



Seminar:

Predation and ecosystem nutrient dynamics

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Animals in food webs regulate ecosystem processes by controlling the transfer of nutrients from plants to higher trophic levels, and through top-down control over the identity, abundances, and functional traits of species at lower trophic levels. However, this regulatory role is not a constant feature of a species. Prey species regularly tweak expressions of behavioral, physiological, morphological, and life history traits in attempt to lessen elevated risk of predation. Animals may use different combinations of those defense responses depending on the specific characteristics of the environmental stressors but also based on the inherent, developmental and environmental constraints on the individual's ability to respond. Recent advances in nutritional ecology allow predicting how defensive phenotypes may alter animals' nutritional requirements (demand) or constrain their ability to achieve those requirements (supply). This understanding enables to predict possible changes in prey diet and nutritional composition of their waste material and body composition. Those changes, in turn, may allow predicting subsequent effects on how these changes will modify ecosystem functioning by (a) regulating the quantity and nutritional quality of plants and animal production known to govern recycling rates; (b) inducing defense phenotypes in soil organisms; and (c) changing soil environmental conditions (via ecosystem engineering). First empirical examination provided support to this novel framework and uncovered interesting context dependent responses that call for further research.

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Location: KOL 00.04, Charles Deberiotstraat 32, Leuven