

Curriculum vitae

Dr. SUBARNA ROY

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Educational qualifications

- **Ph.D** from Indian Institute of Information Technology, Bhagalpur, India in 2026
Thesis Title: Mathematical Studies of Some Ecological and Eco-Epidemiological Systems
Thesis supervisor : Dr. Pankaj Kumar Tiwari,
Department of Basic Science and Humanities,
Indian Institute of Information Technology,
Bhagalpur -- 813210, Bihar, India
- **M. Sc. (Mathematics)**
Passed from Visva-Bharati University, Santiniketan, West Bengal, in 2020 with
CGPA 8.74/10
- **B. Sc. (Math-Hons)**
Passed from Burdwan University, Burdwan, West Bengal, in 2018 with 65.75 %
- **Higher Secondary**
Passed from W.B.C.H.S.E., Kolkata in 2015 with 87.6 %
- **Matriculation**
Passed from W.B.B.S.E., Kolkata in 2013 with 78.7 %

Awards

- Qualified CSIR NET (JRF), November, 2020
- Qualified GATE, 2021

Computer skills

- Computational Software : MATLAB, MATCONT, MAPLE
- Typesetting Software : Latex, Microsoft Office

Research interests

- Nonlinear Dynamical System, Bifurcation Analysis, Mathematical Modeling of ecological systems, Models with seasonality, Models with stochasticity

Teaching experience

- **Assistant Professor (Guest Faculty):** Department of Basic Science and Humanities, Indian Institute of Information Technology, Bhagalpur, from January 01, 2026 to till date.

Published papers

1. P.K. Tiwari, **S Roy**, A.K. Misra, R.K. Upadhyay, Effect of seasonality on a nutrient-plankton system with toxicity in the presence of refuge and additional food, *The European Physical Journal Plus*, 137, 368, 2022. <https://doi.org/10.1140/epjp/s13360-022-02566-1>
2. **S. Roy**, P.K. Tiwari, H. Nayak, M. Martcheva, Effects of fear, refuge and hunting cooperation in a seasonally forced eco-epidemic model with selective predation, *The European Physical Journal Plus*, 137, 528, 2022. <https://doi.org/10.1140/epjp/s13360-022-02751-2>
3. B. Mondal, **S. Roy**, U. Ghosh, P.K. Tiwari, A systematic study of autonomous and nonautonomous predator-prey models for the combined effects of fear, refuge, cooperation and harvesting, *The European Physical Journal Plus*, 137, 724, 2022. <https://doi.org/10.1140/epjp/s13360-022-02915-0>
4. P.K. Tiwari, **S. Roy**, G. Douglas, A.K. Misra, An optimal control model for the impact of Phoslock on the mitigation of algal biomass in lakes, *Journal of Biological Systems*, 30(4), 945-984, 2022. <https://doi.org/10.1142/S0218339022500346>
5. D. Barman, **S. Roy**, P.K. Tiwari, S. Alam, Two fold impacts of fear in a seasonally forced predator-prey system with Cosner functional response, *Journal of Biological Systems*, 31(2), 517–555, 2023. <https://doi.org/10.1142/S0218339023500183>
6. A. Sha, **S. Roy**, P.K. Tiwari, J. Chattopadhyay, Dynamics of a generalist predator-prey system with harvesting and cooperation of predators in a noisy environment, *Mathematical Methods in the Applied Sciences*, 47(7), 5916-5938, 2024. <https://doi.org/10.1002/mma.9897>
7. **S. Roy**, N. Sk, P.K. Tiwari, Bifurcation analysis of a modified Leslie-Gower model with fear, hunting cooperation and predator-taxis sensitivity, *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 34, 023131, 2024. <https://doi.org/10.1063/5.0171936>
8. **S. Roy**, S. Samanta, H. Nayak, P.K. Tiwari, Deterministic Versus Stochastic Dynamics of a Predator-Prey System with Disease in Prey: Impact of Fear and Supplementary Foods, *International Journal of Biomathematics*, 2450047, 2024. <https://doi.org/10.1142/S1793524524500475>

9. A.K. Umrao, **S. Roy**, P.K. Tiwari, P.K. Srivastava, Dynamical behaviors of autonomous and nonautonomous models of generalist predator-prey system with fear, mutual interference and nonlinear harvesting, *Chaos Solitons & Fractals*, 183, 114891, 2024. <https://doi.org/10.1016/j.chaos.2024.114891>
10. **S. Roy**, Sajjan, P.K. Tiwari, B. Dubey, Dynamics of a stage-structured predator-prey system with fear-induced group defense in autonomous and nonautonomous settings, *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 34, 063133, 2024. <https://doi.org/10.1063/5.0215467>
11. **S. Roy**, P.K. Tiwari, Bistability in a predator-prey model characterized by the Crowley–Martin functional response: Effects of fear, hunting cooperation, additional foods and nonlinear harvesting, *Mathematics and Computers in Simulation*, 228, 274-297, 2024. <https://doi.org/10.1016/j.matcom.2024.09.001>
12. **S. Roy**, P.K. Tiwari, Multistability in a predator–prey model with generalist predator and strong Allee effect in prey, *The European Physical Journal B*, 97(11), 176, 2024. <https://doi.org/10.1140/epjb/s10051-024-00814-0>
13. N. Sk, **S. Roy**, P.K. Tiwari, Seasonal stochasticity drives phytoplankton-zooplankton dynamics, *Mathematical Methods in the Applied Sciences*, 48(5), 5998-6018, 2024. <https://doi.org/10.1002/mma.10651>
14. **S. Roy**, S. Mandal, P.K. Tiwari, Maia Martcheva, Stochastic shifts within a predator-prey system featuring schooling behavior and generalist predators, *Journal of Biological Systems*, 33(2), 479-517, 2025. <https://doi.org/10.1142/S0218339025500123>
15. **S. Roy**, S. Khajanchi, P.K. Tiwari, Fear and its carry-over effects in a generalist predator-prey system featuring cooperative hunting, *Journal of Applied Mathematics and Computing*, 71, 3939–3964, 2025. <https://doi.org/10.1007/s12190-024-02346-3>
16. Y. Wang, Q. Guo, H. Liu, **S. Roy**, P.K. Tiwari, M. Zhao, C. Dai, Impacts of refuge and additional foods on the spatiotemporal dynamics of a prey-predator system in a time-periodic environment (SCIE), *The European Physical Journal Plus*, 140, 330, 2025. <https://doi.org/10.1140/epjp/s13360-025-06253-9>
17. S.S. Maity, **S. Roy**, P.K. Tiwari, Spatio-temporal dynamics of a predator-prey system with variable carrying capacity and Cosner response function, *Franklin Open*, 100289, 2025. <https://doi.org/10.1016/j.fraope.2025.100289>
18. A.A. Thirthar, A.L. Alaoui, **S. Roy**, P.K. Tiwari, Fractional and stochastic dynamics of predator-prey systems: The role of fear and global warming, *The European Physical Journal B*, 98, 147, 2025. <https://doi.org/10.1140/epjb/s10051-025-00992-5>
19. S. Jawad, A.A. Thirthar, **S. Roy**, P.K. Tiwari, Deterministic and stochastic risks assessment of excessive CO2 emission on forest biomass under weak Allee effect, *Journal of Applied Mathematics and Computing*, 71, 9129–9156, 2025. <https://doi.org/10.1007/s12190-025-02640-8>

20. **S. Roy**, B. Mondal, S. Ghosh, P.K. Tiwari, Ecological sensitivities to the interplay of Allee effects, prey refuge and supplementary food resources in a predator-prey system, *The European Physical Journal B*, 98, 201, 2025. <https://doi.org/10.1140/epjb/s10051-025-01050-w>
21. **S. Roy**, R. Kumbhakar, S. Karmakar, P.K. Tiwari, N. Pal, Dynamical complexities in a food chain model with schooling behavior: a study in a parameter plane, *The European Physical Journal Plus*, 140, 1002, 2025. <https://doi.org/10.1140/epjp/s13360-025-06939-0>
22. D. Das, D. Bhattacharjee, **S. Roy**, P.K. Tiwari, Stability and bifurcation analysis of a predator-prey system with feedback-controlled odour and wind-driven decay, *Mathematical Biosciences*, 390, 109561, 2025. <https://doi.org/10.1016/j.mbs.2025.109561>
23. **S. Roy**, M. Verma, D.V. Singh, P.K. Tiwari, Impacts of fear, predator harvesting, rarity value, and seasonal fluctuations on a delayed predator-prey system, *Nonlinear Science*, 5, 100077, 2025. <https://doi.org/10.1016/j.nls.2025.100077>
24. **S. Roy**, D.S. AL Jaf, A.A. Thirthar, P.K. Tiwari, The impact of human shields in an autonomous and non-autonomous prey-predator model with a modified Cosner functional response, *Mathematics and Computers in Simulation*, 242, 54-73, 2025. <https://doi.org/10.1016/j.matcom.2025.11.016>

Personal details

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Father's Name	: Sashadhar Roy
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References

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Declaration

I hereby affirm that the information provided above is true and accurate.

Subarna Roy