

Ana I.R. Bento

DISEASE ECOLOGIST · POSTDOCTORAL RESEARCH ASSOCIATE

Odum School of Ecology & CEID, UGA 140 E Green Street, Athens GA 30601, USA

☎ (+1) 706-206-2929 | ✉ anabento@uga.edu | 🏠 www.anabento.io | 📷 [anabento](#) | 🐦 [@anisabelbento](#)

Employment

Odum School of Ecology & Center for the Ecology of Infectious Diseases, University of Georgia

Athens, GA, USA

POSTDOCTORAL RESEARCH ASSOCIATE WITH **PROF. PEJMAN ROHANI**

June 2015 - PRESENT

- Ecology, Immunology and Evolution of childhood diseases. Developing mathematical and statistical models that provide a coherent link between theory and data to explain disease transmission and how it is affected by strategic control policies.

Infectious Disease Epidemiology, Imperial College London

St Mary's campus, London, UK

MRC POSTDOCTORAL RESEARCH FELLOW WITH **PROF. CHRISTL DONNELLY**

2012 - 2015

- Modeling herd dynamics and bovine tuberculosis transmission dynamics and vaccine strategies.
- Studying emerging infectious diseases - PREDEMICS consortium.

Education

Imperial College London

Silwood Park, Ascot, UK

PHD ECOLOGY, UNDER THE SUPERVISION OF **PROF. MICK CRAWLEY, FRS**

November 2012

- Thesis*: Climate variation, plant productivity, herbivore performance and population dynamics. Funded by Natural Environment Research Council (NERC), UK
- Brief Synopsis of Research*: Determining the direct and indirect effects of local weather on forage productivity and the ecology of red deer on Rum and Soay sheep on St. Kilda and elucidating changes in fitness and the role of phenological change in the contrasting population dynamics.

Imperial College London

S. Kensington, London, UK

BSc (HONORS) & ARCS IN BIOLOGY, THESIS ADVISOR **PROF. TIM COULSON**

2007

- Upper Second Class Honours

Publications

PUBLISHED

- 2018** Bento, A.I., Donnelly, C.A. (2018) Epidemiological impact of control and immunisation activities on within-herd bovine tuberculosis outbreaks. (accepted Scientific Reports)
- 2018** Bento, A.I., Riolo, M.A., Choi, Y.H., King, A.A. & Rohani, P. (2018) Core Pertussis transmission groups in England and Wales: A tale of two eras. *Vaccine* 36(9):1160-1166. doi.org/10.1016/j.vaccine.2018.01.046
- 2018** Bento, A.I., King, A.A. & Rohani, P. (2018) A simulation study on the relative role of age groups under differing pertussis transmission scenarios. *BioRxiv* doi:https://doi.org/10.1101/247007
- 2017** Bento, A.I., King, A.A. & Rohani, P. (2017) Maternal pertussis immunisation: clinical gains and epidemiological legacy. *Eurosurveillance* 22(15):30510. doi:10.2807/1560-7917.ES.2017.22.15.30510
- 2017** Garnier, R., Bento, A.I., Pemberton, J.M. & Graham, A.L. (2017) Physiological proteins in resource-limited herbivores experiencing a population die-off. *The Science of Nature* 104(7):68-72. doi:10.1007/s00114-017-1490-4
- 2016** Bento, A.I., Rohani, P. (2016) Forecasting epidemiological consequences of maternal immunization. *Clinical Infectious Diseases* 63(Suppl 4):S205-S212. doi:10.1093/cid/ciw557
- 2016** Finnie, T.J.R., Bento, A.I., South, A., Sherrard-Smith, E. & Jombart, T. (2016) EpiJSON: A unified data-format for epidemiology. *Epidemics* 15:20-26. doi:10.1016/j.epidem.2015.12.002
- 2016** Van Kerkhove, M.D.*, Bento, A.I.*, Mills, H.L., Ferguson, N.M. & Donnelly, C.A. (2015) A review of epidemiological parameters from Ebola outbreaks to inform early public health decision-making. *Scientific Data - Nature* 2:150019. doi: 10.1038/sdata.2015.19 (* joint first authors)
- 2015** Donnelly, C.A.*, Bento, A.I.*, Goodchild, A.V. & Downs, S.H. (2015) Exploration of the power of routine surveillance data to assess the impacts of industry-led badger culling on bovine tuberculosis incidence in cattle herds. *Veterinary Record* 177(16):417-420. doi: 10.1136/vr.103201 (* joint first authors)

- 2014** **Stopher K.V., Bento A.I.,** Clutton-Brock T.H., Pemberton J.M. & Kruuk L.E.B. (2014) Multiple pathways mediate the effects of climate change on maternal reproductive traits in a red deer population. **Ecology** 95:3124-3138. doi:10.1890/13-0967.1
- 2011** **Bento A.I.,** Wilson A.J. (2011) Counting Sheep in a changing world. **Biodiversity Science** 4:1 <https://www.biodiversityscience.com/2011/11/01/counting-sheep-changing-world/>

SCIENTIFIC REPORTS

- 2015** **Bento, A.I.,** Donnelly, C.A. (2015) Impact of immunisation activities on within-herd bovine tuberculosis outbreaks. **Defra** Final Report SE3130: 35 Pages.
- 2013** **Bento, A.I.,** Donnelly, C.A. (2013) Impact of immunisation activities on within-herd bovine tuberculosis outbreaks. **Defra** Interim Report SE3130: 20 Pages.

MANUSCRIPTS SUBMITTED

- 2018** **Garnier R., Bento A.I.,** Rohani P., Omer S.B. & Bansal S. *Feeding the disparities: the geography and trends of breastfeeding in the United States.* (submitted)

NEARING SUBMISSION

- 2018** **Bento A.I.,** King A.A., Taujale R., Bosch T. & Rohani P. *B. pertussis* epidemiology, transmission & evolution in the vaccine era. Submit to Nature Medicine
- 2018** **Bento A.I.,** Bansal S., Omer S.B. & Rohani P. *The scales of herd immunity erosion.* Submit to JRS Interface
- 2018** **Bento A.I.,** Pemberton J.M., Clutton-Brock T.H., Kruuk L.E.B. & Crawley M.J. *Vegetation community dynamics in a wild red deer population.* Submit to J of Animal Ecology
- 2018** **Bento A.I.,** Kettlewell P.S., Poulton P.R. & Crawley M.J. *Spring temperature and rain mediate summer growth in the ParkGrass experiment.* Submit to Am Naturalist

MANUSCRIPTS in preparation

- Bento A.I.,** Gokhale D. & Rohani P. *B. pertussis* correlates of protection.
- Treddeknick A., Bento A.I.,** Hall S.D., Rohani P. & Drake J. *Forecasting the trajectory of infectious diseases using generic time series models: an inter-model comparison across five diseases.*
- Bento A.I.,** Pemberton J.M., Clutton-Brock T.H., Coulson T.M. & Crawley M.J. *Climatic effects of plant productivity and herbivore performance in St Kilda.*

Software & Code

- . Epijson R (CRAN) package and bTB Cattle Risk application for the field for DEFRA (UK).
- . Miscellaneous code associated with publications can be found on my website.

Awards

- 2016** **Travel grant,** from EEID, UGA for EEID Annual Meeting at Cornell University
- 2013** **Travel grant,** British Ecological Society for INTECOL congress
- 2009-2011** **Teaching award,** Silwood Park, Imperial College UK
- 2010-2011** **Best student presentation award,** Macaulay Institute, Aberdeen, UK
- 2008-2012** **NERC-CASE studentship grant,** Phd studentship grant, Imperial College
- 2003-2005** **BBSRC grant,** Undergraduate Research Opportunity Project, Imperial College

Ongoing Collaborations

Evolution of resistance of influenza virus

DR. SAM SCARPINO

Northeastern University

Sept 2018 - PRESENT

- Computationally test the hypothesis that increased HA binding avidity is associated with increased rates of Oseltamivir resistance.

B. pertussis evolution

DR. THJIS BOSCH

RIVM, Bilthoven, The Netherlands

June 2018 - PRESENT

- RIVM provides both epidemiology and gene sequences for our mechanistic model development

Vaccine hesitancy and scales of herd erosion

PROF. SHWETA BANSAL & PROF SAAD OMER

Multi-institution collab, USA

March 2018 - PRESENT

- I'm a postdoc in this project led by Profs Bansal Rohani and Omer

Drivers of dengue seasonality in Brazil

PROF. CLAUDIA PIO

- Drivers of dengue seasonality in Brazil

UNESP, São Paulo, Brazil

August 2017 - PRESENT

Pertussis transmission and evolution

PROF. AARON KING

- I'm a postdoc in this project led by Prof Rohani and Prof King

Univ of Michigan, USA

June 2015 - PRESENT

Teaching (relevant examples)

Introduction to Machine Learning

COURSE ORGANIZER

Odum School 2018

Scientific programming

COURSE CO-ORGANIZER WITH PROF J DRAKE

Odum School 2018

Intro to programming in R

COURSE ORGANIZER

Odum School 2017

Ecol 8030

GUEST LECTURER

Odum School 2018

MSc Public Health

GUEST LECTURER

Imperial College London 2015

II Southern-Summer School on Mathematical Biology

LECTURER WEEK 2

São Paulo, Brazil 2013

Population and Community Ecology

GUEST LECTURER (FINAL YEAR COURSE BSc BIOLOGY)

Imperial College London 2012-2015

Intro to Mathematical Models of the Epidemiology and Control of Infectious Diseases

LECTURER (SHORT COURSE)

Imperial College London 2013-2014

Generalised Linear Modeling in R

INSTRUCTOR FOR PROF MICK CRAWLEY

Silwood Park 2009-2014

Master of Public Health

INSTRUCTOR FOR PROF CHRISTL DONNELLY

Imperial College London 2013-2015

Conservation MSc

TUTOR - DISCUSSION GROUPS

Silwood Park 2009-2012

Mentoring

2017-2018 **Shahab Razvi**, Physics Phd student

UGA

2017 **Yue Yun**, ILS Phd rotation student

UGA

2016 **Jonathan Waring**, REU program

UGA

2011 **Emmanuela Karametta**, MSc Conservation

Silwood Park

Skills

Programming R, C, Python, LaTeX, Matlab

Web JavaScript, HTML5, CSS, JSON

Software user ArcView, ArcGIS, MARK, PRESENCE, DISTANCE, VORTEX, SQL, MS Access

Database management SQL, MS Access

Languages English, Portuguese, Spanish, French

Fieldwork

2013-2015 **Badger mark-recapture**, Oxfordshire and Cornwall, UK

UK

2008-2015 **Vegetation sampling and identification techniques**, St Kilda, Isle of Rum, Parkgrass

UK

2008-2015 **Soay sheep and deer mark-recapture**, St Kilda & Isle of Rum

UK

Presentations

ESA annual meeting

New Orleans, LA

CONTRIBUTED TALK

2018

- *B. pertussis* evolution in the vaccine era

RIVM: Netherlands Public Health

The Netherlands

INVITED SPEAKER

2018

- Drivers of evolution of *B. pertussis*

EEID Conference

Glasgow, UK

CONTRIBUTED TALK

2018

- Integrating parallel data streams to identify drivers of *B. pertussis* resurgence

MIDAS annual meeting

Bethesda, MD, USA

INVITED SPEAKER

Jul. 2012

- Integrating parallel data streams to understand disease resurgence

Odum School 50th Anniversary

Odum School, UGA

INVITED SPEAKER

2018

- Phylodynamics methods for bacterial evolution: *Bordetella pertussis* in the vaccine era

Bordetella symposium

UGA & CDC

INVITED SPEAKER

2017

- *B. pertussis* evolution in the vaccine era

ESA annual meeting

Portland, OR

CONTRIBUTED TALK

Jul. 2012

- Pertussis epidemiology, transmission & evolution in the vaccine era

EEID conference

Santa Barbara, CA

CONTRIBUTED TALK

2017

- Covariates of *B. pertussis* selection

ESA annual meeting

Fort Lauderdale, FL

CONTRIBUTED TALK

2016

- Predicting the relative role of age groups in pertussis dynamics

EEID conference

Ithaca, NY

POSTER SESSION

2016

- Pertussis Maternal Immunization

INTECOL

London, UK

CONTRIBUTED TALK

2013

- The effects of weather and phenology on primary production at the Park Grass Experiment, Rothamsted over 130 years

British Ecological Society annual meeting

Sheffield, UK

CONTRIBUTED TALK

2011

- Weather effects on Soay Sheep demography

British Ecological Society annual meeting

Leeds, UK

CONTRIBUTED TALK

2010

- Weather impacts on ecological processes

Workshops

Phylodynamics models

Odum School, UGA

INVITED WORKSHOP FOR CEID

2017

- Ran a CEID workshop in applications of phylodynamics models.

Hackout 2

GRAPHICAL RESOURCES FOR INFECTIOUS DISEASE EPIDEMIOLOGY IN R

- Developed EpiJSON in a team, as part of the workshop.

Imperial College London, UK

2015

Hackout

HACKATHON FOR THE ANALYSIS OF DISEASE OUTBREAKS IN R

- Exploring ways of analyzing outbreak data.

Imperial College London, UK

2013

Academic Service

Reviewer, Journal of Animal Ecology, Applied Ecology, Epidemics, Plos Computational Biology, Proc Royal Society B., Vaccine, Nature Scientific Reports, Journal of Theoretical Biology, Royal Society Open Science

Section Officer, ESA Disease Ecology Section

2017-PRESENT

Founding member, R-ladies UGA

2018

Advisory Board Member, CEID, UGA

2017-PRESENT

Board Member, Postdoctoral Association, UGA

2016-PRESENT

Contributed Session Presider, Ecological Society of America

2016-2018

Judge, Odum School of Ecology: Graduate Student Symposium

2016-2018

Co-organizer, DIDE seminar series, Imperial College London

2014-2015

Committee member, Athena Swan application DIDE, Imperial College

2014

Moderator, Predictive Ecology Meeting, Royal Society, London UK

2011

Outreach

R-ladies UGA Co-founder

Athens GA

WOMEN IN STEM

2018

- As a part of the Athena qualifications for the IDE at Imperial.

Co-founder Lean-In Circle

Imperial College London

WOMEN IN STEM

2014-2015

- As a part of the Athena qualifications for the IDE at Imperial.

Coding club

Wandsworth, London, UK

KIDS IN STEM

2013-2015

- Ran a weekend coding club for kids (6-12 years of age).

The Life Game

Natural history museum, London UK

MRC CENTENARY AT THE SCIENCE MUSEUM

2013

- Part of the MRC anniversary: We ran a "who infect whom" and other disease games with children between 6-12 years of age.

Memberships

American Society of Naturalists, Ecological Society of America, British Ecological Society, European Platform of Women Scientists, R-ladies global, WiSci (UGA).

References

Prof. Pejman Rohani

ROHANI@UGA.EDU

- Address: Room 36, Odum School of Ecology, 140 E. Green St, Athens GA 30602
- Phone: +1 706 542 8838

Prof. Mick Crawley, FRS

M.CRAWLEY@IMPERIAL.AC.UK

- Address: Silwood Park, Buckhurst Rd, Ascot SL5 7QN, UK
- Phone: +44 (0)20 7594 2216

Prof. Aaron King

KINGAA@UMICH.EDU

- Address: 3050 Biological Science Building 1105 North University Avenue, Ann Arbor, MI 48109-1085 USA
- Phone: +1 734 936 7861