



ICTP | International Centre for Theoretical Physics
SAIFR | South American Institute for Fundamental Research

Campus of IFT-UNESP – São Paulo, Brazil



ANGEL SEGURA
CURE, Uruguay

Macroecology of species fluctuations and extinctions in marine organisms



VIVIANE OLIVEIRA
UFRPE, Brazil

Ecological modeling: Habitat fragmentation and evolutionary rescue



FABIANA LAGUNA
CNEA, Argentina

Modeling Ecological Dynamics Across Scales: From Individuals to Metapopulations



JACOPO GRILLI
ICTP, Italy
Microbial Ecology



PABLO MARQUET
PUC, Chile & Santa Fe, USA



RICARDO MARTINEZ-GARCIA
CASUS, Germany



THORSTEN WIEGAND
UFZ, Germany

Spatial upscaling of community dynamics from the plant neighborhood scale to the community scale

January 18 – 28, 2026

**THEORETICAL ECOLOGY AND
 THE PHYSICS OF LIFE:
 UPSCALING BIODIVERSITY
 IN A CHANGING WORLD**

The growing complexity of ecological data demands a shared language and robust methodologies to describe, understand, and predict ecological dynamics. In this context, the framework of complex systems provides an integrative foundation that is both aligned with the challenges of biological data and is deeply interdisciplinary. This school and workshop will focus on how the intersections of physics, applied mathematics, and ecology are and will be used to address complex ecological phenomena and biodiversity challenges around the world.

To foster scientific collaboration, the event incorporates a two-day workshop as a platform to connect early-career and senior scientists across the region. The workshop will feature invited and contributed talks, extended poster sessions, and a round table on the future of theoretical ecology in South America. Dedicated networking sessions will provide a space to brainstorm collaborative projects and outline joint research priorities for the coming years.

During the school, students will learn some fundamental computational and analytical tools needed to formulate, analyze, and integrate mathematical models with empirical data. The curriculum covers a wide range of modeling approaches, including individual-based models, differential equations, and stochastic dynamics embedded in complex interaction networks.

The school is primarily aimed at master's and Ph.D. students in the life sciences, mathematics, and physics, though highly motivated students at the end of their undergraduate studies and postdoctoral researchers are also welcome to apply. We strive to create a diverse environment in which students with distinct backgrounds are welcome. In particular, we actively invite emerging and established scientists from across South America, and participants are highly encouraged to submit an abstract for a poster presentation or a contributed short talk to highlight their research and spark new collaborations.

School application deadline:
October 20, 2026

Workshop application deadline:
November 20, 2026

Online application and more information:
ictp-saifr.org/tepl2027



ORGANIZERS

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