

**Shyamolina Ghosh, Ph.D.** (she/ her/ hers)

Oberassistentin (Senior researcher)

Department of Evolutionary Biology and Environmental Studies,  
University of Zurich, Winterthurerstrasse 190, 8057 Zurich, Switzerland

Email: [ghoshshyamolina89@gmail.com](mailto:ghoshshyamolina89@gmail.com) Mobile: +41 779567848

DOB: Dec 3, 1989, Nationality: Indian, Category: General

[Website](#)



### ► Education

- 1) **Doctor of Philosophy** (Aug, 2012 – Oct, 2017), Subject: Chemistry  
Thesis title: "[Study Of Nonlinear Dynamics In Some Model Systems](#)"  
Advisor: [Prof. Deb Shankar Ray](#)  
Place of learning: [Indian Association for the Cultivation of Science](#)  
**Ph.D.(Sc.)** degree was given by: [University of Calcutta](#), India (**viva date 17-Oct-2017**)
- 2) **Master of Science** (July 2010 – July, 2012), Chemical Sciences, DGPA 8.88/10, Ranked 1<sup>st</sup>  
Place of learning: [Indian Association for the Cultivation of Science](#)  
**M.Sc.** degree was given by: [West Bengal University of Technology](#), India
- 3) **Bachelor of Science with Honours** (July 2007 – July, 2010), Subject: Chemistry, 68% (1<sup>st</sup> Class),  
Place of learning: [Serampore College](#), India  
**B. Sc.(Hons.)** degree was given by: [University of Calcutta](#), India
- 4) **Higher Secondary Examination** (Std. 10+2), Year 2007, Science stream, Marks 85.58% (A+),  
Place of learning: Tarakeswar High School, India; Board: [W.B.C.H.S.E](#)
- 5) **Secondary Examination** (Std. 10), Year 2005, Marks 92.25% (1<sup>st</sup> division),  
Place of learning: Tarakeswar Girls' High School, India; Board: [W.B.B.S.E](#)

### ► Employment history [Reference link](#)

- 1) **Senior researcher ("Oberassistentin")** at the **Dept. of Evolutionary Biology & Environmental Studies, University of Zurich, Switzerland**  
(01-Jul-2022 to present), Host: [Prof. Owen Petchey](#)
- 2) **Guest researcher** at **Swiss Federal Institute of Aquatic Science and Technology (Eawag), Switzerland**  
(01-Apr-2022 to 31-Jul-2022), Supervisor: [Dr. Blake Matthews](#)
- 3) **Postdoctoral researcher** at **Swiss Federal Research Institute WSL, Switzerland**  
(01-Oct-2020 to 31-Mar-2022), Supervisors: [Prof. Catherine Graham](#) and [Dr. Blake Matthews](#)
- 4) **Postdoctoral researcher** at **KS Biological Survey, Dept. of Ecology and Evolutionary Biology, University of Kansas, USA**  
(07-Nov-2017 to 30-Sept-2020), Supervisor: [Prof. Daniel Reuman](#)

### ► Approved research projects as PI

- 1) **Study of multi-component pattern forming systems in chemical and biological models**,  
National Postdoctoral Fellowship 2017, Science and Engineering Research Board, India, **approved for 2 years equivalent to total ~\$26000, PI: Shyamolina Ghosh (Independent fellowship in India was awarded but I did not accept as I moved to USA)**.
- 2) I am currently leading my own project funded by University of Zurich (host: Prof. Petchey). I also submitted this same proposal in highly competitive SNSF Swiss Postdoctoral Fellowships 2022 (success rate 9.87%, equivalent to Marie Curie), and got high rank 8.18 out of 9, though not funded (funding threshold was 8.25).

### ► Supervision of junior researchers

Mentored three project students: **Shibashis Paul (Master's end-semester project**, Dec, 2015-May, 2016, project title: *Differential Flow Induced Chemical Instability for Reaction-Diffusion System*, later published in a peer-reviewed journal <https://doi.org/10.1103/PhysRevE.94.042223>), **Debankur Bhattacharyya (Summer project 2017**, project title: *Study of Symmetry Breaking Phenomenon in Self Propelled Particles with Internal Degree of Freedom in Thermally Equilibrated System*, later published in a peer-reviewed journal <https://doi.org/10.1103/PhysRevE.97.042125>), **Munia Sultana (Master's end-semester project** on *traveling waves in reaction diffusion model*, Dec, 2014-May, 2015)

### ► Teaching activities

- 1) Teaching assistant for R course for biologists (KU Biol 701, Fall 2019, USA): I assisted in weekly discussion forum with hands-on experience and evaluating students' assignments, I also **gave a lecture on some special topics later on this course.** [\[Reference Link\]](#)
- 2) I delivered **two days guest lectures and hands on** for population dynamic models for **undergraduates** (KU Biol 415, Fall 2019, USA). [\[Reference Link\]](#)

### ► Individual scientific reviewing activities

- 1) I have **experience in reviewing** some journals (journals are Ecology, Ecology letters, Environmental and Ecological Statistics, Global Ecology & Biogeography)
- 2) I have **grant reviewing experience** (e.g., Discovery grant application, NSERC, Canada)
- 3) I joined **on invitation** as a **subject matter editor** in journal **Ecological Monograph** from Jan 2024.

### ► Organization of workshop/ Outreach

- 1) I organized **Grant writing workshop** for Peer Mentoring Group of women researchers, WSL, Switzerland, Dec 9, 2021.
- 2) **Shyamolina Ghosh**, A brief intro on how patterns are different in terrestrial vs. aquatic communities on public platform <https://www.youtube.com/watch?v=UxApE16nV7Y>
- 3) Helped in infographic design idea for Blue-Green-Biodiversity research public communication.

### ► Prizes, awards, fellowships

- 1) **National Eligibility Test** for **Senior Research Fellowship, 2015** and **Junior Research Fellowship, 2013** by Council of Scientific and Industrial Research (**All India Rank 50**)
- 2) **Graduate Aptitude Test in Engineering**, organized by Indian Institute of Technology Delhi, **2012** (**All India Rank 30**)
- 3) **Post B. Sc. Integrated Research Fellowship** by Indian Association for the Cultivation of Science, **2010** (**only top 10 candidates were selected in across India**)
- 4) **Joint Admission Test for M.Sc.**, organized by Indian Institute of Technology Madras, **2010**. (**All India Rank 22**)

### ► Personal skills (e.g. language skills, digital competences)

- 1) **Language skills:** English, Bengali, Hindi (all fluent in reading, writing, and speaking)
- 2) **Coding skills:** R (fluent), **FORTTRAN** (intermediate), **Python, MATLAB, SQL, Shiny** (beginner).
- 3) **Applications:** LATEX, common Windows database, spreadsheet, and presentation software.
- 4) **Operating Systems:** Linux, Windows.

### ► Contributions to conferences (invited talk, oral presentation, or poster)

#### • TALK/ INVITED TALK

- 1) **Shyamolina Ghosh**, Biology24 conference, ETH Zurich, 18-19 Jan **2024**. (**Talk**)
- 2) **Shyamolina Ghosh**, Stochastic and nonlinear dynamics in chemistry and biology, SNDCB-2024, S. N. Bose National Center for Basic Sciences, Kolkata, India, 4-5 Jan **2024**. (**Invited Speaker**)
- 3) **Shyamolina Ghosh**, Response-diversity symposium, GfÖ, Leipzig, Germany, 12-16 Sept, **2023**. (**Invited Speaker**)
- 4) **Shyamolina Ghosh**, Biodiversity Convention, Monte-Verita, Switzerland, 26-30 June, **2023**. (**Talk**)
- 5) **Shyamolina Ghosh**, INTECOL2022 in-person conference, Geneva, Switzerland, Aug 30, **2022**. (**Talk**)
- 6) **Shyamolina Ghosh**, Lecture Series in Aquatic Ecology and Evolution, jointly organized by Eawag and University of Bern, Switzerland, Mar 2, **2022**. (**Invited Speaker**)
- 7) **Shyamolina Ghosh**, KBS ecology seminar, University of Kansas and Kansas Biological Survey, Nov 5, **2021**. (**Invited Speaker**)
- 8) **Shyamolina Ghosh** et al., GfÖ Virtual Annual Meeting, 30 August to 1 September, **2021**. (**Talk**)
- 9) **Shyamolina Ghosh**, Short talk at BES MACRO **2021**, July 5-7, **2021**, A global analysis of community stability: freshwater vs. terrestrial realms. (**Talk**)
- 10) **Shyamolina Ghosh**, ESA/USSEE Joint Meeting held in Louisville, Kentucky, USA, 11<sup>th</sup> – 16<sup>th</sup> August, **2019**. (**Talk**)

- **POSTER**

- 11) **Shyamolina Ghosh** and Deb Shankar Ray, Differential flow induced transition of traveling wave patterns and wave splitting, Theoretical Chemistry Symposium, University of Hyderabad, India, 14<sup>th</sup>-17<sup>th</sup> Dec, **2016**
- 12) **Shyamolina Ghosh** and Deb Shankar Ray, Rayleigh-type parametric chemical oscillation, A Discussion meeting on Perspective in Teaching & Research in Physical Chemistry, IACS, India, 21<sup>st</sup> - 22<sup>nd</sup> Aug, **2015**.
- 13) **Shyamolina Ghosh** and Deb Shankar Ray, Controlling Turing target pattern by substrate injection in a reaction- diffusion system, Theoretical Chemistry Symposium, CSIR-NCL Pune, India, 18<sup>th</sup> - 21<sup>st</sup> Dec, **2014**.
- 14) **Shyamolina Ghosh** and Deb Shankar Ray, Signature of Vibrational Resonance on Selkov Glycolytic Model, Symposium on Theoretical and Computational Chemistry - Frontiers and Challenges, Bharathidasan University, Tiruchirappalli, India, 14<sup>th</sup> - 15<sup>th</sup> June, 2013.
- 15) **Shyamolina Ghosh** and Deb Shankar Ray, Signature of Vibrational Resonance on the optical susceptibilities of a two-level system, An International conference on: Electronic Structure and Dynamics of Molecule and Clusters, IACS, India, 17<sup>th</sup> - 20<sup>th</sup> February, 2013.

► **Publications in peer-reviewed scientific journals (order: newest to oldest)**

- **Publications during Post-doctoral Study**

- 1) Imran Khaliq, Christian Rixen, Florian Zellweger, Catherine H. Graham, Martin M. Gossner, Ian R. McFadden, Laura Antão, Jakob Brodersen, **Shyamolina Ghosh**, Francesco Pomati, Ole Seehausen, Tobias Roth, Thomas Sattler, Sarah R. Supp, Maria Riaz, Niklaus Zimmermann, Blake Matthews, Anita Narwani, *Warming underpins community turnover in temperate freshwater and terrestrial communities*, **Nature Communications** 15.1: 1921(2024). <https://doi.org/10.1038/s41467-024-46282-z> (**Impact Factor: 16.6**)
- 2) Ian R. McFadden, Agnieszka Sendek, Morgane Brosse, Marco Baity-Jesi, Janine Bolliger, Kurt Bollmann, Eckehard G. Brockerhoff, Giulia Donati, Friederike Gebert, **Shyamolina Ghosh**, Hsi-Cheng Ho, Imran Khaliq, J. Jelle Lever, Ivana Logar, Helen Moor, Daniel Odermatt, Loïc Pellissier, Luiz Jardim de Queiroz, Christian Rixen, Nele Schuwirth, Ole Seehausen, J. Ryan Shipley, Yann Vitasse, Christoph Vorburger, Mark Wong, Niklaus E. Zimmermann, Martin M. Gossner, Blake Matthews, Catherine H. Graham, Florian Altermatt and Anita Narwani, *Linking human impacts to community processes in terrestrial and freshwater ecosystems*, **Ecology letters** 26.2 (2023): 203-218. <https://onlinelibrary.wiley.com/doi/full/10.1111/ele.14153> (**Impact Factor: 11.274**)
- 3) **Shyamolina Ghosh**, Daniel C. Reuman, James D. Bever, *Preferential allocation of benefits and resource competition among recipients allows coexistence of symbionts within hosts*, **The American Naturalist**, 199(4), 468 (2022). <https://doi.org/10.1086/718643> (**Impact Factor: 4.367**)
- 4) **Shyamolina Ghosh**, Kathryn L. Cottingham, Daniel C. Reuman, *Species relationships in the extremes and their influence on community stability*, **Phil. Trans. R. Soc. B** 376: 20200343 (2021). <https://doi.org/10.1098/rstb.2020.0343> (**Impact Factor: 6.671**)
- 5) **Shyamolina Ghosh**, Lawrence W. Sheppard, Philip C. Reid, and Daniel Reuman, *A new approach to interspecific synchrony in population ecology using tail association*, **Ecology and evolution** 10, no. 23 (2020): 12764-12776. <https://doi.org/10.1002/ece3.6732> (**Impact Factor: 3.167**)
- 6) **Shyamolina Ghosh**, Lawrence W. Sheppard, Daniel C. Reuman, *Tail associations in ecological variables and their impact on extinction risk*, **Ecosphere**, 11(5):e03132, (2020). <https://doi.org/10.1002/ecs2.3132> (**Impact Factor: 3.593**)
- 7) **Shyamolina Ghosh**, Lawrence W. Sheppard, Mark T. Holder, Terrance D. Loecke, Philip C. Reid, James D. Bever, Daniel C. Reuman, *Copulas and their potential for ecology*, **Advances in Ecological Research**, 62, 409, (2020). <https://doi.org/10.1016/bs.aecr.2020.01.003> (**Impact Factor: 5.182**)

- **Publications during Doctoral Study**

- 8) Debankur Bhattacharyya, Shibashis Paul, **Shyamolina Ghosh** and Deb Shankar Ray, *Brownian dynamics of self-regulated particles with additional degrees of freedom: Symmetry breaking and homochirality*, **Phys. Rev. E**, 97, 042125 (2018). <https://doi.org/10.1103/PhysRevE.97.042125> (**Impact Factor: 2.707**)
- 9) Shibashis Paul, **Shyamolina Ghosh** and Deb Shankar Ray, *Reaction–diffusion systems with*

*fluctuating diffusivity; spatio-temporal chaos and phase separation*, **Journal of Statistical Mechanics: Theory and Experiment**, **3**, 033205 (2018). <https://doi.org/10.1088/1742-5468/aab019> (**Impact Factor: 2.234**)

- 10) Shibashis Paul, **Shyamolina Ghosh** and Deb Shankar Ray, *Nonequilibrium transition and pattern formation in a linear reaction-diffusion system with self-regulated kinetics*, **Phys. Rev. E**, **97**, 022213 (2018). <https://doi.org/10.1103/PhysRevE.97.022213> (**Impact Factor: 2.707**)
- 11) Shibashis Paul, **Shyamolina Ghosh** and Deb Shankar Ray, *Noisy flow induced instability in a reaction-diffusion system*, **Phys. Rev. E**, **94**, 062217 (2016). <https://doi.org/10.1103/PhysRevE.94.062217> (**Impact Factor: 2.707**)
- 12) **Shyamolina Ghosh**, Shibashis Paul and Deb Shankar Ray, *Differential-flow-induced transition of traveling wave patterns and wave splitting*, **Phys. Rev. E**, **94**, 042223 (2016). <https://doi.org/10.1103/PhysRevE.94.042223> (**Impact Factor: 2.707**)
- 13) **Shyamolina Ghosh** and Deb Shankar Ray, *Parametric spatiotemporal oscillation in reaction-diffusion systems*, **Phys. Rev. E**, **93**, 032209 (2016). <https://doi.org/10.1103/PhysRevE.93.032209> (**Impact Factor: 2.707**)
- 14) **Shyamolina Ghosh** and Deb Shankar Ray, *Rayleigh-type parametric chemical oscillation*, **J. Chem. Phys.**, **143**, 124901 (2015). <https://doi.org/10.1063/1.4931401> (**Impact Factor: 4.304**)
- 15) **Shyamolina Ghosh** and Deb Shankar Ray, *Selecting spatio-temporal patterns by substrate injection in a reaction-diffusion system*, **Eur. Phys. J. B**, **88:180**, 1-7 (2015). <https://doi.org/10.1140/epjb/e2015-60260-9> (**Impact Factor: 1.398**)
- 16) **Shyamolina Ghosh** and Deb Shankar Ray, *Optical Bloch equations in a bichromatic field; vibrational resonance*, **Eur. Phys. J. B**, **88:23**, 1-5 (2015). <https://doi.org/10.1140/epjb/e2014-50306-y> (**Impact Factor: 1.398**)
- 17) **Shyamolina Ghosh** and Deb Shankar Ray, *Liénard-type chemical oscillator*, **Eur. Phys. J. B**, **87:65**, 1-7 (2014). <https://doi.org/10.1140/epjb/e2014-41070-1> (**Impact Factor: 1.398**)
- 18) **Shyamolina Ghosh** and Deb Shankar Ray, *Chemical oscillator as a generalized Rayleigh oscillator*, **J. Chem. Phys.**, **139**, 164112 (2013). <https://doi.org/10.1063/1.4826169> (**Impact Factor: 4.304**)
- 19) **Shyamolina Ghosh** and Deb Shankar Ray, *Nonlinear vibrational resonance*, **Phys. Rev. E**, **88**, 042904 (2013). <https://doi.org/10.1103/PhysRevE.88.042904> (**Impact Factor: 2.707**)

#### ► Contributions to books

**Shyamolina Ghosh**, Lawrence W. Sheppard, Mark T. Holder, Terrance D. Loecke, Philip C. Reid, James D. Bever, Daniel C. Reuman. Copulas and their potential for ecology. Tropical Ecosystems in the 21st Century. 2020:409. (**Chapter 11 in the book**), edited by Alex Dumbrell, Edgar Turner, Tom Fayle (eBook ISBN: 9780128211366), publisher Elsevier.

#### ► Other artefacts with documented use (In Review/ In Revision)

- 1) **Shyamolina Ghosh**, Blake Matthews, Sarah R. Supp, Roel van Klink, Francesco Pomati, James A. Rusak, Imran Khaliq, Niklaus E. Zimmermann, Ole Seehausen, Christian Rixen, Martin M. Gossner, Anita Narwani, Jonathan M. Chase, & Catherine H. Graham. (2023). **Project BioDyn: compilation of long-term (>20yrs) community timeseries data from terrestrial and freshwater realms [Data set]**. Zenodo. <https://doi.org/10.5281/zenodo.8233591>
- 2) **Shyamolina Ghosh**, Blake Matthews, Sarah R. Supp, Roel van Klink, Francesco Pomati, James A. Rusak, Imran Khaliq, Niklaus E. Zimmermann, Ole Seehausen, Christian Rixen, Martin M. Gossner, Anita Narwani, Jonathan M. Chase, & Catherine H. Graham. **Synchrony and tail-dependent synchrony have different effects on the stability of terrestrial and freshwater communities**. *Authorea*. August 24, 2023. <https://doi.org/10.22541/au.169287307.74379399/v1>
- 3) **Shyamolina Ghosh**, Blake Matthews. **Temporal turnover in species' ranks can explain variation in Taylor's slope for ecological timeseries**. *Authorea*. September 29, 2023. <https://doi.org/10.22541/au.169597120.04933319/v1>
- 4) **Shyamolina Ghosh**, Owen Petchey. **Spatial synchrony at the extremes: Tail-dependence in temperature drives tail-dependence in birds' spatial synchrony across North America**. *Authorea*. November 16, 2023. <https://doi.org/10.22541/au.170014328.86737085>
- 5) **Shyamolina Ghosh**, Blake Matthews, Owen Petchey. **Temperature change and biodiversity influence community stability differently in birds and fishes**. *Research Square*. November 20, 2023. <https://doi.org/10.21203/rs.3.rs-3578300/v1>