

Modelling Marine Ecosystems for Biodiversity Protection: the case of Øresund strait**Authors:**

- Josep Sardanyés, Centre de Recerca Matemàtica (jsardanyes@crm.cat)

Abstract:

Currently, over 17,000 marine protected areas (MPAs) cover nearly 9% of the oceans, but only 23% have clear management plans, and just 1% have evaluated their management effectiveness. Effective plans are crucial but face financial and infrastructural challenges. Existing guidelines lack systematic approaches for balancing biodiversity targets with socio-economic impacts, and none provide adaptive plans for necessary transformative change. This gap is critical because socio-ecological systems are complex and unpredictable, leading to rapid ecosystem degradation. In this talk, we will discuss a trophic chain model using ordinary differential equations to study the population dynamics of shallow marine ecosystems in the Oresund strait, focusing on the role of cod in controlling various trophic levels, including mesopredators, mesoherbivores, filamentous algae, and eelgrass meadows.

References: