Christopher Kelly DPhil (Oxon.)

+27(0)76 419 6656 (South Africa) c.m.r.kelly@gmail.com

I am a wonder-filled and passionate biological scientist turned teacher of the physical sciences, and now shifting to a data science career. I have over 12 years of direct data experience; my former research illuminated the population dynamics and evolution of different groups of snakes in time and space, via generation and analysis of large genetic sequence data sets and integration of evolutionary information with geographic data. I have always been enthused by the power and utility of data when judiciously processed and interpreted, and my ambition moving forward is to manoeuvre into a scientifically oriented data science niche. To add to the skills transferrable from my academic background, I am currently studying to gain the additional capabilities necessary for such a position.

Employment

Jan 2013 – Dec 2020

Teacher (Head of Physical Sciences)

Graeme College, Makhanda / Grahamstown, South Africa

Worked creatively and enthusiastically with colleagues and the Eastern Cape Education Department to instil in the next generation a love for science and mathematics. Sought fresh and memorable ways to convey complex concepts and inspire students to perform at their peak in the following subject areas:

- Physical Sciences (equiv. to UK Nat. Curriculum years 10-12)
- Mathematics (equiv. to UK Nat. Curriculum years 8-10)
- Natural Sciences (equiv. to UK Nat. Curriculum years 7-9)

Jan 2012 – Dec 2012

Freelance Scientific Editor

Edanz Group Limited, Fukuoka, Japan

Edited the language, style and structure of academic articles written by second language speakers of English, in preparation for submission to peer-reviewed science journals.

Jan 2008 – Dec 2012

Temporary Lecturer

Rhodes University, Makhanda / Grahamstown, South Africa
Departments of Zoology and Entomology, Botany, and Biochemistry, Microbiology and Biotechnology

Supervised and co-supervised student research projects in zoology, from third year dissertations to PhD level. Designed or co-designed and presented the courses listed below:

- Cell Biology (Cellular genetics module); 1st year level
- Microbiology (Molecular biology module); 2nd year level
- Zoology (Herpetology module); 3rd and 4th year level

Jan 2007 – Dec 2011

Postdoctoral Research Fellow

Rhodes University, Makhanda / Grahamstown, South Africa
Molecular Ecology and Systematics Research Group

Rhodes University Fellowship (2007 – 2009) and National Research Foundation Innovation Fellowship (2009 – 2011).

- Conducted extensive fieldwork for collection of specimens.
- Generated and analysed large DNA sequence data sets in conjunction with geographic data to elucidate the population dynamics, evolutionary relationships and biogeography of various groups of African snakes.
- Communicated results via peer-reviewed journal articles (see “Awards” for recognition), academic conference presentations, university seminars, and expositions to the general public.
- Managed a molecular systematics laboratory (2008 – 2012), involving general lab maintenance and maintenance of stores, ordering of stock, supervision of lab activities, and training of students in laboratory protocols and software usage.

Skills

- Management of large data sets
- Statistical analysis
- Geographic Information Systems
- Image processing
- Training personnel in software use
- Science communication
- Problem solving
- Meticulous attention to detail
- Excellent interpersonal skills
- Field research

Software

MS Office suite	Experienced
ArcGIS	Currently studying
R	Currently studying
Python	Currently studying
SQL	Currently studying

Languages

English	(Native)
French	(Basic)
Shona	(Basic)

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Education (certificates and transcripts available on request)

Feb 2021 – Present — **Data Science courses** (via Udemy, Inc.)

Jose Portilla (Pierian Data)
- 2021 Complete Python Bootcamp (From Zero to Hero in Python)
- Python for Data Science and Machine Learning Bootcamp

365 Careers
- The Data Science Course 2021 (Complete Data Science Bootcamp)

Sept 2001 – Sept 2005 — **DPhil (Molecular Systematics)**
Oxford University (Merton College), Oxford, United Kingdom
Thesis title: Systematics and Phylogeography of Advanced Snakes
Extensive field collection in 13 African countries; DNA sequencing of several nuclear and mitochondrial genes; detailed phylogenetic, phylogeographic and other statistical analyses to reveal the evolutionary pattern, tempo and geographic context for several groups of African snakes.

Jan 2000 – Dec 2000 — **BSc (Hons)**
Rhodes University, Makhanda / Grahamstown, South Africa
Department of Zoology and Entomology
Graduated *cum laude* (Zoology)

Jan 1997 – Dec 1999 — **BSc**
Rhodes University, Makhanda / Grahamstown, South Africa
Graduated *cum laude* (Zoology and Biochemistry)

Awards and Honours

2019
- East African snake species named in my honour: *Psammophylax kellyi* (Tanzanian Grass Snake)

2010
- Joseph B. Slowinski Award (Center for North American Herpetology) acknowledging the most distinguished paper on snake systematics to be published globally in 2009 (judged by an international panel of experts).
  Kelly, C. M. R. et al. (2009) *Cladistics* 25:38-63

2001
- Rhodes Scholarship (Zimbabwe Constituency). Funds awarded by the Rhodes Trust for study at Oxford University, on the basis of academic merit, leadership potential and service to society.
- South African National Research Foundation Prestigious Scholarship
- Zoological Society of Southern Africa Award (for excellence in Zoology at BSc (Hons) level)

2000
- Academic Honours (Rhodes University)
- Rhodes University Foundation Scholarship (for the most outstanding graduate of Rhodes University)
- South African Foundation for Research and Development Scholarship
- Honours Degree Scholarship (Rhodes University)
- Duerden Scholarship (Rhodes University)
- Zoological Society of Southern Africa Award (for excellence in Zoology at BSc level)

Interests

Herpetology

Evolutionary biology

Cosmology

Music

Photography

Fine art

Christian philosophy

Poetry and creative prose

Exploring the African bush

Rock climbing

Outreach

- Educational presentations on reptiles and evolutionary biology to public societies, church groups and school and university students, to dispel myths and raise awareness of a maligned vertebrate taxon and a misunderstood scientific theory.
- Free snake removal service in Grahamstown / Makhanda.
- Regular contributor to public snake identification groups and snakebite discussion and information groups on social media.
- Lay preaching and short term Christian mission trips.
- Motivational and devotional Christian talks to school and university students.
- Deacon of the Grahamstown Baptist Church and leader of prayer ministry (2010 – 2017).
- Leader of prayer ministry in the Christians @ Rhodes group (2009).
- Oxford Nightline trained volunteer, providing telephonic non-directional listening, support and information services to Oxford University students (2004 – 2006).

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Publications

Kelly, C. M. R., W. R. Branch, N. P. Barker, A. Barlow, W. Wüster and M. H. Villet (in prep.). Old mountains and new species: the radiation of southern African dwarf adders (*Bitis*, Serpentes: Viperidae).

Taylor, P. J., T. Kearney, D. L. Dalton, G. Chakona, **C. M. R. Kelly** and N. P. Barker (2020). Biomes, geology and past climate drive speciation of laminate-toothed rats on South African mountains (Murinae: *Otomys*). *Zoological Journal of the Linnean Society* 189:1046-1066.

Barlow, A., W. Wüster, **C. M. R. Kelly**, W. R. Branch, T. Phelps and K. A. Tolley (2019). Ancient habitat shifts and organismal diversification are decoupled in the African viper genus *Bitis* (Serpentes: Viperidae). *Journal of Biogeography* 46:1234-1248.

Kaiser, H., B. I. Crother, **C. M. R. Kelly**, L. Luiselli, M. O'Shea, H. Ota, P. Passos, W. Schleip and W. Wüster (2013). Best practices: in the 21st century, taxonomic decisions in herpetology are acceptable only when supported by a body of evidence and published via peer-review. *Herpetological Review* 44:8-23.

Kelly, C. M. R., W. R. Branch, D. G. Broadley, N. P. Barker and M. H. Villet (2011). Molecular systematics of the African snake family Lamprophiidae Fitzinger, 1843 (Serpentes: Elapoidea), with particular focus on the genera *Lamprophis* Fitzinger 1843 and *Mehelya* Csiki 1903. *Molecular Phylogenetics and Evolution* 58:415-426.

Connan, M., **C. M. R. Kelly**, C. D. McQuaid, B. T. Bonnevie and N. P. Barker (2011). Morphological versus molecular identification of sooty (*Phoebetria fusca*) and light-mantled (*P. palpebrata*) albatross chicks. *Polar Biology* 34:791–798.

Kelly, C. M. R., N. P. Barker, M. H. Villet and D. G. Broadley (2009). Phylogeny, biogeography and classification of the snake superfamily Elapoidea: a rapid radiation in the late Eocene. *Cladistics* 25:38-63.

Kelly, C. M. R., N. P. Barker, M. H. Villet, D. G. Broadley, and W. R. Branch (2008). The snake family Psammophiidae (Reptilia: Serpentes): Phylogenetics and species delimitation in the African sand snakes (*Psammophis* Boie, 1825) and allied genera. *Molecular Phylogenetics and Evolution* 47:1045-1060.

Kelly, C. M. R., N. P. Barker, and M. H. Villet (2003). Phylogenetics of advanced snakes (Caenophidia) from four mitochondrial genes. *Systematic Biology* 52:439-459.