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PERSONAL INFORMATION

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RESEARCH INTERESTS

- Entomology
- Biological control of invasive weeds and/or insect pests
- Answering evolutionary questions using phylogenetics and molecular tools
- Creating user-friendly applications in R and Python to streamline data processing

SKILLS

- **Molecular biology:** DNA extraction, PCR, phylogenetics, genetic barcoding, fragment analyses (ISSR, SSR) and data processing
- **Computational:** Programming in Python and R, R Shiny Apps

COURSES COMPLETED

- Advanced Statistics in R, accredited through Rhodes University (August 2020)
- Invasive Weeds Short Course, accredited through Rhodes University (October 2018)
- Phylogenetics beginner and advanced workshop, Stellenbosch University (June 2018)

EDUCATION

- PhD, Entomology, Rhodes University, 2020-present
- MSc, Entomology, Rhodes University, 2018-2019
- BSc Hons (with distinction, top honours student), Entomology, Rhodes University, 2017
- BSc, Zoology and Entomology (with a distinction in Entomology), Rhodes University (EC Province), 2014-2016
- Selly Park Secondary School, Rustenburg (NW Province), 2008-2012, seven distinctions in matric (English first language, Afrikaans second additional language, Mathematics, Life Science, Physical Science, History, Life Orientation)

TEACHING, WORK, AND PROJECT EXPERIENCE

- **Postgraduate projects**
  - **PhD** A genetic investigation of the native stem-boring *Tetramesa* wasps in South Africa: identifying potential biological control agents of invasive grasses
  - **MSc** Using genetic barcoding methods to identify the different species and intra-specific lineages of *Dactylopius* Costa used as biological control agents of invasive Cactaceae
- **Phylogenetics tutorials** I delivered a series of 1-1.5 hour/week tutorials to colleagues within the Centre for Biological Control (CBC) research group, September - October 2020. See my GitHub repository.
- **Undergraduate and Honours projects**
  - The efficacy of a host-specific granulovirus (PlxyGV) under field conditions on the biological control of the diamondback moth (*Plutella xylostella* L.)
  - The extent of microplastic pollution along the South African coastline using indigenous (*Perna perna*) and invasive (*Mytilus galloprovincialis*) mussel tissue as indicators
  - The biological control of water hyacinth under eutrophic conditions and the effects of different herbivorous feeding guilds on plant health and defenses
  - The determination of the efficacy of a unisexual vs a bisexual sterile insect release for the false codling moth (*Thaumatotibia leucotreta* Meyrick) (Lepidoptera: Tortricidae); a major citrus pest in South Africa. I also compared mating preference and successful mating ability between sterile and wild adults
- **Demonstrating** Cell biology 101, Zoology 102, Zoology 201 and 202, Entomology 201, 202, 301 and 302, Honours R statistics courses; Department of Zoology and Entomology, Rhodes University (2017, 2018, 2019, 2020, 2021). Duties included assisting undergraduate students with their practical classes and fieldwork, and marking their scripts and assignments
- **Postgraduate student representative (MSc students)** Centre for Biological Control, Department of Zoology and Entomology, Rhodes University (2018-2019)
- **Library assistant** Student assistant at the Rhodes University main library loans desk (2018)
- **Committee member** Environmental Representative (House Committee) for my residence (2016) at Rhodes University (Kimberley Hall)

- **Volunteering** Week-long plant collecting excursion in the Stormberg Mountains for the Botany Department, Rhodes University (2014)
- **Tutoring** Computer skills on FirstTutors South Africa (2021-); Mathematics, physical science and life science to grade 10 and 11 homeschooling students (Rustenburg, North West Province, 2013)

AWARDS

- Departmental PhD bursary through the Centre for Biological Control (CBC) (2020 – 2022)
- Awarded an NRF bursary for an MSc degree (2018 - 2019)
- Academic Colours (Rhodes University, 2017)
- Entomological Society of Southern Africa Student Award: best Honours student in Entomology, Rhodes University, 2017
- Ewer prize for Zoology, Department of Zoology and Entomology, Rhodes University, 2017
- Academic Excellence Award, Postgraduate Hall, 2017
- Recipient of the Ada and Bertie Levenstein bursary for 2017, 2018, and 2019
- Awarded the Henderson bursary for 2017 and 2018
- Placed on the Dean's list of the Faculty of Science for Academic Merit for the years 2014, 2015, 2016, and 2017, Rhodes University
- Academic Excellence Award (Kimberley Hall, Rhodes University, 2016)
- Distinguished Excellence Award (Kimberley Hall, Rhodes University, 2016)
- The Most Inspiring Person Award (Kimberley Hall, Rhodes University, 2015)
- Top Student's Award (Kimberley Hall, Rhodes University, 2015)
- Academic Excellence Award (Kimberley Hall, Rhodes University, 2015)
- Academic Half Colours (Rhodes University, 2015)
- "Top 5" student award received from grade 8 through to matric.
- Represented the North West Province in the South African National Chess Championships in 2010 (UCT) and 2011 (UJ)

CONFERENCE AND OTHER PRESENTATIONS

- Sutton, G.F., **van Steenderen, C.J.M**., Canavan, K., Yell, L., and Paterson, I.D. South Africa is a hotspot for previously unknown stem-boring wasps of grasses (*Tetramesa*; Eurytomidae). Grassland Society of Southern Africa, 56th Annual Congress. July 26 - 30 2021.
- **van Steenderen, C.J.M.**, Paterson, I.D., Sutton, G.F., and Canavan, K. A genetic investigation of the native stem-galling *Tetramesa* Walker (Hymenoptera: Eurytomidae) in South Africa, and their potential use as biological control agents. 22nd Hybrid Congress of the Entomological Society of Southern Africa (ESSA). 28 June - 1 July 2021.
- **van Steenderen, C.J.M.**, Paterson, I.D. and Edwards, S. Cochineal identification: how molecular techniques can distinguish between biological control agents and agricultural pests. Second International Congress of Biological Control (ICBC2), Davos, Switzerland [virtual conference]. Biological control of cactus pests and pest cacti online session. 26 - 30 April 2021.
- **van Steenderen, C.J.M.**, Moore, S.D., Marsberg, T., Peyper, M., Kirkman, W., and Hill, M.P. Are sterile females in an SIT programme for FCM beneficial to its success? Will be presented by Sean Moore at the 11th Citrus Research Symposium, Drakensberg, August 2021.
- **van Steenderen, C.J.M.**, Paterson, I.D. and Edwards, S. The genetic barcoding of the species and lineages of *Dactylopius* Costa (Hemiptera: Dactylopiidae). The National Symposium on Biological Invasions (15-17 May 2019), Tulbagh, Western Cape.
- Cactus Working Group (CWG), Botanical Gardens, Pretoria, 14 November 2018
- Guest talk at Victoria Girls High School, 29 October 2018, Grahamstown

PEER-REVIEWED PUBLICATIONS

- **van Steenderen, C.J.M.**, Paterson, I.P., Edwards, S., and Day, M.D. Addressing the red flags in cochineal identification: the use of molecular techniques to identify cochineal insects that are used as biological control agents for invasive alien cacti. 2021. *Biological Control*. doi: https://doi.org/10.1016/j.biocontrol.2020.104426

R PACKAGES AND SHINY APPLICATIONS

- **van Steenderen, C.J.M.** BinMat: Processes Binary Data Obtained from Fragment Analysis Methods. CRAN repository, 2020 (also see the Shiny Application)
- Dacty-ID Identifies a query genetic sequence (12S, 18S, or COI) for cochineal species, relative to the genetic database created in my MSc project
- Genetic Barcode Tester Tests the accuracy of genetic barcode data
- ThermalSampleR Extrapolates thermal tolerance data from entomological studies to estimate optimal sample sizes
- SPEDE-SAMPLER GMYC Runs the GMYC species delimitation method on multiple resampled tree files

REVIEWER

Biological Control (1 paper) [Impact factor: 2.754]
Weed Research (1 paper) [Impact factor: 2.011]

POPULAR ARTICLES

- **van Steenderen, C.J.M.** Joe Dispenza's *Becoming Supernatural*: How Common People Are Being Misled. *Skeptical Inquirer* Vol. 40, No. 4. July/August 2020. https://skepticalinquirer.org/authors/clarke-van-steenderen/

OTHER SKILLS

Software Microsoft Word, Excel, and PowerPoint, LaTex, GitHub, and a variety of phylogenetic software programs
Languages English: professional proficiency. Afrikaans: conversational.

MEMBERSHIPS

- International Organization for Biological Control-Afrotropical Regional Section (IOBC-ATRS) for 2020 (Membership number ATRS-034)
- Golden Key Society

HOBBIES

Playing chess, squash, tennis, playing guitar in a duo band, reading, writing, drawing, jogging, spending time with my mates.