CBGP
Centre de Biologie pour la Gestion des Populations

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Salle de réunion

TRACKING UNCERTAINTIES IN MECHANISTIC MODELS FOR RISK ASSESSMENT OF PEST CONTROL STRATEGIES

par
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Food web structure and interaction strength regulate a large part of biomass and energy transfers in ecosystems, but also the spread of contaminants (in a broad sense: from chemical compounds to parasites). My research focus on how food interactions modulate contaminant spreading and how trophic systems respond to those contamination.

I briefly present some mechanistic models challenging mere intuition: (i) influence of the shape of multi-species functional response to disease risk, (ii) tipping points in predator-prey system under different contamination regimes and (iii) weakness of equilibrium in a tri-system: pest – pesticide – "pest natural predators" which are likely to be secondary poisoned.

If complex behaviors emerge from simple mechanistic models, how to link them to data from complex open system? Going back to a simple survival model, I present the use of a Bayesian framework to track the propagation of uncertainties from data collection to model predictions.

Finally, in the context of Bt-Maïze risk assessment on Non-Target Lepidoptera, I present a spatio-temporal model incorporating the variability brought by data in every part of the model in order to disentangle the rise of uncertainties up to risk estimates.

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