Workshop and Symposium on Mathematical Ecology
December 7-14, 2010

Part-1: Workshop on Mathematical Ecology (7-11 December, 2010)
Venue: Okakura Bhavan, Near Salt Lake City Centre, Kolkata
organized by
Indian Institute of Science Education and Research (IISER-Kolkata),
Mohanpur, Nadia, West Bengal

Workshop Schedule:

Time/ Dates	Tuesday (7th December)		Wednesday (8th December)	Thursday (9th December)	Friday (10th December)	Saturday (11th December)
9:00-9:30	Welcome					
	P-I	P-II				
9:30-10:30	Soumitro Banerjee	Santanu Ray	Sutirth Dey-II	Sitabhra Sinha	KS Choudhury	Sandip Banerjee-II
10:30-11:00	*TEA/COFFEE*	*TEA/COFFEE*	*TEA/COFFEE*	*TEA/COFFEE*	*TEA/COFFEE*	*TEA/COFFEE*
11:00-12:00	Soumitro Banerjee	Santanu Ray	Sutirth Dey-II	Sitabhra Sinha	KS Choudhury	Malay Banerjee
12:00-1:00	Seema Nanda	Sutirth Dey-I	PDN Srinivasu -I	Sitabhra Sinha	KS Choudhury	Malay Banerjee
1:00-2:00	*LUNCH*	*LUNCH*	*LUNCH*	*LUNCH*	*LUNCH*	*LUNCH*
2:00-3:00	Seema Nanda	Sutirth Dey-I	PDN Srinivasu-I	Siddhartha P. Chakrabarty	PDN Srinivasu -II	Sunita Gakkhar
3:00-3:30	*TEA/COFFEE*	*TEA/COFFEE*	*TEA/COFFEE*	*TEA/COFFEE*	*TEA/COFFEE*	*TEA/COFFEE*
3:30-4:30	Ram Rup Sarkar-I	G. Umapathy	Ram Rup Sarkar-II	Siddhartha P. Chakrabarty	Sandip Banerjee -I	Sunita Gakkhar
4:30-6:00	Ram Rup Sarkar-I	G. Umapathy	Ram Rup Sarkar-II	Siddhartha P. Chakrabarty	Sandip Banerjee-I	Concluding Session
	Computer Lab/ Discussion	Computer Lab/ Discussion	Computer Lab/ Discussion	Computer Lab/ Discussion	Computer Lab/ Discussion	

Courses:

Day 1: Two parallel sessions:

Parallel Session – 1(P-I): Introduction of Mathematical Methods for Biologists

Soumitro Banerjee (IISER, Kolkata): Basic Mathematics, ODE, Nonlinear Dynamics

Seema Nanda (TIFR, Bangalore): Basic Mathematics, PDE, Stochastic Differential Eqns.

Ram Rup Sarkar (CCMB, Hyderabad) - lecture I: Probability and Basic Statistics

Parallel Session – 2(P-II): Introduction of Ecology for Mathematicians/Physicists

Santanu Ray (Viswabharati University, Shantiniketan): Ecology, Niche, Species, Food web, Ecological interactions, Food chain

Sutirth Dey (IISER, Pune)- lecture I: Statistics, Regression, Data Analysis

G. Umapathy (CCMB, Hyderabad): Ecological Data, Field Ecology, Data analysis

Day 2: Basic modeling techniques, Data Analysis, Population dynamics,

Sutirth Dey (IISER, Pune)- lecture II: Discrete Models in Ecology, Ecological Data Analysis

PDN Srinivasu (Andhra Univ., Visakhapatnam)- lecture I: Continuous Models in Ecology, Population Dynamics

Ram Rup Sarkar (CCMB, Hyderabad) - lecture II: Time Series Analysis

Day 3: Food web: Food Chain, Network; Optimization techniques in Ecology

Sitabhra Sinha (IMSc., Chennai): Graph Theory, Network and Food Web Models

Siddhartha P. Chakrabarty (IIT, Guwahati): Optimization techniques in Ecology

Day 4: Optimization techniques in Ecology; Stage Stucture Modelling & Metapopulation

KS Choudhury (Jadavpur University, Kolkata): Optimization techniques in Ecology, Bio-economic Models in Ecology

PDN Srinivasu (Andhra Univ., Visakhapatnam)- lecture II: Bio-economic Models in Ecology

Sandip Banerjee (IIT, Roorkee)- lecture I: Stage Structure Models, Metapopulation Models

Day 5: Metapopulation, Spatial Ecology & Disease in Ecological System

Sandip Banerjee (IIT, Roorkee)- lecture II: Metapopulation Models-contd., Estimation of parameters (Revisited)

Malay Banerjee (IIT, Kanpur): Spatial Ecology, Stochastic Models in Ecology

Sunita Gakkhar (IIT, Roorkee): Impulsive Models in Ecology, Disease in Ecological Systems

Part-2: Symposium on Mathematical Ecology (13-14 December, 2010)

Venue: J. C. Bose Building,
Indian Institute of Science Education and Research (IISER-Kolkata),
Mohanpur Campus, Nadia, West Bengal

Symposium Schedule

Time	Monday (13th December)	Time	Tuesday (14th December)
9:00 - 9:15	*WELCOME*	9:00 - 9:40	Sunita Gakkhar
9:15 - 9:55	Sitabhra Sinha	9:40 - 10:20	PDN Srinivasu
9:55 - 10:35	Siddhartha P. Chakrabarty	10:20 - 11:00	Sandip Banerjee
10.35-11.00	*BREAK*	11:00-11:30	*BREAK*
11:00 - 11:40	Sutirth Dey	11:30 - 12:10	Sanjay Jain
11:40 - 12:20	G.P. Samanta	12:10 - 12:50	Seema Nanda
12:20 - 1:00	Malay Banerjee	12:50 - 1:30	Joydev Chattopadhyay
1:00 - 2:00	*LUNCH*	1:30 - 2:30	*LUNCH*
2:00 - 2:40	G. Umapathy	2:30 - 3:30	Contributed Talks Session II
2:40 - 3:20	Manju Agarwal	3:30 - 4:00	*BREAK*
3.20 - 3:50	*BREAK*	4:00 - 4:40	Somdatta Sinha
3:50 - 4:30	KS Choudhury	4:40 – 5:20	Santanu Ray
4:30-5:10	Soumyendu Raha	5:20 - 6:00	Govindan Rangarajan
5:10 - 7:00	Contributed Talks Session I	6:00 - 6:30	Open Forum & Discussion *Concluding Session*
7:30 onwards	*CONFERENCE BANQUET*		

Invited Talks:

Sitabhra Sinha (IMSc., Chennai): *Why large, diverse and highly connected ecosystems should exist at all ? Lessons from nonlinear dynamics on complex networks*

Siddhartha P. Chakrabarty (IIT, Guwahati): *Application of control theory in fishery harvesting*

Sutirth Dey (IISER, Pune): *Dynamics of laboratory populations of Drosophila melanogaster*

G.P. Samanta (BE College, Howrah): *Analysis of nonautonomous two species system in a polluted environment*

Malay Banerjee (IIT, Kanpur): *Turing and non-Turing pattern formation in ecology: effect of environmental noise*

G. Umapathy (CCMB, Hyderabad): *The occurrence of arboreal mammals in the rain forest fragments in the Anamalai Hills, South India*

Manju Agarwal (Lucknow University, Lucknow): An Introduction to Stage Structured Mathematical Models

KS Choudhury (Jadavpur University, Kolkata): A Joint Project of Fishery and Poultry: A Bioeconomic Model

Soumyendu Raha (IISc., Bangalore): *Differential-Algebraic Equation Modeling in Predator-Prey Dynamics*

Sunita Gakkhar (IIT, Roorkee): *Complexity in Ecological Systems*

PDN Srinivasu (Andhra University, Visakhapatnam): *Bio-economics of a renewable resource subjected to strong Allee effect in a periodically fluctuating environment*

Sandip Banerjee (IIT, Roorkee): *Time lags can control algal bloom in two harmful phytoplankton–zooplankton system*

Sanjay Jain (Delhi University, Delhi): *Stability and diversity in complex systems*

Seema Nanda (TIFR, Bangalore): *Optimal Control of Harvesting in a Stochastic Metapopulation Model*

Joydev Chattopadhyay (ISI, Kolkata): *A possible solution on plankton paradox: existing research and paradigm shift*

Somdatta Sinha (CCMB, Hyderabad): *Modelling Insect Population Dynamics*

Santanu Ray (Viswabharati University, Shantiniketan): *Art of simulation modeling in ecology with some examples from Hooghly-Matla estuarine system*

Govindan Rangarajan (IISc., Bangalore): *Synchronized extinction of species*

Contributed Talks:

Session I

Sapna Devi (BHU, Varanasi): *A time-delay model for the effect of toxicant in a single species growth*

Pusapati Sarada Varma (Andhra University, Vizag): *Dynamics of Dissolved Oxygen in relation to saturation and health of an aquatic body: Observations made and lessons learnt for Chilka lagoon in India*

Meera Mane (IISc, Bangalore): *Study of survivorship patterns of plant species at Mudumalai 50 hectare forest dynamics plot*

Krishna Pada Das (Mahadevananda Mahavidyalaya, Kolkata): *Role of competition in phytoplankton population for the occurrence and control of plankton bloom in the presence of environmental fluctuations*

Anal Chatterjee (Mirzapur H.S.C.High School, Murshidabad): *Bottom up and top down effect on toxin producing phytoplankton and its consequence on the formation of plankton bloom*

Bhuvanagiri Sree Rama Vara Prasad (Andhra University, Vizag): *Biological control through provision of additional food to predators: a theoretical study*

Joyita Mukherjee (Visva-Bharati University, Santiniketan): *Dynamics of dissolved inorganic carbon in Hooghly estuary*

Randhir Singh Baghel (ABV-IIITM, Gwalior): *Three species Food Web Model*

Session II

Joydeb Bhattacharyya (Carey High School, Kolkata): *Coexistence of Competing Predators in Coral Reef Ecosystem*

Ashok Munde (Dr. Babasaheb Ambedkar Marathwada University, Aurangabad): *Stability Analysis of Mutualistic Interactions Among Three Species with Unlimited Resources*

Kiran Kumar Gurubilli (Andhra University, Vizag): *Periodic Solutions for an equation governing dynamics of a Renewable Resource Subjected to Allee Effects*

Meghana Kulkarni (IISc, Bangalore): *Elephant population density estimate by line transect dung count method using Distance computer software*