The Abdus Salam International Centre for Theoretical Physics

Workshop on Theoretical Ecology and Global Change

Organizer(s): Directors: G. A. Canziani, G. A. De Leo, A.P. Dobson, M. Pascual. Local Organizer: F. Giorgi
Trieste - Italy, 02 - 13 March 2009

Venue: Leonardo da Vinci Building Main Lecture Hall

Final programme

MONDAY, March 2 (Room:Leonardo da Vinci Building Main Lecture Hall)

2 March 2009

09:00 - 10:00 --- REGISTRATION ---
(After you have Registered: Administrative Formalities (daily living allowances/travel reimbursements, bank transactions, etc.) at the E. Fermi Building - just above the Leonardo Da Vinci Bldg.

10:00 - 10:30 **OPENING & WELCOME BY THE ORGANIZERS**

10:30 - 10:45 (Room: Leonardo da Vinci Building, Lobby)
--- Coffee Break ---

10:45 - 11:45 **F. Giorgi, Head, ICTP ESP Section**
Climate Change

11:45 - 12:30 **L. Buckley** / *National Center for Ecological Analysis and Synthesis, Santa Barbara (CA), USA*
Theoretical models of species' ranges and range dynamics

12:30 - 14:00 (Room: Leonardo da Vinci Building Cafeteria)
--- Lunch ---

14:00 - 15:00 **P. Moorcroft** / *Harvard University, Dept. of Organismic & Evolutionary Biology, USA*
Scaling from plant-level responses into ecosystem-level consequences (i) Modeling species interactions (ii) Incorporating vegetation heterogeneity: age structure and size structure (iii) Representing plant functional diversity

15:00 - 15:45 **Introduction to Core Groups**

15:45 - 16:00 (Room: Leonardo da Vinci Building, Lobby)
--- Coffee Break ---

16:00 - 16:00 (Room: Computer Lab. (LB))
L. Buckley
Climate Lab

TUESDAY, March 3 (Room:Leonardo da Vinci Building Main Lecture Hall)

3 March 2009

06:00 - 06:00 (Room: Computer Lab. (LB))
--- GENERAL LAB DOCUMENTS ---
Andy Dobson Materials

09:00 - 10:00 **L. Buckley**
Applying range models to predict responses to climate change

10:00 - 11:00 **P. Moorcroft**
The ecosystem-level consequences of vegetation heterogeneity (i) Developing a predictive science of the biosphere (ii) Non-linear ecosystem responses

11:00 - 11:30 (Room: Leonardo da Vinci Building, Lobby)
--- Discussion & Coffee Break ---

11:30 - 12:30 **M. Pascual** / *University of Michigan, Dept. of Ecology and Evolutionary Biology, USA*
Climate variability and population cycles in the dynamics of infectious diseases

12:30 - 14:00 (Room: Leonardo da Vinci Building Cafeteria)
--- Lunch ---

14:00 - 15:00 **J. Dunne** / *Santa Fe Institute (NM), USA*
Food web network structure: data, models, and inference

15:00 - 15:45 **Core Groups discussions**

15:45 - 16:00 (Room: Leonardo da Vinci Building, Lobby)
--- Coffee Break ---

16:00 - 16:00 (Room: Computer Lab. (LB))
P. Moorcroft
Climate Lab

WEDNESDAY, March 4 (Room:Leonardo da Vinci Building Main Lecture Hall)

4 March 2009

09:00 - 10:00 **M. Pascual**
Infectious diseases and non-stationary environments: climate change and pathogen evolution

10:00 - 11:00 **S. Allesina** / *National Center for Ecological Analysis and Synthesis, Santa Barbara (CA), USA*
Robustness of ecological networks (i.e. effects of extinctions on network structure)

11:00 - 11:30 (Room: Leonardo da Vinci Building, Lobby)
--- Discussion & Coffee Break ---

11:30 - 12:30 **Participant Presentations**

In-lake phytoplankton succession modeling with morphofunctional groups (Angel Segura - Uruguay) 30'

The Role of topological keystone species in food web structure (Daniela Torres Alruiz - Venezuela) 30'

12:30 - 14:00 (Room: Leonardo da Vinci Building Cafeteria)
--- Lunch ---

14:00 - 15:00 **J. Dunne**
Dynamical modeling of complex food webs

15:00 - 15:45 **Core Groups discussions**

15:45 - 16:00 (Room: Leonardo da Vinci Building, Lobby)
--- Coffee Break ---

16:00 - 16:00 (Room: Computer Lab. (LB))
J. Dunne
Food web Lab 1

19:00 - 20:30 (Room: Leonardo da Vinci Building Cafeteria)
--- WELCOME RECEPTION ---

THURSDAY, March 5 (Room:Leonardo da Vinci Building Main Lecture Hall)

5 March 2009

09:00 - 10:00 **S. Allesina**
Stability of ecological systems (i.e. linear stability, qualitative stability etc.)

10:00 - 11:00 **J. Bascompte** / *Consejo Superior de Investigaciones Cientificas, Estacion Biologica de Donana, Seville, Spain*
Mutualistic Networks

11:00 - 11:30 (Room: Leonardo da Vinci Building, Lobby)
--- Discussion & Coffee Break ---

11:30 - 12:30 **G. Canziani** / *Multidisciplinary Institute on Ecosystems & Sustainable Development, UNCBA, Tandil, Argentina*
Parasites, climate, and fuzzy logic models

12:30 - 14:00 (Room: Leonardo da Vinci Building Cafeteria)
--- Lunch ---

14:00 - 15:00 **M.- J. Hernandez** / *Instituto de Zoologia Tropical, Universidad Central de Venezuela, Caracas*
The Dynamics of Variable or Conditional Population Interactions: Nature and Models

15:00 - 15:45 **Core Groups discussions**

15:45 - 16:00 (Room: Leonardo da Vinci Building, Lobby)
--- Coffee Break ---

16:00 - 16:00 (Room: Computer Lab. (LB))
S. Allesina
Food web Lab 2
Handouts for Participants

FRIDAY, March 6 (Room:Leonardo da Vinci Building Main Lecture Hall)

6 March 2009

09:00 - 10:00 **J. Bascompte**
Food web structure and network motifs (or Spatial networks of genetic variability)

10:00 - 11:00 **M.- J. Hernandez**
The Dynamics of Variable or Conditional Population Interactions: Models in Nature

11:00 - 11:30 (Room: Leonardo da Vinci Building, Lobby)
--- Discussion & Coffee Break ---

11:30 - 12:30 **G. Canziani**
The trophic state of shallow lakes, remote sensors and ANN

12:30 - 14:00 (Room: Leonardo da Vinci Building Cafeteria)
--- Lunch ---

14:00 - 15:00 **E. Bertuzzo** / *Laboratoire d'écohydrologie (ECHO), EPF Lausanne*
Cholera dynamics in a river network

15:00 - 15:45 **Participant Presentations**
Biotic interaction and species distribution under climate change scenarios (José Ferrer Paris - Venezuela) 20'
Structure and dynamics of pollination networks: the role of alien plants (Fernanda Valdovinos - Chile) 20'
Discussion Session 05'

15:45 - 16:00 (Room: Leonardo da Vinci Building, Lobby)
--- Coffee Break ---

16:00 - 16:00 **Core Groups Reports**

MONDAY, March 9 (Room:Leonardo da Vinci Building Main Lecture Hall)

9 March 2009

09:00 - 10:00 **A. Dobson** / *Princeton University, Dept of Ecology and Evolutionary Biology, USA*
CLimate Change, LAnd USe Change and the decline of Ecosystem Services (1)

10:00 - 11:00 **J. - P. Rodriquez** / *Instituto Venezolano de Investigaciones Cientificas, Caracas*
The Neotropical Biodiversity Mapping Initiative (NeoMaps) (1)

11:00 - 11:30 (Room: Leonardo da Vinci Building, Lobby)
--- Discussion & Coffee Break ---

11:30 - 12:30 **G. De Leo** / *University of Parma, Dept. of Environmental Sciences, Italy*
The state of marine resources (1)

12:30 - 14:00 (Room: Leonardo da Vinci Building Cafeteria)
--- Lunch ---

14:00 - 15:00 **R. Hilborn** / *School of Aquatic Fishery Sciences, University of Washington, Seattle, USA*
Application areas fisheries and marine ecosystems (1)

15:00 - 16:00 **Core Groups discussions**

16:00 - 16:15 (Room: Leonardo da Vinci Building, Lobby)
--- Coffee Break ---

16:15 - 16:15 (Room: Computer Lab. (LB))
B. Bolker / *University of Florida, Zoology Dept., Gainesville*
LAB (1)

TUESDAY, March 10 (Room:Leonardo da Vinci Building Main Lecture Hall)

10 March 2009

09:00 - 10:00 **M.-J. Hernandez**
The Dynamics of Variable or Conditional Population Interactions in Space. Discussion on the characterization of population interactions (1)

10:00 - 11:00 **J. - P. Rodriquez**
Quantitative criteria for the assessment of ecosystem extinction risk (2)

11:00 - 11:30 (Room: Leonardo da Vinci Building, Lobby)
--- Discussion & Coffee Break ---

11:30 - 12:30 **R. Hilborn**
Wildlife, especially East African parks management, protected areas(2)

12:30 - 14:00 (Room: Leonardo da Vinci Building Cafeteria)
--- Lunch ---

14:00 - 15:00 **G. De Leo**
When size matters: Trade-offs, non-linearities and surprises in the management of size-structured populations (2)

15:00 - 16:00 **Core Groups discussions**

16:00 - 16:15 (Room: Leonardo da Vinci Building, Lobby)
Coffee Break

16:15 - 16:15 (Room: Computer Lab. (LB))
B. Bolker
LAB (2)

WEDNESDAY, March 11 (Room:Leonardo da Vinci Building Main Lecture Hall)

11 March 2009

09:00 - 10:00 **R. Hilborn**
Contrasting marine and terrestrial conservation: similarities and differences (3)

10:00 - 11:00 **Participants Presentations**

Competing effects of phytoplankton for the occurance and control of plankton bloom in the presence of environmental fluctuations- a mathematical study (Samares Pal - India) 30'

Impact of Climate change on malaria in India (Sharmila Pahwa - India) 30'

11:00 - 11:30 (Room: Leonardo da Vinci Building, Lobby)
--- Discussion & Coffee Break ---

11:30 - 12:30 **L. Boitani** / *Dept. Animal & Human Biology, University of Rome "La Sapienza"*
Where is the species? Representing species on a map (1)

12:30 - 14:00 (Room: Leonardo da Vinci Building Cafeteria)
--- Lunch ---

14:00 - 15:00 **L. Boitani**
Where is the species? Representing species on a map (2)

15:00 - 16:00 **Core Groups discussions**

16:00 - 16:15 (Room: Leonardo da Vinci Building, Lobby)
--- Coffee Break ---

16:15 - 16:15 (Room: Computer Lab. (LB))
B. Bolker
LAB (3)

THURSDAY, March 12 (Room:Leonardo da Vinci Building Main Lecture Hall)

12 March 2009

09:00 - 10:00 **A. Dobson**
Assembling a Serengeti Food-web: Insight for Conservation and Management of complex tropical ecosystems (2)

10:00 - 11:00 **Participant Presentations**

Effect of sedimentation increase on a benthic Antartic community (Luciana Torre - Argentina) 30'

Matrix Models in Coral Metapopulations (Adriana Humanes - Venezuela) 30'

11:00 - 11:30 (Room: Leonardo da Vinci Building, Lobby)
--- Discussion & Coffee Break ---

11:30 - 12:30 **G. Canziani**
Past, present and future of a neotropical wetland ecosystem. Tools for analyzing changes (2)

12:30 - 14:00 (Room: Leonardo da Vinci Building Cafeteria)
--- Lunch ---

14:00 - 15:00 **Core Groups: preparation of presentations**

15:00 - 16:00 (Room: Computer Lab. (LB))
B. Bolker
LAB (4)

16:00 - 16:15 (Room: Leonardo da Vinci Building, Lobby)
--- Coffee Break ---

16:15 - 16:15 (Room: Computer Lab. (LB))
B. Bolker
LAB (5)

FRIDAY, March 13 (Room:Leonardo da Vinci Building Main Lecture Hall)

13 March 2009

09:00 - 10:00 **Participant Presentations**

The impact of aerosols on climate change (Ashraf Zakey - (Egypt) ESP-ICTP) 10'

Impact and effectiveness of a marine protected area in economic sustainability (Chakib Jerry - Morocco) 10'

Evaluating the role of fishing and environment in determining the surplus production of the North Sea fish stocks (Katyana Vert-Pre - Martinique) 10'

Epidemiological consequences of forest fragmentation in Sao Paulo State, Brazil (Alessandra Nava - Brazil) 10'

Spatial Modelling of Malaria risk: exploring the impact of climate change (Lawrence Kazembe - Malawi) 10'

An individual-based model of hermaphrodite fish population with gender conflicts (Amira Kebir - Tunisia) 10'

Networks / Food webs (Thierry Aaron Tomos (United Kingdom)) 20'

11:00 - 11:30 (Room: Leonardo da Vinci Building, Lobby)
--- Discussion & Coffee Break ---

11:30 - 12:30 **Presentation of Core Groups results**

12:30 - 14:00 (Room: Leonardo da Vinci Building Cafeteria)
--- Lunch ---

14:00 - 16:00 **Presentation of Core Groups results**

16:00 - 16:15 (Room: Leonardo da Vinci Building Cafeteria)
--- Coffee Break ---

16:15 - 16:15 **Conclusions and certificates**