

Samraat Pawar — *Curriculum Vitae*

CONTACT	<p>Reader (Associate Professor) Department of Life Sciences Imperial College London Silwood Park Campus Buckhurst Road, Ascot Berkshire SL5 7PY, UK</p>	<p><i>E-mail:</i> s.pawar@imperial.ac.uk <i>Phone:</i> +44 (0)2075942213 <i>www:</i> pawarlab.org</p>
RESEARCH	Systems biology; Biological scaling; Species interaction networks; Ecosystems; Biological effects of climatic fluctuations	
PROFESSIONAL APPOINTMENTS	<p>Reader 2019– Department of Life Sciences, Imperial College London, UK</p> <p>Senior Lecturer 2016–2019 Department of Life Sciences, Imperial College London, UK</p> <p>Lecturer 2013–2016 Department of Life Sciences, Imperial College London, UK</p> <p>Postdoctoral Scholar 2012–2013 Department of Ecology & Evolution, University of Chicago, USA (Advisor: Stefano Allesina)</p> <p>Postdoctoral Scholar 2009–2012 Department of Biomathematics, University of California, Los Angeles, USA (Advisor: Van Savage)</p> <p>Graduate Research Assistant 2005–2008 Department of Astronomy, University of Texas at Austin, USA (Advisor: John Scalzo)</p> <p>Graduate Teaching Assistant 2002–2005 Section of Integrative Biology, University of Texas at Austin, USA</p>	
EDUCATION	<p>PhD, Ecology, Evolution & Behavior 2002–2009 University of Texas, Austin, USA (Advisor: Sahotra Sarkar)</p> <p>MSc, Ecology 1997–1999 Saurashtra University, India</p> <p>BSc, Zoology (<i>Distinction</i>) 1993–1996 University of Pune, India</p>	
SELECTED PUBLICATIONS	<p>[1] Ho H, Tylianakis JM, Zheng JX, & Pawar S. (2019) Predation Risk Influences Food-Web Structure by Constraining Species Diet Choice. <i>Ecology Letters</i>. In press.</p> <p>[2] Pawar S, Dell AI, Lin T, Wiczyński DJ, & Savage VM (2019) Interaction Dimensionality Scales Up to Generate Bimodal Distributions in Ecological Communities. <i>Frontiers in Ecology and Evolution</i> 7 : 1–11</p> <p>[3] Kissling DW., Walls R, Bowser A, Jones MO, Kattge J, Agosti D, Amengual J, Basset A, van Bodegom PM, Cornelissen JHC, Denny EG, Deudero S, Egloff W, Elmendorf SC, García EA 16, Jones KD, Jones OR, Lavorel S, Lear D, Navarro LM, Pawar S, et al (2018) Towards global data products of Essential Biodiversity Variables (EBVs) on species traits. <i>Nature Ecol. Evol.</i> 2: 1531–1540.</p> <p>[4] García-Carreras B, Sal S, Padfield D, Kontopoulos D-G, Bestion E, Schaum C-E, Yvon-Durocher G, & Pawar S (2018) Role of Carbon Allocation Efficiency in the Temperature Dependence of Autotroph Growth Rates. <i>PNAS</i>, E7361–E7368.</p> <p>[5] Bestion E, García-Carreras B, Schaum C-E, Pawar S & Yvon-Durocher G (2018) Metabolic traits predict the effects of warming on phytoplankton. <i>Ecol Lett</i>, 21(5), 655–664.</p> <p>[6] Kontopoulos D-G, García-Carreras B, Sal S, Smith TP & Pawar, S (2018) Use and misuse of temperature normalisation in meta-analyses of thermal responses of biological traits. <i>PeerJ</i>, 6, e4363.</p> <p>[7] Rizzuto M, Carbone C, & Pawar S, (2017). Foraging constraints reverse the scaling of activity time in carnivores. <i>Nature Ecol Evol</i>, 2, 247–253.</p> <p>[8] Schaum C-E, Barton S, Bestion E, Buckling A, Garcia-Carreras B, Lopez P, Lowe C, Pawar S et al. (2017). Adaptation of phytoplankton to a decade of experimental warming linked to increased photosynthesis. <i>Nature Ecol Evol</i>, 1.</p>	

- [9] Woodward G, Bonada N, Brown LE, Death RG, Durance I, Gray C, Hladyz S, Ledger, ME, Milner AM, Ormerod SJ, Thompson RM, **Pawar S** (2016). The Effects of Climatic Fluctuations and Extreme Events on Running Water Ecosystems. *Phil Trans Roy Soc B*, 371.
- [10] **Pawar S**, Dell AI, Savage VM., & Knies JL (2016). Real versus artificial variation in the thermal sensitivity of biological traits. *Am Nat*, 187(2).
- [11] Gibert JP., Dell AI., DeLong JP., & **Pawar S** (2015) Scaling up trait variation from individuals to ecosystems. *Adv Ecol Res*, 52, 1–17.
- [12] **Pawar S** (2015) The role of body size variation in community assembly. *Adv Ecol Res*, 52, 201–248.
- [13] Johnson L, Ben-Horin T, Lafferty KD. , McNally A, Mordecai E, Paaijmans KP., **Pawar S**, and Ryan SJ. (2015) Understanding uncertainty in temperature effects on vector-borne disease: A Bayesian approach. *Ecology*. 96:1, 203–213.
- [14] **Pawar S**, Dell AI., and Savage VM. (2015) From metabolic constraints on individuals to the eco-evolutionary dynamics of ecosystems. in A Belgrano, G Woodward, and U Jacob, editors. *Aquatic Functional Biodiversity: An Eco-Evolutionary Approach* (pp. 3–36). Elsevier.
- [15] Tang S, **Pawar S** & Allesina S (2014) Correlation between interaction strengths drives stability in large ecological networks. *Ecol Lett* 17, 1094–1100.
- [16] Dell AI., **Pawar S** & Savage VM. (2014) Temperature dependence of trophic interactions are driven by asymmetry of species responses and foraging strategy. *J Anim Ecol*, 83(1) 70–84.
- [17] Mordecai E, Paaijmans K, Johnson L, Balzer C, Ben-Horin T, DeMoor E, McNally A, **Pawar S**, Ryan SJ., Smith T & Lafferty KD (2012). Optimal temperature for malaria transmission is dramatically lower than previously predicted. *Ecol Lett*, 16(1), 22–30.
- [18] **Pawar S**, Dell AI. & Savage VM. (2012). Dimensionality of consumer search space drives trophic interaction strengths. *Nature*, 486, 485–489.
- [19] Dell AI, **Pawar S** & Savage VM. (2011). Systematic variation in the temperature dependence of physiological and ecological traits. *PNAS*, 108, 10591–10596.

TEACHING

Undergraduate

Lecturer, <i>Metabolic Ecology</i> , 1 st year BSc in Biological Sciences Department of Life Sciences, Imperial College London	2015–
Lecturer, <i>Modelling Global Change Biology</i> , 3 rd year BSc in Biological Sciences Department of Life Sciences, Imperial College London	2015–
Lecturer, <i>Computing & Statistics</i> , 1 st & 2 nd year BSc Department of Life Sciences, Imperial College London	2014–
Lecturer, <i>Energetics in Population and Community Ecology</i> , 3 rd year BSc in Biological Sciences Department of Life Sciences, Imperial College London	2014–2016
Lecturer, <i>Population and Community Ecology</i> , Final year BSc Department of Life Sciences, Imperial College London	2013

Graduate

Lecturer, <i>Biological Computing Bootcamp, NERC Centre for Doctoral Training in Quantitative Methods in Ecology and Evolution</i> Imperial College London & University of Reading	2017–
Lecturer, <i>Training modules on Ecoinformatics, Imperial College NERC Doctoral Training Partnership on Science and Solutions for a Changing Planet</i> Imperial College London	2015–16
Lecturer, <i>Biological Computing in UNIX and Python – MSc/MRes in Computational Methods in Ecology and Evolution</i> Department of Life Sciences, Imperial College London	2014–
Lecturer, <i>Biological 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</i> Department of Life Sciences, Imperial College London	2014–
Lecturer, <i>Computational Genomics and Ecoinformatics – MSc in Quantitative Biology and MRes in Biodiversity Informatics & Genomics</i> , Department of Life Sciences, Imperial College London Department of Life Sciences, Imperial College London	2013–14
Guest Lecturer, <i>Biological network Topology and Dynamics</i> Department of Biomathematics, University of California, Los Angeles	2012, 2010, 2009

Guest Lecturer, *Modeling food web structure and dynamics* 2012
Department of Ecology and Evolutionary Biology, University of California, Los Angeles

MAJOR GRANTS

A Novel Framework for Predicting Emerging Chemical Stressor Impacts in Complex Ecosystems 2018–22

£1,933,825 Awarded from UK National Environment Research Council (*Co-Investigator, and Primary Investigator on the Theory Component*)

The Asgard Project 2018

£150,000 Awarded by private (anonymous) funder (*Co-Investigator*) — renewed for another three years, with precise amount TBD.

Impacts of global warming in sentinel systems: from genes to ecosystems 2015–19

£3,686,480 awarded from UK National Environment Research Council Large Grants Program (*Co-Investigator*)

Vector Behaviour in Transmission Ecology (VectorBiTE) 2015–20

£499,290 awarded from UK BBSRC, £300,986 from US NIH under the US/UK Collaborative Research Collaboration Network Program (*Co-Investigator, and Primary Investigator on the Theory & Ecoinformatics Component*)

Can metabolic traits limit species invasions under climate change? 2014–18

£703,562 Awarded from UK National Environment Research Council (*Primary Investigator*)

Understanding the Temperature Dependence of Consumer-resource Interactions 2009–12

\$407,000 awarded, NSF Division of Environmental Biology (*Senior Personnel*)

HONORS AND AWARDS

Nominee, UCLA Chancellor's Award for outstanding postdoctoral research accomplishment 2011

Harrington Dissertation Fellowship, University of Texas at Austin 2008–09

Frank & Fern Blair Fellowship in Integrative Biology, University of Texas at Austin 2007

Zoology Scholarship Endowment for Excellence, University of Texas at Austin, USA 2004

MSc fellowship award for academic merit, Ministry of Environment and Forests, Government of India 1997–99

ACADEMIC SERVICES

Departmental

Ecoinformatics Theme Leader, Grand Challenges in Ecosystems and the Environment, Silwood Park, Department of Life Sciences, Imperial College, 2014–

Director, NERC Centre for Doctoral Training in Quantitative Methods in Ecology and Evolution, 2018–

Educational

Coordinator of Silwood Masters Courses, Silwood Park, Department of Life Sciences, Imperial College, 2016–2018

Training Director, NERC Centre for Doctoral Training in Quantitative Methods in Ecology and Evolution, 2016–2018

Director, *Masters in Computational Methods in Ecology and Evolution*, Department of Life Sciences, Imperial College, 2014–

Co-director, *MSc in Quantitative Biology*, Department of Life Sciences, Imperial College London, 2013–2014

Doctoral Committees

Internal PhD Committees: 14 (past and current) at ICL

External: University of Oxford; University of Sheffield; University of Exeter; Trinity College Dublin

Editorial

Editorial Board Member, *Nature Scientific Data*, 2018–

Review editor, *PLOS Biology*, 2017–

Recommender, *PCI Ecology*, 2018–

Review editor, *Frontiers in Ecology and Evolution*, 2014–

Volume Editor, *Advances in Ecological Research: From Traits to Ecosystem Function*, 2015

Member of Editorial Board, *Current Conservation*, 2009–2012

Advisory Boards and Steering Committees

Member of Advisory Board, *Current Conservation*, 2012–2016

Member of Steering Committee, *VectorBiTE Research Coordination Network*, 2016–

Reviewing

Several scientific journals including *Am Nat*, *Ecol Modelling*, *Ecology*, *Ecol Lett*, *J Biosci*, *J Anim Ecol*, *J Royal Soc Interface*, *Math Biosci*, *Nature*, *Nat Ecol Evol*, *Nat Comm*, *Nat Sci Data*, *Phys Rev A*, *Phys Rev Lett*, *PNAS*, *Proc Royal Soc B*, *PLOS Biology*, *Science & Theor Pop Biol*

Grant reviewing

French National Research Agency, National Geographic Society, US Environmental Protection Agency (STAR fellowships), US Department of Defense, Chilean Antarctic Institute

Institutional reviewing Reviewer of Station d'Ecologie Théorique et Expérimentale (SETE) in Moulis, on behalf of the French High Council for the Evaluation of Research and Higher Education (Hcéres)

Memberships

British Ecological Society, Ecological Society of America, American Society of Naturalists

SYNERGISTIC
ACTIVITIES
(SELECTED)

Workshops, conferences & seminars

Irreversible Processes in Ecological Evolution, Santa Fe Institute, Santa Fe, New Mexico, Jan 2019

GLOBal Infrastructures for Supporting Biodiversity research (GLOBIS) – Traits Workshop 2016, University of Amsterdam.

GLOBal Infrastructures for Supporting Biodiversity research (GLOBIS) – Traits Workshop 2016, University of Amsterdam.

VectorBiTE 2018, Annual Meeting of the Vector Behavior in Transmission Ecology RCN, Asilomar, California, June 2018 (Co-Organizer)

VectorBiTE 2017, Annual Meeting of the Vector Behavior in Transmission Ecology RCN, Imperial College London, UK, July 2017 (Co-Organizer)

VectorBiTE 2016, Annual Meeting of the Vector Behavior in Transmission Ecology RCN, University of South Florida, Tampa, Florida, March 2016 (Co-Organizer)

Linking Ecological, Evolutionary and Ecosystem Dynamics, Gordon Research Conference on Unifying Ecology across Scales, University of New England, Biddeford, Maine, Jul 2016 (Session Leader)

Combining Information Theory and Game Theory, Santa Fe, New Mexico, Aug 2012 (Invited participant)

Trait Evolution and the Dynamics of Food Webs, Annual Meeting of the Ecological Society of America, Austin, Texas, Aug 2011 (Invited moderator)

Evolutionary Processes in Ecological Networks, Annual Meeting of the Ecological Society of America, Austin, Texas, Aug 2011 (Invited moderator)

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 – 2016

Malaria and Climate Change, National Center for Ecological Analysis and Synthesis & University of California, Santa Barbara, Feb 2011–2013

Online Databases & Information portals

VectorBiTE Ecoinformatics: vectorbyte.org

The Global Biotraits Database: biotraits.io

ADVISEES/
MENTORING

PhD: J Cook (2017–); A Christensen (2017–); T Clegg (2017–); P Huxley (2016–); J Zheng (2016–); H Ho (2016–); T Smith (2015–19); D Kontopoulos (2015–19); R Short, Co-Supervisor (2013–2018); G Adams, Co-Supervisor (2012–15)

Postdoc: S. Sal (2015–17); B Garcia-Carreras (2015–18); Rebecca Kordas (2016–); Emma Cavan (2019–)

Masters: 31 students advised to completion at ICL since 2013

BSc: 33 students advised to date at ICL since 2013 (ICL UROP + Final Year Dissertation projects)

INVITED TALKS
(SELECTED,
LAST 5 YEARS)

- Are changes in species interactions and their ecosystem consequences irreversible?*, Workshop on Irreversible Processes in Ecological Evolution, Santa Fe Institute, Santa Fe, New Mexico, Jan 2019
- Metabolic constraints on species interactions and stability of the ecosystem carbon budget*, Gordon Research Conference on Unifying Ecology across Scales, University of New England, Biddeford, Maine, Jul 2018
- Metabolic Constraints on Complex Ecosystems*, University of Reading, Reading, November 2017
- Metabolic Constraints on Complex Ecosystems*, Mathematical Models in Ecology and Evolution Meeting, London, July 2017
- Metabolic Constraints on Complex Ecosystems*, Mathematical Models in Ecology and Evolution Meeting, London, July 2017
- Metabolic Constraints on Complex Ecosystems*, EAWAG, Switzerland, April 2017
- The spontaneous emergence of properties of complex ecosystems: how much do metabolic constraints matter?*, Gordon Research Conference on Unifying Ecology across Scales, University of New England, Biddeford, Maine, Jul 2016
- Metabolic constrains on emergent phenomena in complex ecological networks*, Centre for Complexity Science, University of Warwick, March 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

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Updated: August 29, 2019