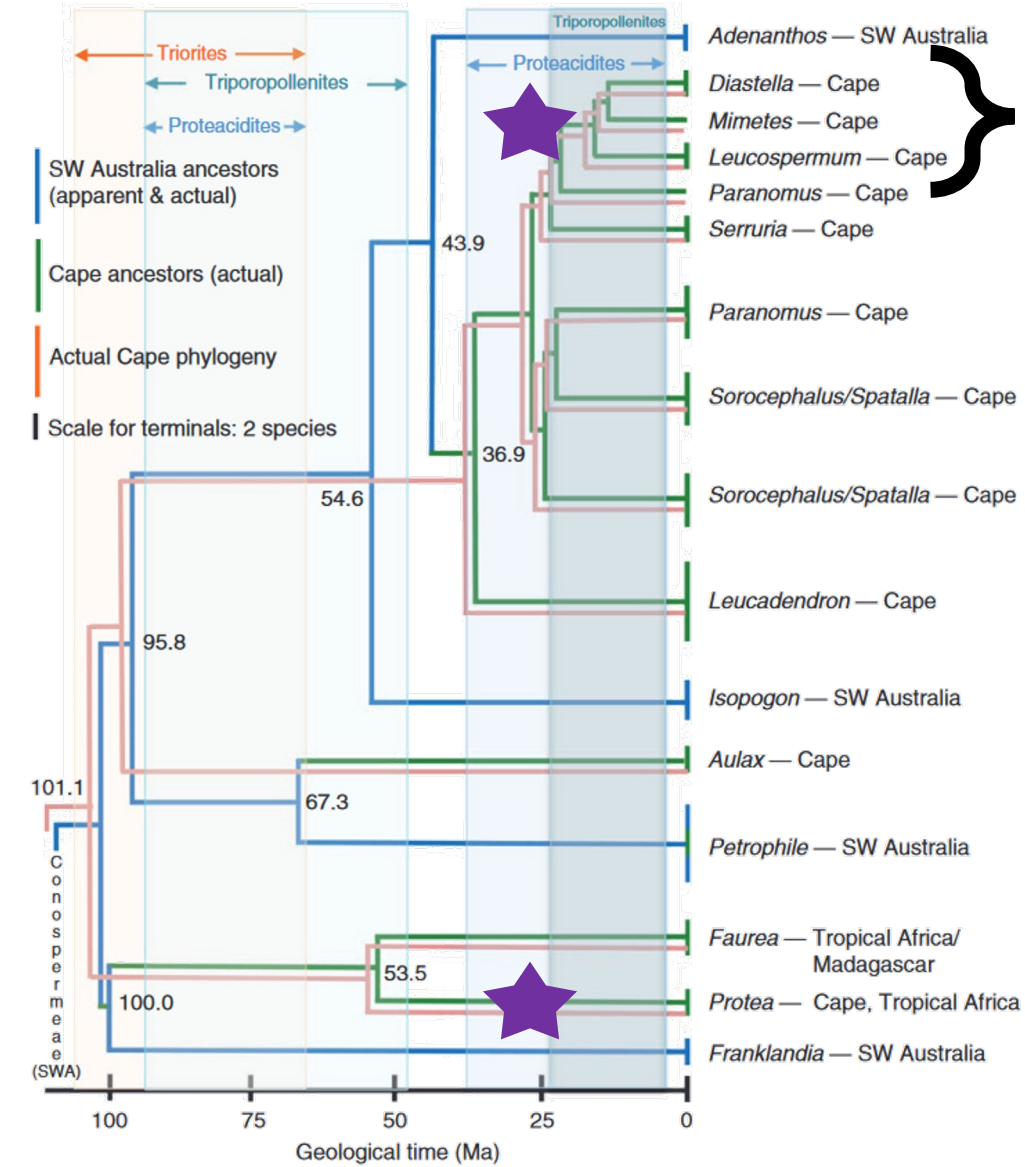
1. Proteaceae separates from Platanaceae 131 Ma with exchange between Africa and S America up to 95 Ma



More than three different clades have colonized CFR

Fossil pollen resolves origin of the South African Proteaceae as transcontinental not transoceanic

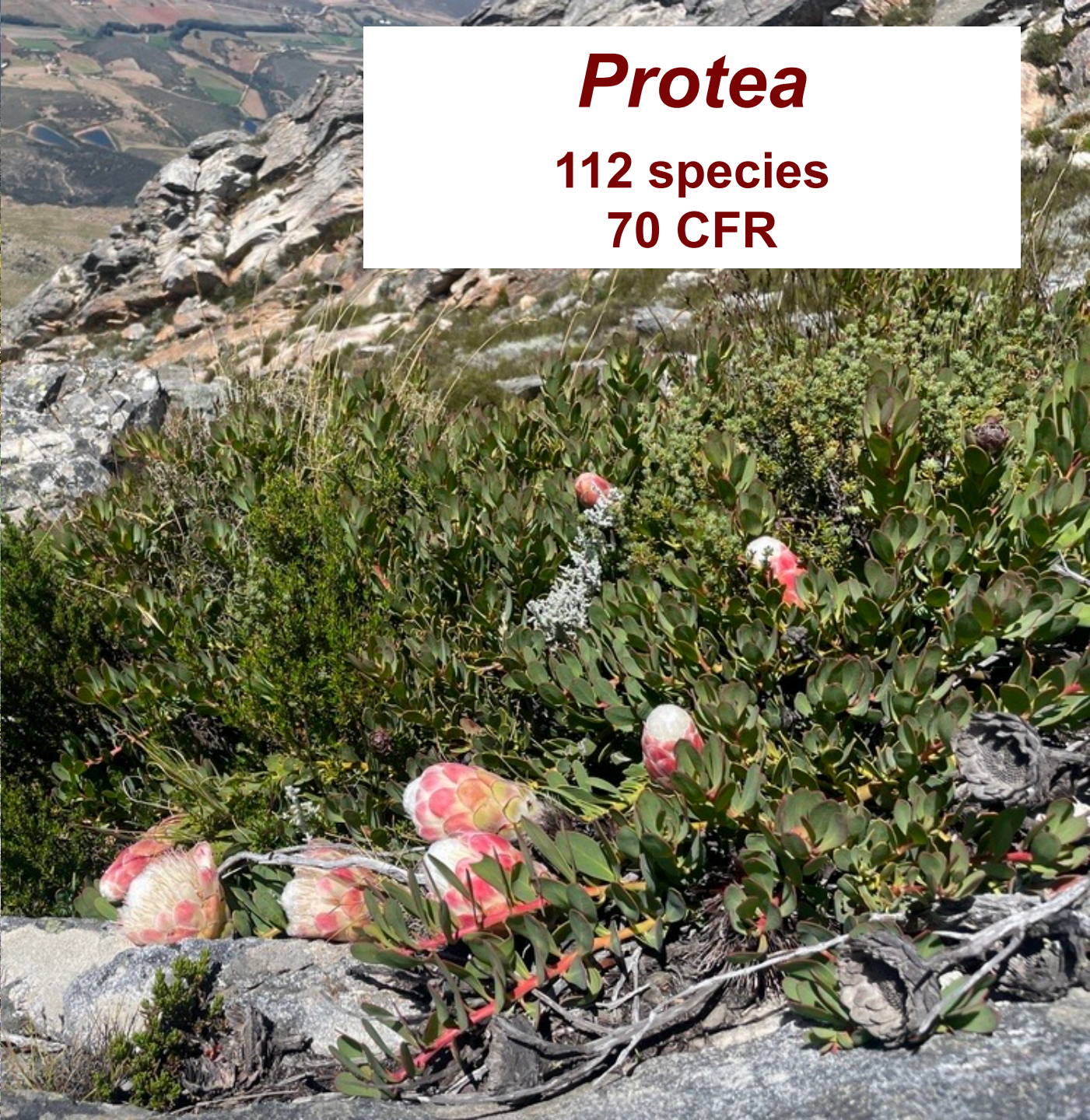
Byron B. Lamont^{1*}, Tianhua He² and Richard M. Cowling³





Study the patterns of functional diversity in Proteaceae to try to understand how they diversified across Africa





Protea

112 species

70 CFR



Leucospermum

48 species

45 CFR





Mimetes

13 species
All CFR





Diastella

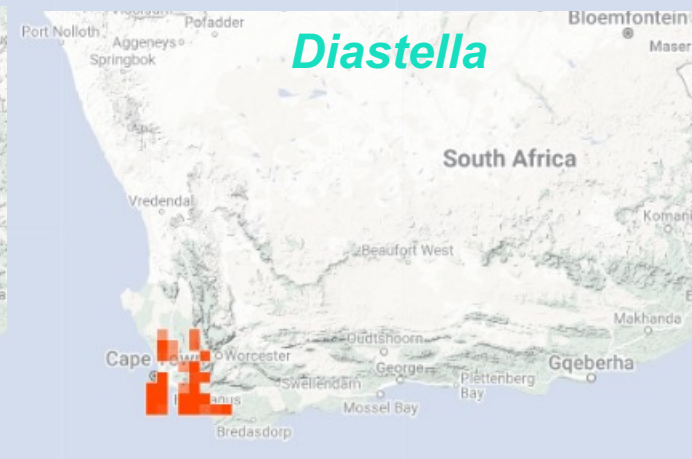
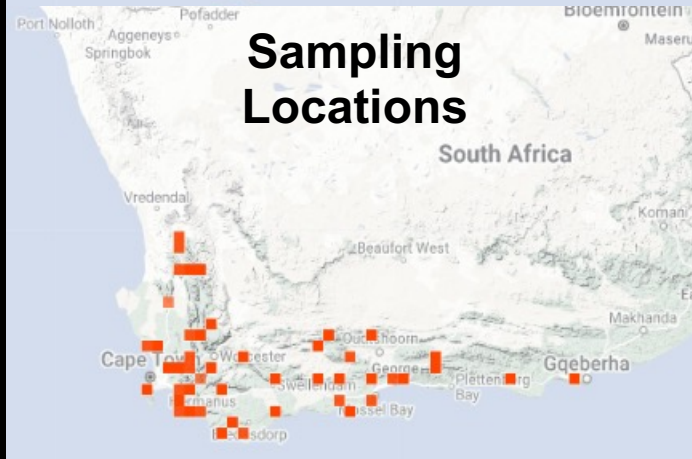
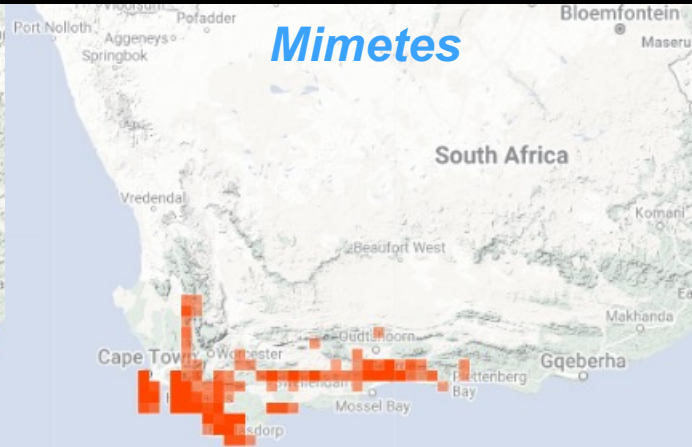
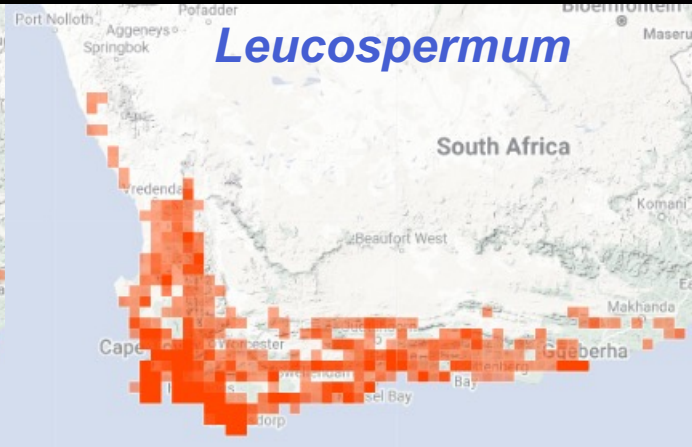
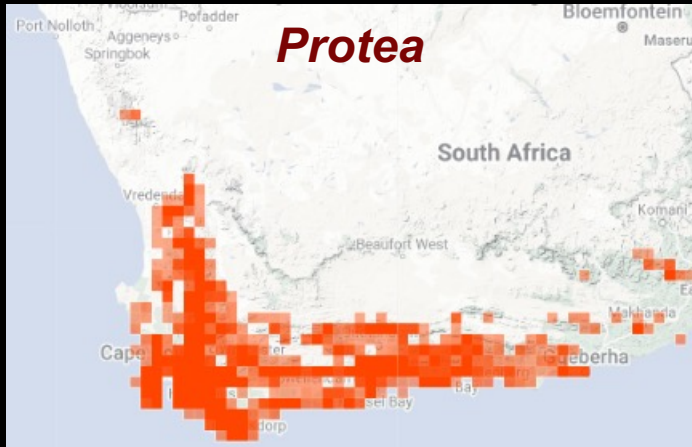
7 species

All CFR



Orothamnus

1 species
All CFR



Protea *Leucospermum* *Mimetes* *Diastella* *Orothamnus*

70 CFR

45 CFR

13 CFR

7 CFR

1 CFR

67

31

8

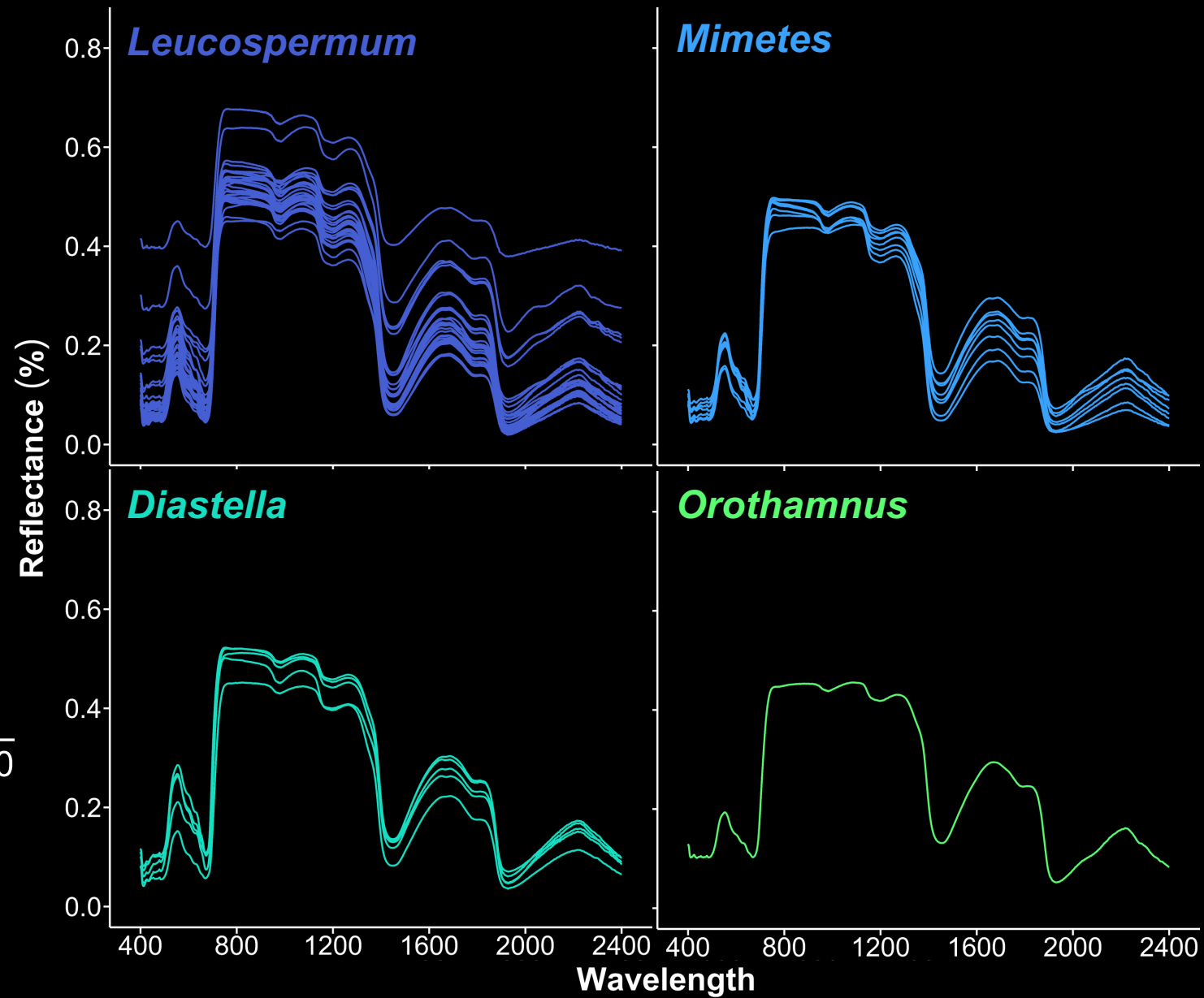
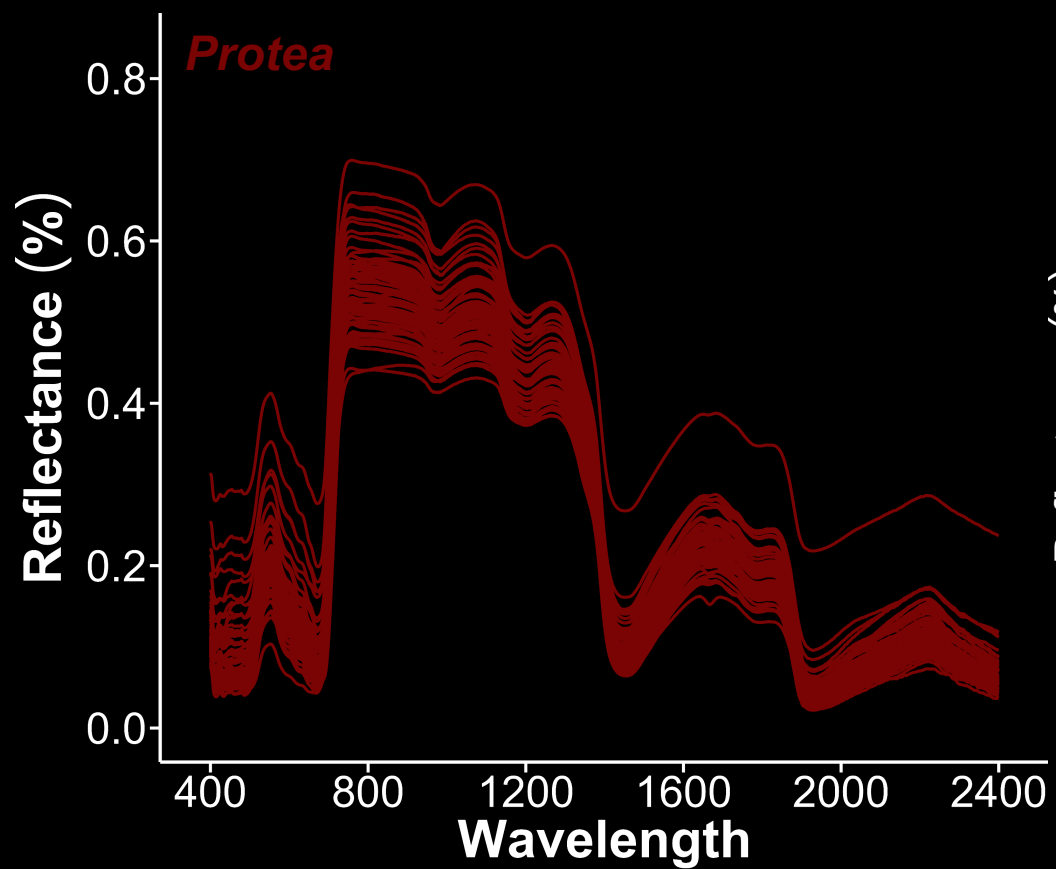
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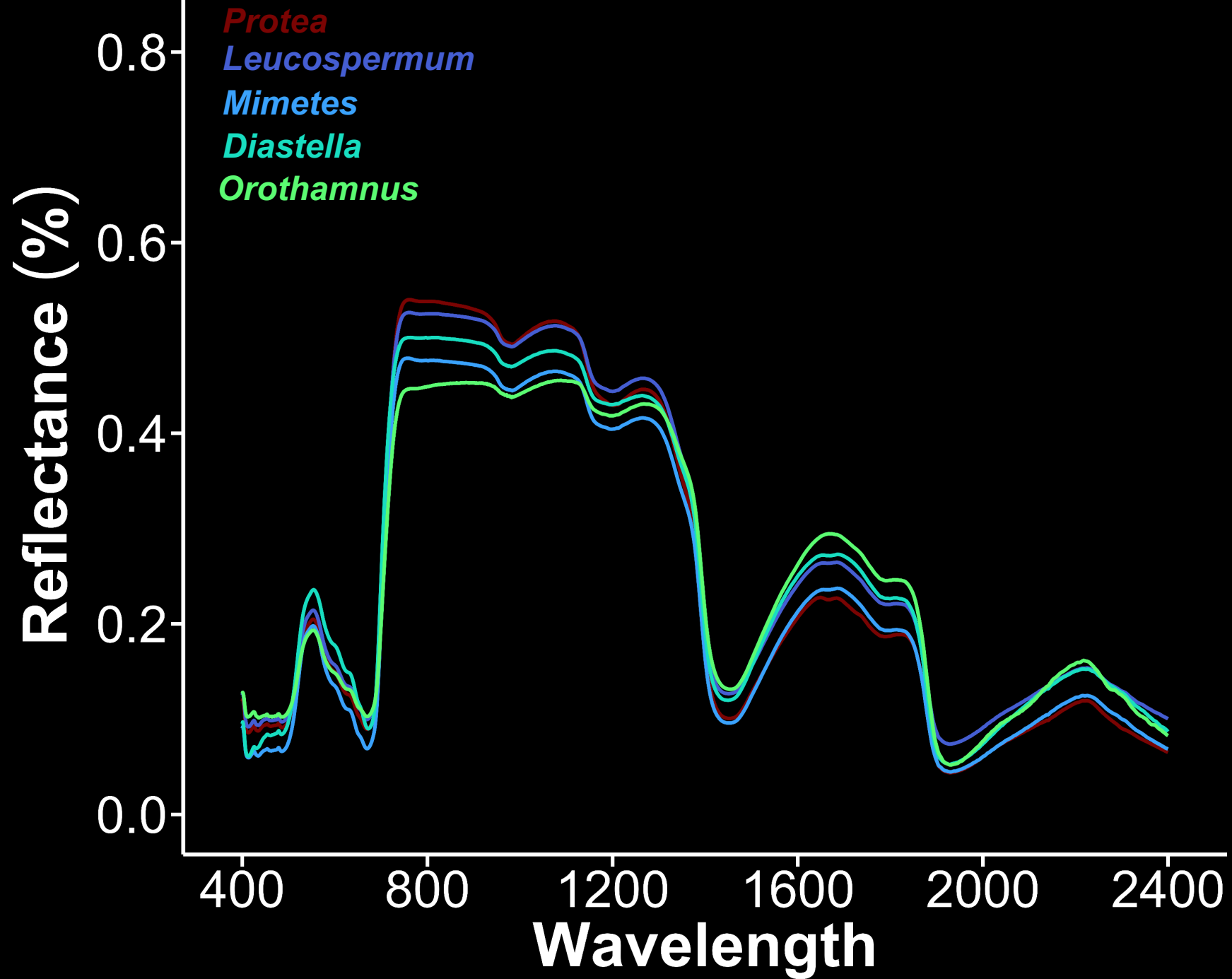
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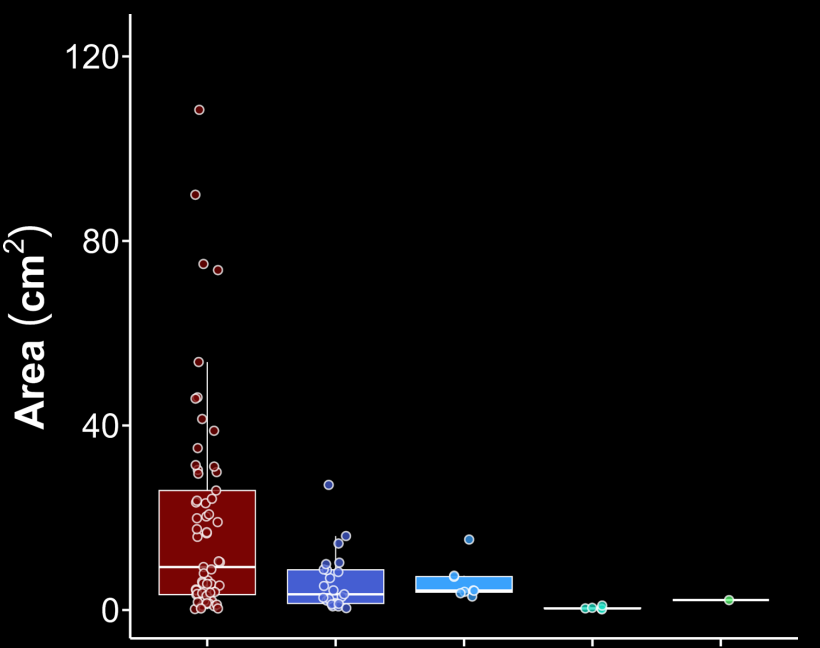
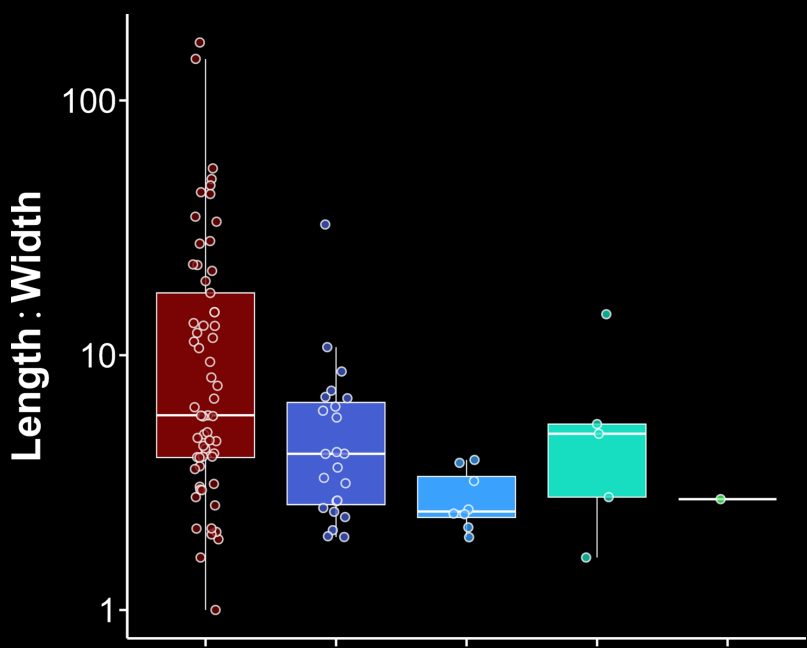
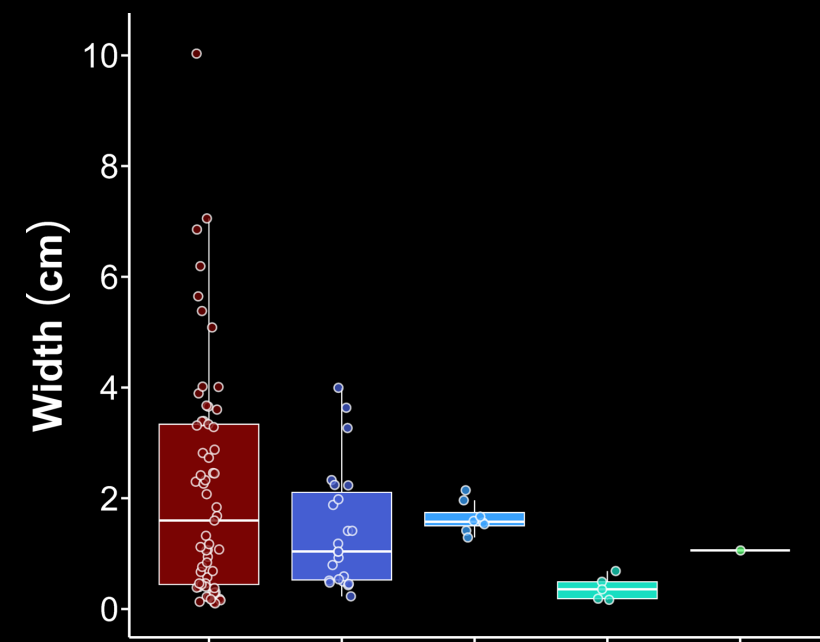
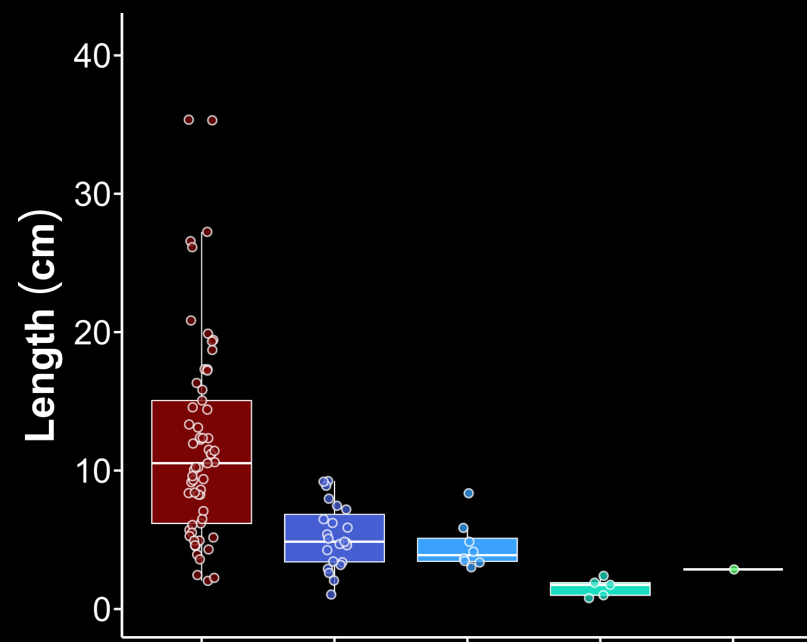
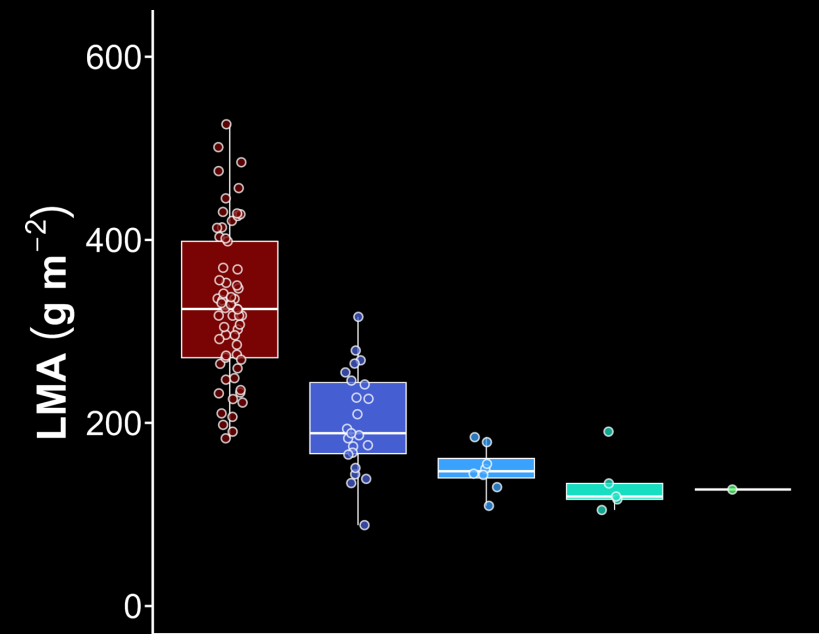
Spectra

Leaf Traits

(LMA, area, width)







Protea
Leucospermum
Mimetes
Diastella
Orothamnus



Questions

