

Top-down or bottom-up?

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Deer foraging
 behaviour

Introduction

- In absence of large carnivores: browsing limits saplings 50-180 cm, productivity limits saplings <50cm
- What happens when we add an extra trophic level?
- Wolf affects deer distribution and foraging behaviour

What is the relative importance of productivity and browsing on tree regeneration in a landscape of fear?



Sapling
 browsing

Methods - Planting experiment - Białowieża forest

- 14 sites: different in predation risk and productivity
 - Distance from human settlements ~ Predation risk
 - Vegetation height ~ Productivity
- Planted 64 saplings per site in April 2015
- Followed faith of saplings over time
 - Sapling height
 - Sapling browsing intensity
- Scored deer foraging behaviour (camera trapping)



H1: Top-down



H2: Bottom-up



Results - Structural Equation Model (PiecewiseSEM)

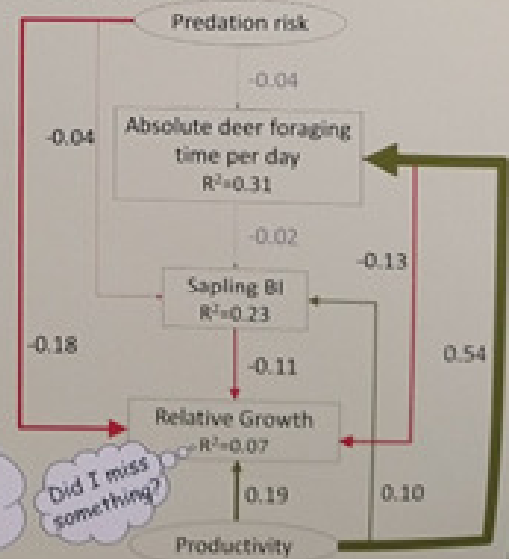
- Deer foraging not affected by predation risk, big influence of productivity
- On high risk sites saplings grow less → contradicts top-down hypothesis

Correlation between predation risk and productivity: high risk sites least productive.



Problematic for interpretation

Is the expected positive effect of predation risk on sapling growth levelled out by low productivity and vice versa?



Did I miss something?



AIC=28
 Fisher's C=0, p=1, df=0
 saturated model

* Have you worked with Structural Equation Models, and also want search for better interpretation?

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