

# Ruan van Mazijk

Research & Publications Intern  
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

**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

## Professional affiliations

SASSB<sup>1</sup> council student representative

2019–2021

SASSB student member

2018–

SAAB<sup>2</sup> student member

2017–

Golden Key International Honour Society

2015–

<sup>1</sup>SASSB: Southern African Society for Systematic Biology

<sup>2</sup>SAAB: South African Association of Botanists

## Funding & awards

### Travel grants

|   |      |
|---|------|
| NRF Student Sponsorship for online attendance at MEDECOS XVII (R7,000)  | 2022 |
| UCT Travel Grant for the 45 <sup>th</sup> Annual SAAB, AMA <sup>3</sup> & SASSB Joint Congress, 2019 (R3,819) | 2018 |

### Scholarships & bursaries

|   |           |
|---|-----------|
| NRF Innovation Masters Scholarship (R90,000)                                | 2019      |
| UCT Masters Research Scholarship <sup>4</sup> (R30,000)                     | 2019      |
| UCT Bursary Top Ups <sup>5</sup> (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 <sup>6</sup> (R20,000)                | 2017      |
| UCT Science Faculty Scholarship (R15,000 p.a.)                              | 2015–2016 |

### Awards & honours

|  |           |
|--|-----------|
| Best Systematics MSc Presentation <sup>7</sup> at the 45 <sup>th</sup> 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 <sup>nd</sup> year biology (R1,000)          | 2015      |
| Top of the class at UCT for:   |           |
| 3 <sup>rd</sup> year evolutionary biology  | 2016      |
| 2 <sup>nd</sup> year botany  | 2015      |
| 2 <sup>nd</sup> year zoology   | 2015      |
| 2 <sup>nd</sup> year marine biology  | 2015      |
| 1 <sup>st</sup> 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 <sup>rd</sup> year evolutionary biology                                 | 2016          |
| 3 <sup>rd</sup> year ecology  | 2016          |
| 2 <sup>nd</sup> year botany   | 2015          |

<sup>3</sup>AMA: African Mycological Association

<sup>4</sup>Awarded but not reimbursed due to award of Innovation Masters Scholarship

<sup>5</sup>From MSc supervisors

<sup>6</sup>Awarded but not reimbursed due to award of Innovation Honours Scholarship

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

## Teaching assistance

|   |                |
|---|----------------|
| Teaching assistant & field assistant for 2 <sup>nd</sup> year angiosperm diversity<br>Convenor: Associate Prof S. Chimphango (UCT)  | 2022           |
| Teaching & field assistant for 2 <sup>nd</sup> year ecology & evolution<br>Convenor: Prof G.A. Verboom (UCT)  | 2019–2020      |
| Teaching assistant for 2 <sup>nd</sup> year angiosperm diversity<br>Lecturer: Prof G.A. Verboom (UCT)   | 2018–2019      |
| Tutor for 2 <sup>nd</sup> year study design & data analysis for scientists in R<br>Convenor: Associate Prof R. Altwegg (SEEC <sup>8</sup> )   | 2017–2020      |
| Lectured for SDU <sup>9</sup> short course <i>Teaching Biodiversity for FET<sup>10</sup> Life Sciences Teachers</i><br>Lecture title: <i>Biodiversity, evolution &amp; taxonomy—an overview of the major clades of animals &amp; plants</i> | 18 Mar 2019    |
| Assistant tutor for SEEC-ACCESS <sup>11</sup> short course <i>Study design &amp; data analysis for scientists in R</i><br>Organiser: Associate Prof R. Altwegg (SEEC)   | 18–20 Jul 2018 |
| Assistant tutor for 1 <sup>st</sup> year introductory statistics R practicals<br>Convenor: Associate Prof R. Altwegg (SEEC)   | 2016–2018      |
| Hot-seat tutor for 1 <sup>st</sup> year mathematics for biology, earth & environmental sciences undergraduates<br>Convenor: T. van Heerden (UCT); hot-seat organiser: Dr R. Moolman (UCT)   | 2015           |

## Workshops

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

## Research assistance

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

<sup>8</sup>SEEC: Centre for Statistics in Ecology, the Environment & Conservation, UCT

<sup>9</sup>SDU: Schools Development Unit, UCT

<sup>10</sup>Further Education & Training (grades 10–12 in South Africa)

<sup>11</sup>ACCESS: Applied Centre for Climate & Earth Systems, NRF

<sup>12</sup>CREEM: Centre for Research into Ecological & Environmental Modelling, St Andrews University

## Conferences

|  |                             |
|--|-----------------------------|
| Presenter at UCT Biological Sciences Research Day<br><i>Genome size &amp; ecophysiology in two species-rich Cape lineages</i>  | 29 Nov 2022                 |
| Presenter at SAAB Postgraduate Virtual Symposium<br><i>Comparing genome size &amp; ecophysiology in two species-rich Cape sedge lineages<br/>(Schoenus L. &amp; Tetraria P.Beauv., tribe Schoeneae, Cyperaceae)</i>  | 28 Sep 2022                 |
| Attendee at MEDECOS XVII   | 5–9 Sep 2022                |
| Presenter at IBS <sup>13</sup> Early Career Biogeographers Conference<br><i>Environmental heterogeneity explains contrasting plant species richness between the South African Cape &amp; southwestern Australia</i>  | 22–24 Oct 2021              |
| Presenter & candidate at iDiv <sup>14</sup> Online Joint Recruitment Symposium   | 31 Aug–1 Sep 2020           |
| Presenter at the 45th Annual SAAB, AMA & SASSB Joint Congress<br>1 <sup>st</sup> oral presentation:<br><i>Environmental turnover predicts plant species richness &amp; turnover<br/>Based on my then BSc Hons work, later published in Journal of Biogeography</i> | 9–11 Jan 2019<br>9 Jan 2019 |
| 2 <sup>nd</sup> oral presentation:<br><i>Larger genome size constrains water-use efficiency &amp; phenology in Cape schoenoid sedges<br/>Based on my MSc work</i>  | 11 Jan 2019                 |
| Presenter at UCT BioDay<br>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><br><i>Harvesting Storm Water</i>  | 28 Nov 2018  |
| Interviewed for article for UCT News by S. Segar<br><i>Harvesting storm water from the Liesbeek River</i>   | 26 Nov 2018  |
| Mentioned in article for UCT Faculty of Science press releases<br><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><br>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 (1<sup>st</sup> language)  
Afrikaans (2<sup>nd</sup> 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*

## Methods

<sup>13</sup>IBS: International Biogeography Society

<sup>14</sup>iDiv: German Centre for Integrative Biodiversity Research, Halle-Jena-Leipzig

## Miscellaneous

|  |  |
|--|--|
| UCT Open Day volunteer<br>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<br>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<br>Within the Department of Biological Sciences<br>Related to roles as Class/Departmental Representative—see above<br>Selected by: Prof A.G. West (UCT)         | Aug 2016   |
| Selected to give student feedback for <i>Biology: How Life Works</i> (2 <sup>nd</sup> edition)<br>Morris et al., 2016. W.H. Freeman & Co., Macmillan Education<br>Selected by: Dr R. Kelly-Laubscher (University College Cork) | May 2016   |
| Cape Wine Ambassador qualification<br>Conferred by: Clive Torr   | 2016   |
| UCT Biological Society member  | 2015   |
| Two Oceans Aquarium Young Biologist Volunteer  | 2013–2014  |

## References

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