

## Samraat Pawar — *Curriculum Vitae*

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CONTACT	Lecturer, Department of Life Sciences Imperial College London Silwood Park Campus Buckhurst Road, Ascot Berkshire SL5 7PY, UK	       	<i>E-mail:</i> <a href="mailto:s.pawar@imperial.ac.uk">s.pawar@imperial.ac.uk</a> <i>Phone:</i> +44 (0)2075942213 <i>www:</i> <a href="http://www.imperial.ac.uk/people/s.pawar">www.imperial.ac.uk/people/s.pawar</a>
RESEARCH	Systems biology; Physiology and metabolic scaling; Biomechanics; Ecoinformatics; Population dynamical and evolutionary consequences of species interactions; Interaction network dynamics; Biological effects of climatic fluctuations; Community assembly and recovery of ecosystem function		
EDUCATION	<b>PhD, Ecology, Evolution &amp; Behavior</b> , University of Texas, Austin, USA <b>MSc, Ecology</b> , Saurashtra University, India <b>BSc, Zoology</b> ( <i>with distinction</i> ), University of Pune, India	2002–2009 1997–1999 1993–1996	
PROFESSIONAL APPOINTMENTS	<b>Lecturer</b> Division of Ecology and Evolution, Imperial College London, UK <b>Postdoctoral Scholar</b> Department of Ecology & Evolution, University of Chicago, USA <b>Postdoctoral Scholar</b> Department of Biomathematics, University of California, Los Angeles, USA	2013–  2012–2013 2009–2012	
SELECTED PUBLICATIONS	<ul style="list-style-type: none"><li>[1] †<b>Pawar S.</b>, Dell A.I., Savage V.M., &amp; Knies J.L. (2015). Real versus artificial variation in the thermal sensitivity of biological traits. <i>Am Nat</i>, in press.</li><li>[2] †Gibert J.P.*, Dell A.I., DeLong J.P., &amp; <b>Pawar S.</b> (2015) Scaling up trait variation from individuals to ecosystems. <i>Adv Ecol Res</i>, 52.</li><li>[3] †<b>Pawar S.</b> (2015) The role of body size variation in community assembly. <i>Adv Ecol Res</i>, 52.</li><li>[4] †Johnson L., Ben-Horin T.*, Lafferty K.D. , McNally A.*, Mordecai E., Paaijmans K.P., <b>Pawar S.</b>, and Ryan S.J. (2015) Understanding uncertainty in temperature effects on vector-borne disease: A Bayesian approach. <i>Ecology</i>. 96:1, 203–213.</li><li>[5] Johnson L., Lafferty K.D., McNally A.*, Mordecai E., Paaijmans K., <b>Pawar S.</b> &amp; Ryan S.J., (2015) Mapping the Distribution of Malaria: Current approaches and future directions. In: <i>Analyzing and Modeling Spatial and Temporal Dynamics of Infectious Diseases</i> (ed. Chen D, Moulin B, Wu J) Wiley-Interscience, NJ, 189 p.</li><li>[6] †<b>Pawar S.</b>, Dell A.I., and Savage V.M. (2015) From metabolic constraints on individuals to the eco-evolutionary dynamics of ecosystems. in A. Belgrano, G. Woodward, and U. Jacob, editors. <i>Aquatic Functional Biodiversity: An Eco-Evolutionary Approach</i>. Elsevier.</li><li>[7] †<b>Pawar S.</b> (2014) Why are plant-pollinator networks nested? <i>Science</i>. 345, 383.</li><li>[8] Tang S.*, <b>Pawar S.</b> &amp; Allesina S. (2014) Correlation between interaction strengths drives stability in large ecological networks. <i>Ecol Lett</i>. 17, 1094–1100.</li><li>[9] Dell A.I., <b>Pawar S.</b> &amp; Savage V.M. (2014) Temperature dependence of trophic interactions are driven by asymmetry of species responses and foraging strategy. <i>J Anim Ecol</i>, 83(1) 70–84. Media Coverage: <a href="#">ScienceDaily</a>, <a href="#">EarthSky</a>, <a href="#">Phys.Org</a>, <a href="#">UCLA Newsroom</a>, <a href="#">RedOrbit</a>, <a href="#">AAAS EurekAlert</a>, <a href="#">Bio-Medicine</a>, <a href="#">NSF News</a></li><li>[10] Dell A.I., <b>Pawar S.</b> &amp; Savage V.M. (2013) The temperature dependence of biological traits. <i>Ecology</i>, 94 (5), 1205–1206.</li><li>[11] <b>Pawar S.</b>, Dell A.I. &amp; Savage V.M. (2013). Reply to Giacomini et al. <i>Nature</i> 493 (7434), E2–E3</li><li>[12] Mordecai E.*, Paaijmans K., Johnson L., Balzer C.*, Ben-Horin T.*, DeMoor E.*, McNally A.*, <b>Pawar S.</b>, Ryan S.J., Smith T.* &amp; Lafferty K.D. (2012). Physiological constraints lower the expected temperature for peak malaria transmission. <i>Ecol Lett</i>, 16(1), 22–30. Media Coverage: <a href="#">The Atlantic Wire</a>, <a href="#">SUNY-ESF</a>, <a href="#">NCEAS</a>, <a href="#">New Scientist</a>, <a href="#">Science Daily</a>; <a href="#">UChicago CI</a>, <a href="#">USGS Newsroom</a></li><li>[13] <b>Pawar S.</b>, Dell A.I. &amp; Savage V.M. (2012). Dimensionality of consumer search space drives trophic interaction strengths. <i>Nature</i>, 486, 485–489.</li></ul>		

Reviewed for F1000 by Shurin (8: Must Read)

Media Coverage: Science Daily; SFI News; Times of India; UCLA Newsroom

- [14] Dell A.I., **Pawar S.** & Savage V.M. (2011). Systematic variation in the temperature dependence of physiological and ecological traits. *Proc Natl Acad Sci USA*, 108, 10591–10596. (Commentary by Huey & Kingsolver in PNAS)
- [15] **Pawar S.** (2009) Community assembly, stability and signatures of dynamical constraints on food web structure. *J Theor Biol*, 259(3): 601–612.
- [16] **Pawar S.**, Koo M. S., Kelley C.\*\*, Ahmed M.F., Choudhury S. & Sarkar S. (2007) Conservation assessment and prioritization of areas in Northeast India: priorities for amphibians and reptiles. *Biol Cons*, 136: 346–361.
- [17] **Pawar S.S.**, Birand A.C., Ahmed M.F., Sengupta S. & Raman T.R.S. (2007). Conservation biogeography in Northeast India: hierarchical analysis of cross-taxon distributional congruence. *Divers Distrib*, 13: 53–65.
- [18] Biswas S. & **Pawar S.S.** (2006). Phylogenetic tests of distribution patterns in South Asia: towards an integrative approach. *J Biosci*. 31(1): 95–113.
- [19] **Pawar S.S.** (2005) Geographical variation in the rate of evolution: effect of available energy, or fluctuating environment? *Evolution* 59 (1): 234–237.
- [20] **Pawar S.S.**, Rawat G.S. & Choudhury B.C. (2004). Recovery of frog and lizard communities following primary habitat alteration in Mizoram, Northeast India. *BMC Ecology* 4 (1): 10. (BMC Highly Accessed)
- [21] †**Pawar S.**, Dell A.I., & Savage V.M. (In review) Trophic interaction dimensionality drives bimodal size-ratio distributions in local communities.

## TEACHING

- Lecturer**, *Modelling approaches in Global Change Biology, 3<sup>rd</sup> year BSc in Biological Sciences* 2015–  
Department of Life Sciences, Imperial College London
- Lecturer**, *Training modules on Ecoinformatics, Imperial College NERC Doctoral Training Partnership on Science and Solutions for a Changing Planet* 2015–  
Imperial College London
- Lecturer**, *Biological Computing in Python and R – MSc/MRes in Computational Methods in Ecology and Evolution* 2014–  
Department of Life Sciences, Imperial College London
- Lecturer**, *Statistical Computing in R – Joint module for MSc/MRes in Ecology, Evolution and Conservation, MSc in Conservation Science, MSc in Ecological Applications, NHM MSc in Taxonomy and Biodiversity* 2014–  
Department of Life Sciences, Imperial College London
- Lecturer**, *Computational Biostatistics, 1<sup>st</sup> & 2<sup>nd</sup> year BSc* 2014–  
Department of Life Sciences, Imperial College London
- Lecturer**, *Energetics in Population and Community Ecology, 3<sup>rd</sup> year BSc in Biological Sciences* 2014  
Department of Life Sciences, Imperial College London
- Lecturer**, *Computational Genomics and Ecoinformatics – MSc in Quantitative Biology and MRes in Biodiversity Informatics & Genomics*, Department of Life Sciences, Imperial College London 2013–14  
Department of Life Sciences, Imperial College London
- Lecturer**, *Population and Community Ecology, Final year BSc* 2013  
Department of Life Sciences, Imperial College London
- Guest Lecturer**, *Biological network Topology and Dynamics* 2012, 2010, 2009  
Department of Biomathematics, University of California, Los Angeles
- Guest Lecturer**, *Modeling food web structure and dynamics* 2012  
Department of Ecology and Evolutionary Biology, University of California, Los Angeles
- Teaching Assistant & Supplementary Instructor**, *Intro Cell and Molecular Biology* 2007  
Section of Integrative Biology, University of Texas at Austin
- Teaching Assistant**, *Evolutionary Ecology* 2004  
Section of Integrative Biology, University of Texas at Austin
- Teaching Assistant & Supplementary Instructor**, *Genetics & Evolution* 2007  
Section of Integrative Biology, University of Texas at Austin
- Lab Teaching Assistant**, *Physiology & Functional Anatomy* 2007  
Section of Integrative Biology, University of Texas at Austin

MAJOR GRANTS	<p><b>Impacts of global warming in sentinel systems: from genes to ecosystems</b> 2015–19 £3,686,480 awarded from UK National Environment Research Council Large Grants Program (<i>Co-Investigator</i>)</p> <p><b>Vector Behaviour in Transmission Ecology (VectorBiTE)</b> 2015–20 £499,290 awarded from UK BBSRC, £300,986 from US NIH under the US/UK Collaborative Research Collaboration Network Program (<i>Co-Investigator</i>)</p> <p><b>Can metabolic traits limit species invasions under climate change?</b> 2015–17 £703,562 Awarded from UK National Environment Research Council (<i>Primary Investigator</i>)</p> <p><b>Understanding the Temperature Dependence of Consumer-resource Interactions</b> 2009 – 2012 \$407,000 awarded, NSF Division of Environmental Biology (<i>Senior Personnel</i>)</p>
HONORS AND AWARDS	<p>Nominee, UCLA Chancellors Award for outstanding postdoctoral research accomplishment 2011</p> <p>University Continuing Fellowship, University of Texas at Austin 2008–09</p> <p>Frank &amp; Fern Blair Fellowship, Section of Integrative Biology, University of Texas at Austin 2007</p> <p>Graduate Student Professional Development Award, University of Texas at Austin 2006</p> <p>Beijing Complex Systems Summer School scholarship, Santa Fe Institute, USA 2005</p> <p>Zoology Scholarship Endowment for Excellence, University of Texas at Austin, USA 2004</p> <p>Research Fellowship, Section of Integrative Biology, University of Texas at Austin, USA 2003</p> <p>Travel Grant, India Foundation 2002</p> <p>Chicago Zoological Society Conservation and Research Fund 2000</p> <p>Oriental Bird Club &amp; International Bird Conservation Network Program Grant 2000</p> <p>Centre for Ecological Research and Conservation Research Grant, India 2000</p> <p>McCann Grant, Bombay Natural History Society, India 1998</p> <p>MSc fellowship, Ministry of Environment and Forests, Government of India 1997–99</p>
ACADEMIC SERVICES	<p><b>Departmental</b> Ecoinformatics Theme Leader, Grand Challenges in Ecosystems and the Environment, Department of Life Sciences, Imperial College, 2014–</p> <p><b>Educational</b> Director, <i>Masters in Computational Methods in Ecology and Evolution</i>, Department of Life Sciences, Imperial College, 2014– Co-director, <i>MSc in Quantitative Biology</i>, Department of Life Sciences, Imperial College London, 2013–2014</p> <p><b>Editorial</b> Volume Editor, <i>Advances in Ecological Research: From Traits to Ecosystem Function</i>, 2015 Review editor, <i>Frontiers in Ecology and Evolution</i>, 2014– Member of advisory board, <i>Current Conservation</i>, 2012– Member of editorial board, <i>Current Conservation</i>, 2009–2012</p> <p><b>Reviewing</b> Several scientific journals including Adv Ecol Res, Am Nat, Cons Bio, Curr Zool, Ecography, Ecology, Ecol Lett, J Biosci, J Royal Soc Interface, J Trop Ecol, Math Biosci, Nature, Theor Pop Biol, Ecol Model, Proc Royal Soc B, PLOS Biology, &amp; Science</p> <p><b>Grant reviewing</b> National Geographic Society, US Environmental Protection Agency (STAR fellowships), US Department of Defence</p> <p><b>Memberships</b> British Ecological Society, Ecological Society of America, American Society of Naturalists</p>
SYNERGISTIC ACTIVITIES	<p><b>Workshops, conferences &amp; seminars</b> <i>Combining Information Theory and Game Theory</i>, Santa Fe, New Mexico, Aug 2012 (Invited participant) <i>Trait Evolution and the Dynamics of Food Webs</i>, Annual Meeting of the Ecological Society of America, Austin, Texas, Aug 2011 (Invited moderator) <i>Evolutionary Processes in Ecological Networks</i>, Annual Meeting of the Ecological Society of America, Austin, Texas, Aug 2011 (Invited moderator)</p>

*Adaptation to climate from a spatial perspective*, University of Helsinki, Finland, Sep 2011 (Invited speaker)  
*Early Career Scientist Symposium on networks in Ecology and Evolution*, University of Michigan, Ann Arbor, Mar 2008 (One of eight invited speakers)

### Working groups

*How do social and ecological networks cope with environmental change?* Grand Challenges in Ecosystems and the Environment, Imperial College London, Silwood Park, July 2014 – *Malaria and Climate Change*, National Center for Ecological Analysis and Synthesis & University of California, Santa Barbara, Feb 2011–2013

### Online Databases & Information portals

*The Global Biotraits Database*: [biotraits.ucla.edu](http://biotraits.ucla.edu)

*Tracking Ecological Interactions*: [sites.google.com/site/videoecologicalinteractions](http://sites.google.com/site/videoecologicalinteractions)

### GRADUATE AND UNDERGRADUATE ADVISEES

**BSc**: R Sheppard, (2014) O McGuinty (2015), J Chan (2015)  
**MSc/MRes**: M Rizzuto (2013–2014), A Kazhdan (2013–2014), D Kontopoulos (2013–2014), D McMorrough (2015), S. Rana (2014–15), T Smallwood (2015), D Harris (2015), R Hohan (2014–15)  
**PhD**: Thomas Smith (2015–), D Kontopoulos (2015–)  
**Postdoc**: Dr. S. Sal (2015–), Dr. B Garcia-Carreras (2015–)

### INTERNAL PHD COMMITTEES

R Hintzen, Imperial College London (2015–); A. Matthews, Imperial College London (2014–); P. Smith, Imperial College London (2014–); M. Boyle, Imperial College London (2014–); L Gough (2015–)

### EXTERNAL PHD EXAMINER

K Healy, Trinity College Dublin (2015)

### MENTORSHIP

Currently mentoring five 1<sup>st</sup>, five 2<sup>nd</sup>, six 3<sup>rd</sup> year BSc students at Imperial College London

### INVITED TALKS (SELECTED)

*Metabolic constrains on ecosystem dynamics and function*, Department of Zoology, University of Oxford, Mar 2016  
*Metabolic constrains on emergent phenomena in complex ecological networks*, Centre for Complexity Science, University of Warwick, Feb 2016  
*From Individual energetics to the dynamics of complex communities*, Biosciences Departmental Seminar, University of Exeter (Penryn Campus), Mar 2015  
*How do thermal fluctuations propagate from cells to populations?*, Biomathematics Seminar, Imperial College London, Dec 2014  
*How do thermal fluctuations propagate from cells to populations?*, Department of Mathematics, University of York, Dec 2014  
*A mechanistic framework for scaling up systems biology from individuals to ecosystems*, National Centre for Biological Sciences, Bangalore, India Nov 2014  
*From individual energetics to community dynamics*, Indian Institute of Science, Education and Research, Pune, India, Nov 2014  
*Individuals, interactions, and aquatic ecosystem dynamics*, British Ecological Society Aquatic Group Annual Meeting, July 2014  
*A mechanistic framework for scaling up systems biology from individuals to communities*, Okinawa Institute of Science and Technology, Okinawa, Japan, April 2014  
*A mechanistic framework for scaling up systems biology from individuals to communities*, Division of Ecology and Evolution, Imperial College London, Silwood Park, Feb 2013  
*A mechanistic framework for scaling up systems biology from individuals to communities*, Department of Integrative Biology, University of South Florida, Feb 2013  
*Scaling up systems biology from individuals to communities*, School of Biological Sciences, Monash University, Melbourne, Feb 2013  
*Scaling up systems biology from individuals to communities*, Department of Biology, University of Rochester, Rochester, New York, Jan 2013  
*Integrating consumer-resource interactions into the Metabolic Theory of Ecology*, Gordon Research Conference (GRC) on the Metabolic Basis of Ecology, University of New England, Biddeford, Maine, Jul 2012  
*A Mechanistic framework for Understanding Multi-Trophic Effects of Nutrient Enrichment*, GRS section of GRC on the Metabolic Basis of Ecology, University of New England in Biddeford, Maine, Jul 2012

*On optimal foraging and community dynamics*, Bambi Talk, Barro Colorado Island, Smithsonian Tropical Research Institute, Panama, Apr 2012

*Scaling up the effects of body size and environmental temperature from individuals to communities*, Smithsonian Tropical Research Institute, Panama City, Panama, Nov 2011

*Scaling up the effects of physiological constraints from individuals to communities*, Frontiers in Systems and Integrative Biology Seminar, Department of Biomathematics, University of California, Los Angeles, Oct 2011

*Predicting how body size, habitat structure, and environmental temperature shape community structure and dynamics*, Department of Biology, University of New Mexico, Albuquerque, Jun 2011

*Understanding the effects of climatic warming on biological interactions*, University of California at Santa Barbara, Feb 2011

*The effects of body size and temperature on trophic interactions and community dynamics*, Department of Biology, California State University, Fresno, California, Nov 2010

*The effects of body size and temperature on consumer-resource interactions and population dynamics*, National Center for Ecological Analysis and Synthesis, Santa Barbara, California, Oct 2010

*From individuals to population interaction networks: disentangling Darwin's entangled bank* EEB seminar, Rice University, Houston, Mar 2008

*Life history, energetics, and the molding of population interaction networks*, Early Career Scientist Symposium on networks in Ecology and Evolution, University of Michigan, Ann Arbor, Mar 2008

*Ecological Niche modeling of Amphibian and Reptile distributions in South Asia: Conservation and Biogeographical Applications*, Slowinski Memorial Symposium, 2006 Joint Meeting of Ichthyologists and Herpetologists, Jun 2006

CONTRIBUTED TALKS (SELECTED) *A mechanistic model for consumption rate explains body size-structure in local communities*, 11th INTECOL Congress, London, Aug 2014

*Predicting the effects of temperature changes on population fitness and species interactions*, University of Helsinki, Finland, Sep 2011

*Consumption rates and trophic interaction strengths are constrained by dimensionality of consumer search space*, 96th Annual Meeting of the Ecological Society of America, Austin, Texas, Aug 2011

*Understanding variation in the response of biological traits to temperature*, GRC on Metabolic Basis of Ecology and Evolution, University of New England, Biddeford, ME, Jul 2010

*Community Assembly, Stability and Food Web Structure*, Section of Integrative Biology, University of Texas at Austin, May 2009

*From individuals to population interaction networks: Life history, energetics, and the dynamical molding of food web structure*, Population Biology Seminar, University of Texas at Austin, Mar 2008

*The effects of environmental stochasticity on population interaction webs*, Joint Meeting of the Ecological Society of America and Society for Ecological Restoration, San Jose, California, Aug 2007

*Webs in an ever-changing world: environmental fluctuations and population interaction networks*, Ecological Integration Student Research Symposium, Texas A&M University, Apr 2007

*Webs in an ever-changing world: environmental fluctuations and population interaction networks*, Population Biology Seminar, University of Texas at Austin, Apr 2007

*Webs in an uncertain world: Assembly and persistence of population interaction networks in fluctuating environments* Annual meeting of the Society for Integrative and Comparative Biology, Phoenix, Arizona, Jan 2007

*Evolutionary Dynamics of Population Interaction Networks*, Santa Fe Institute Complex Systems Summer School, Institute for Theoretical Physics, Chinese Academy of Science, Beijing, Aug 2005

*Conservation assessment and prioritization of areas in the Indo-Burma biodiversity hotspot*, EEB and Plant Biology Graduate Student Symposium, University of Texas at Austin, Oct 2005

*Evolutionary-Population Ecology in fluctuating environments*, EEB and Plant Biology Graduate Student Symposium, University of Texas at Austin, Oct 2004

*Community assembly following primary habitat alteration*, Centre for Ecological Sciences, Indian Institute of Science, Bangalore, Sep 2000

*Languages:* Fluent in English, Hindi, Marathi, Spanish; Working Knowledge of Punjabi, Sanskrit  
*Computer:* Linux/UNIX, Mac OS, Windows, L<sup>A</sup>T<sub>E</sub>X, Matlab, GNU Octave, Mathematica, Python, R

Samraat Pawar  
Updated: October 13, 2015