

Ruan van Mazijk

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C4 EcoSolutions



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Education

MSc in Biological Sciences (UCT)

2023

Genome size variation in Cape schoenoid sedges & its ecophysiological consequences

Principal supervisor: Prof A.M. Muasya

Co-supervisors: Prof G.A. Verboom & Prof A.G. West

BSc Hons in Biological Sciences (UCT)

2017

Relating vascular plant species richness & environmental heterogeneity spatially in the GCFR & SWAFR

Supervisors: Prof M.D. Cramer & Prof G.A. Verboom

With distinction

BSc in Ecology & Evolution, Applied Biology (UCT)

2016

With distinction in both majors & the degree

Publications

- Ismail, Duker, **van Mazijk**, Mills & Potts. The importance of ground-truthing for thicket restoration site-selection: distinguishing degraded solid thicket from natural thicket mosaics. *Ecol. Rest.* In prep.
- Ismail, **van Mazijk**, Duker & Mills. *Portulacaria afra* canopies support diverse understory plant growth-forms in southern African xeric succulent thicket. *J. Arid Env.* In prep.
- Mills & **van Mazijk**. Non-parametric permutation testing to identify significant constraint promotion within biological scatterplots. *Ecol. Evol.* In prep.
- Mills, **van Mazijk**, Allen & Strydom. Soil geochemistry & constraint of tree seedlings immediately after germination on *Macrotermes* termite mounds in the Kruger National Park, South Africa. *Oikos* In rev.
- Van Mazijk**, West, Verboom, Elliott, Bureš & Muasya. Genome size variation in Cape schoenoid sedges (Cyperaceae: Schoeneae) & its ecophysiological consequences. *Am. J. Bot.* In rev.
- Mills, Duker, Lechmere-Oertel, **van Mazijk** & Potts. Science is the fuel required for lifting ecosystem restoration into the orbit of hundreds of millions of hectares. *Front. Cons. Sci.* In press
- Van Mazijk**, Cramer & Verboom. Environmental heterogeneity explains contrasting plant species richness between the South African Cape & southwestern Australia. *J. Biogeog.* 48. 10.1111/jbi.14118. 2021
- Elliott, **van Mazijk**, Barrett, Bruhl, Joly, Muthaphuli, Wilson & Muasya. Global dispersal & diversification of the genus *Schoenus* (Cyperaceae) from the Western Australian biodiversity hotspot. *J. Syst. Evol.* 59(4). 10.1111/jse.12742. 2021
- Elliott, Laidler, Muasya, Muthaphuli & **van Mazijk**. Solving the sedge mystery. *Veld & Flora* 105(3):20–25. 2019
- Cramer, Wootton, **van Mazijk** & Verboom. New regionally-modelled soil layers improve prediction of vegetation type relative to that based on global soil models. *Div. Distrib.* 25(11). 10.1111/ddi.12973. 2019
- Van Mazijk**, Smyth, Weideman & West. Isotopic tracing of stormwater in the urban Liesbeek River. *Water SA* 44(4). 10.4314/wsa.v44i4.16. 2018

Peer review

- Grobler & Cowling. The composition, geography, biology and assembly of the coastal flora of the Cape Floristic Region. *PeerJ* 9:e11916. DOI: 10.7717/peerj.11916. 2021

Interests

Systematics & taxonomy

Phylogenetic comparative methods

Biodiversity patterns & macroecology

Community ecology

Plant ecophysiology & functional traits	SASSB student member	2018–
	SAAB ² student member	2017–
Professional affiliations	Golden Key International Honour Society	2015–
SASSB ¹ council student representative	2019–2021	

¹SASSB: Southern African Society for Systematic Biology

²SAAB: South African Association of Botanists

Funding & awards

Travel grants

SASSB & GENUS (DSI-NRF Centre of Excellence in Palaeosciences) Sponsorship for SASSB XVI (R6,000)	2023
NRF Student Sponsorship for online attendance at MEDECOS XVII (R7,000)	2022
UCT Travel Grant for the 45 th Annual SAAB, AMA ³ & SASSB Joint Congress, 2019 (R3,819)	2018

Scholarships & bursaries

UCT Postgraduate Publication Incentive Funding (R4,000)	2023
NRF Innovation Masters Scholarship (R90,000)	2019
UCT Masters Research Scholarship ⁴ (R30,000)	2019
UCT Bursary Top Ups ⁵ (R6,000 total)	2019
SAAB MSc Student Bursary (inaugural recipient) (R20,000 p.a.)	2018–2019
UCT Department of Biological Sciences Dorothy Cameron Scholarship (R20,000)	2018
UCT Once-Off Top Up Award (R5,520)	2018
UCT Masters Research Scholarship (R30,000)	2018
NRF Innovation Honours Scholarship (R60,000)	2017
SAAB Honours Scholarship (R10,000)	2017
UCT Council Honours Merit Scholarship ⁶ (R20,000)	2017
UCT Science Faculty Scholarship (R15,000 p.a.)	2015–2016

Awards & honours

3 rd Best Student Presentation at SASSB XVI	Jul 2023
Best Systematics MSc Presentation ⁷ at the 45 th Annual SAAB, AMA & SASSB Joint Congress	Jan 2019
UCT Dean's Merit List	2014–2016
UCT Dick & Dorothy Borcherts Prize, for the highest standard in 2 nd year biology (R1,000)	2015
Top of the class at UCT for:	
3 rd year evolutionary biology	2016
2 nd year botany	2015
2 nd year zoology	2015
2 nd year marine biology	2015
1 st year biological diversity	2014

Leadership positions

SASSB council member, student representative	2019–2021
UCT Department of Biological Sciences Postgraduate Committee member	Oct 2018–2019
UCT Departmental Representative for the Department of Biological Sciences	2016
Class Representative at UCT for:	
3 rd year evolutionary biology	2016
3 rd year ecology	2016
2 nd year botany	2015

³AMA: African Mycological Association

⁴Awarded but not reimbursed due to award of Innovation Masters Scholarship

⁵From MSc supervisors

⁶Awarded but not reimbursed due to award of Innovation Honours Scholarship

⁷Awarded by SASSB, 3-way tie with Z. Shaik (UCT, SANBI) & D. Main (UJ)

Teaching assistance

Teaching assistant & field assistant for 2 nd year angiosperm diversity Convenor: Associate Prof S. Chimphango (UCT)	2022
Teaching & field assistant for 2 nd year ecology & evolution Convenor: Prof G.A. Verboom (UCT)	2019–2020
Teaching assistant for 2 nd year angiosperm diversity Lecturer: Prof G.A. Verboom (UCT)	2018–2019
Tutor for 2 nd year study design & data analysis for scientists in R Convenor: Associate Prof R. Altwegg (SEEC ⁸)	2017–2020
Lectured for SDU ⁹ short course <i>Teaching Biodiversity for FET¹⁰ Life Sciences Teachers</i> Lecture title: <i>Biodiversity, evolution & taxonomy—an overview of the major clades of animals & plants</i>	18 Mar 2019
Assistant tutor for SEEC-ACCESS ¹¹ short course <i>Study design & data analysis for scientists in R</i> Organiser: Associate Prof R. Altwegg (SEEC)	18–20 Jul 2018
Assistant tutor for 1 st year introductory statistics R practicals Convenor: Associate Prof R. Altwegg (SEEC)	2016–2018
Hot-seat tutor for 1 st year mathematics for biology, earth & environmental sciences undergraduates Convenor: T. van Heerden (UCT); hot-seat organiser: Dr R. Moolman (UCT)	2015

Workshops

Organiser, lead for <i>Data wrangling & manipulation in R</i> For UCT Department of Biological Sciences postgraduates	1–3 Jul 2019
Attendee at <i>Phylogenetics in R</i> Pre-congress workshop at the 45th Annual SAAB, AMA & SASSB Joint Congress Instructors: Prof L.J. Revell (University of Massachusetts Boston) & Prof L.J. Harmon (University of Idaho)	6–8 Jan 2019
Presenter at <i>Biodiversity & Environmental Change in the Cape Floristic Region</i> With L.M. Wootton Progress report on <i>Development of soil atlas for the Greater Cape Floristic Region</i> Organiser: Associate Prof L. Gillson (UCT)	24 Jan 2017
Attendee at <i>Spatial Point Process Modelling for Ecological Survey Data with inlabru</i> Instructors: Prof D.L. Borchers (CREEM ¹²), Dr J.B. Illian (University of Glasgow) & Dr F. Bachl (University of Edinburgh)	11–13 Jan 2017

Research assistance

Field assistant for sampling <i>Schoenus</i> spp. (Cyperaceae, tribe Schoeneae) Specimens were used for genome-size analyses and taxonomic study Supervisor: Dr T.L. Elliott (Masaryk University) & Prof A.M. Muasya (UCT)	2018
Laboratory assistant for <i>Schoenus</i> spp. (Cyperaceae, tribe Schoeneae) hydroponics pilot study Supervisor: Dr T.L. Elliott (Masaryk University) & Prof A.M. Muasya (UCT)	2018
Data processing assistant for assessing the current available data for the soils of the GCFR With L.M. Wootton <i>Biodiversity and Environmental Change in the Cape Floristic Region</i> research programme Supervisor: Prof M.D. Cramer (UCT)	Jun–Dec 2016
Field assistant for population monitoring of <i>Mimetes</i> spp. & <i>Leucospermum</i> spp. (Proteaceae) on the Cape Peninsula With L.M. Wootton Supervisor: Dr J.A. Slingsby (UCT, SAEON)	Jan–Feb 2017
Laboratory & field assistant for legume symbiotic rhizobia culturing Also involved plant collections & literature-derived rhizobial collection data processing Supervisors: Dr M. Dladlu (University of Swaziland) & Prof A.M. Muasya (UCT)	Dec 2015

⁸SEEC: Centre for Statistics in Ecology, the Environment & Conservation, UCT

⁹SDU: Schools Development Unit, UCT

¹⁰Further Education & Training (grades 10–12 in South Africa)

¹¹ACCESS: Applied Centre for Climate & Earth Systems, NRF

¹²CREEM: Centre for Research into Ecological & Environmental Modelling, St Andrews University

Conferences

Presenter at SASSB XVI <i>Genome size variation in Cape schoenoid sedges (Cyperaceae: Schoeneae) & its ecophysiological consequences</i>	5–7 Jul 2023
Presenter at UCT Biological Sciences Research Day <i>Genome size & ecophysiology in two species-rich Cape lineages</i>	29 Nov 2022
Presenter at SAAB Postgraduate Virtual Symposium <i>Comparing genome size & ecophysiology in two species-rich Cape sedge lineages (Schoenus L. & Tetraria P.Beauv., tribe Schoeneae, Cyperaceae)</i>	28 Sep 2022
Attendee at MEDECOS XVII	5–9 Sep 2022
Presenter at IBS ¹³ Early Career Biogeographers Conference <i>Environmental heterogeneity explains contrasting plant species richness between the South African Cape & southwestern Australia</i>	22–24 Oct 2021
Presenter & candidate at iDiv ¹⁴ Online Joint Recruitment Symposium	31 Aug–1 Sep 2020
Presenter at the 45th Annual SAAB, AMA & SASSB Joint Congress 1 st oral presentation: <i>Environmental turnover predicts plant species richness & turnover</i> Based on my then BSc Hons work, later published in <i>Journal of Biogeography</i>	9–11 Jan 2019 9 Jan 2019
2 nd oral presentation: <i>Larger genome size constrains water-use efficiency & phenology in Cape schoenoid sedges</i> Based on my MSc work	11 Jan 2019
Presenter at UCT BioDay Preliminary results of my MSc work	30 Nov 2018
Attendee at satRday Cape Town	17 Mar 2018

Press releases & science communication

Radio interview on <i>The John Maytham Show, CapeTalk</i> <i>Harvesting Storm Water</i>	28 Nov 2018
Interviewed for article for UCT News by S. Segar <i>Harvesting storm water from the Liesbeek River</i>	26 Nov 2018
Mentioned in article for UCT Faculty of Science press releases <i>Tracing stormwater in the Liesbeeck River - students passion drives scientific discovery</i>	Nov–Dec 2018
Presenter at <i>Pint of Science Cape Town</i> I talked about hypotheses concerning the role of genome size in plant water use & ecology to a general audience	16 May 2018

Skills

Strong public speaker
Written communication skills
Teaching experience
Visual design
Detail oriented
Analytical thinking
Highly numerate

Languages

English (1st language)
Afrikaans (2nd language)

Tools

Data manipulation, wrangling & cleaning
Data visualisation
Statistical modelling
Phylogenetic inference
Phylogenetic comparative methods
GIS (in R)

bash, R
R Markdown & related R-packages
tidyverse R-packages
git, GitHub
LaTeX, BibTeX
Apple macOS
Microsoft Windows
Microsoft Office Word, Excel & Powerpoint

Miscellaneous

UCT Open Day volunteer For the Department of Biological Sciences	22 Apr 2017, 21 Apr 2018, 4 May 2019, 8 Oct 2022
Animal Ethics Course certified by South African Veterinary Council Completed as part of BSc Hons general coursework	Apr 2017
Botanical Society of South Africa (BotSoc) member	2017–
UCT Wine & Culture Society member	2016–2018
UCT Birding Club member	2016–2017
Selected to give student feedback for curriculum-restructuring Within the Department of Biological Sciences Related to roles as Class/Departmental Representative—see above Selected by: Prof A.G. West (UCT)	Aug 2016
Selected to give student feedback for <i>Biology: How Life Works</i> (2 nd edition) Morris et al., 2016. W.H. Freeman & Co., Macmillan Education Selected by: Dr R. Kelly-Laubscher (University College Cork)	May 2016
Cape Wine Ambassador qualification Conferred by: Clive Torr	2016
UCT Biological Society member	2015
Two Oceans Aquarium Young Biologist Volunteer	2013–2014

References

Prof A.M. Muasya Department of Biological Sciences, UCT Keeper, Bolus Herbarium, UCT	muthama.muasya@uct.ac.za, (+27) 21 650 3725
Prof G.A. Verboom Head, Department of Biological Sciences, UCT Director, Bolus Herbarium, UCT	tony.verboom@uct.ac.za, (+27) 21 650 3398
Prof M.D. Cramer Department of Biological Sciences, UCT	michael.cramer@uct.ac.za, (+27) 21 650 2444
Prof A.G. West Department of Biological Sciences, UCT	adam.west@uct.ac.za, (+27) 21 650 3628
Associate Prof R. Altwegg Department of Statistical Sciences, UCT Head, SEEC, UCT	res.altwegg@uct.ac.za, (+27) 21 650 5750
Prof T.A.J. Hedderson Department of Biological Sciences, UCT Bolus Herbarium, UCT	terry.hedderson@uct.ac.za, (+27) 21 650 4037