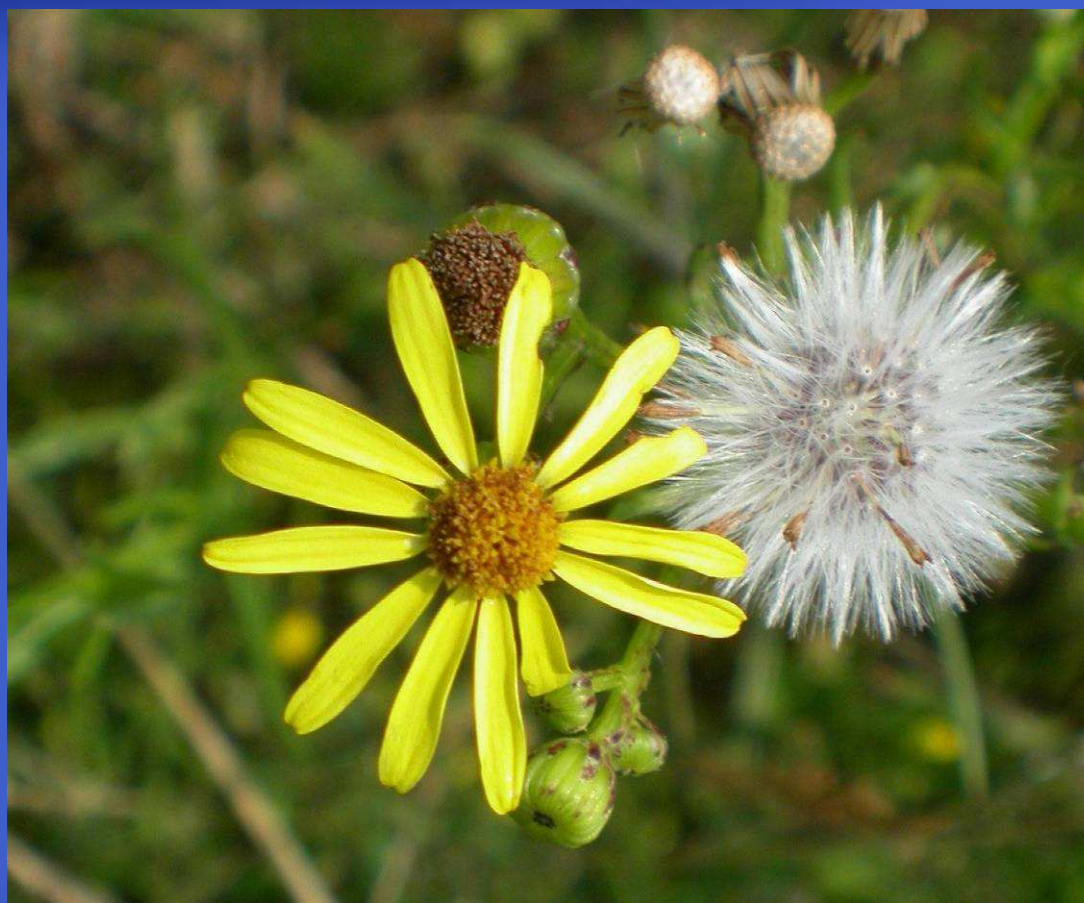


A joint analysis of plant invader and ecosystem traits to explain invasion success



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Goal

Design

Results

Unravelling the rules of a successful invasion by analysing plant traits (underlying invasiveness) and ecosystem traits (underlying invasibility) simultaneously.

11 exotic species

33 sites

95 traits

Which **exotic** species have **invader** potential?

Which ecosystems can be invaded?

Strategy: 11 model invaders, 3 ecosystems/species



Plant and ecosystem traits



Explaining invasive success via traits

e.g. success=dense ecosystem + small SLA



Predicting: exotic **X** invades ecosystem **Y**

e.g. dense ecosystem can be invaded
by exotic with small SLA



Goal

Design

Results

Successful vs unsuccessful

Successful exotic

Predicting

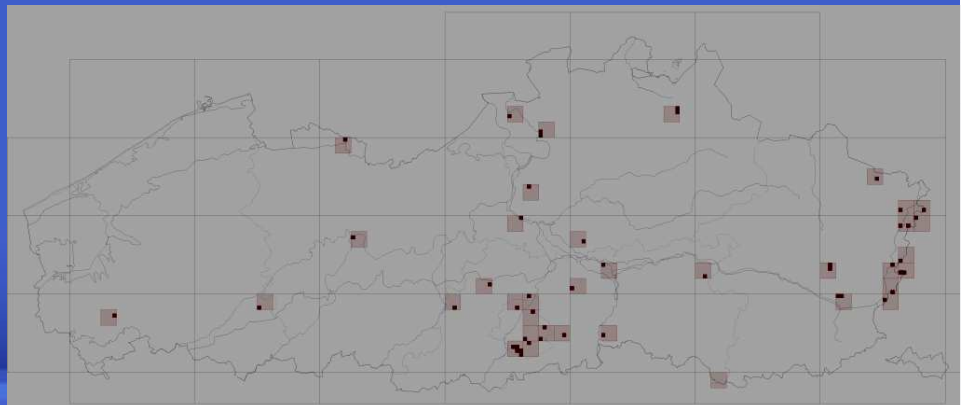
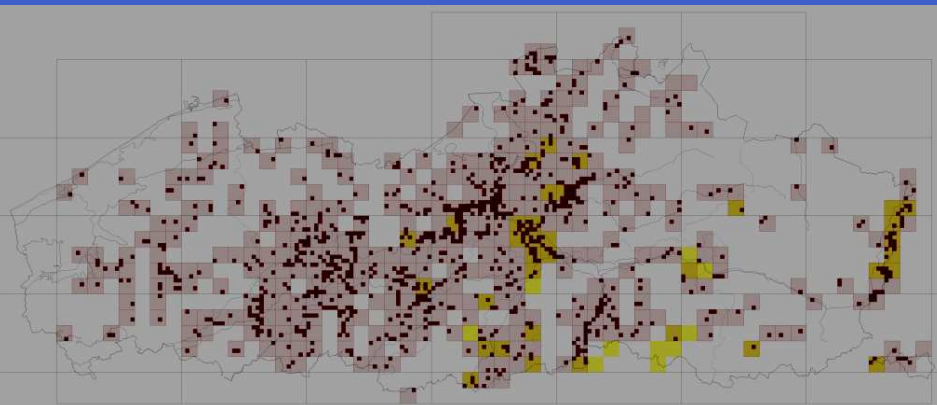
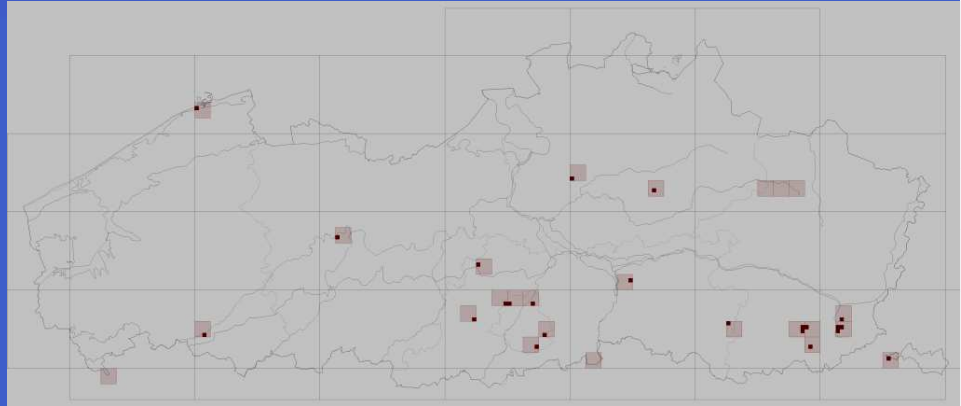
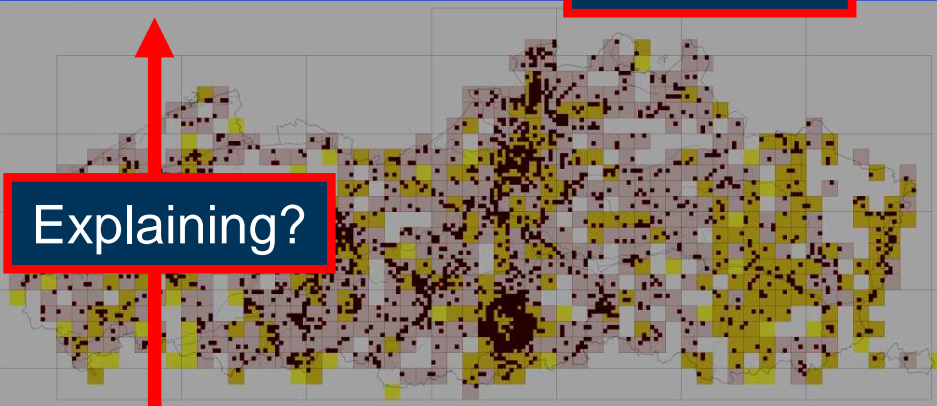
Unsuccessful exotic

Explaining?

Successful native

Predicting

Unsuccessful native

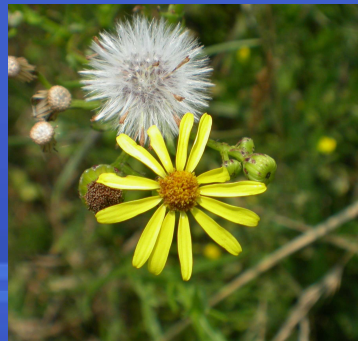




Goal

Design
Species

Results





Goal

Design
Sites

Results

Antwerpen, *Ekeren*

Assenede Temse Kessel Westerlo

Blankenberge

Wenduine

Bredene

De Panne

Zonien forest

(several sites)

Kraainem,

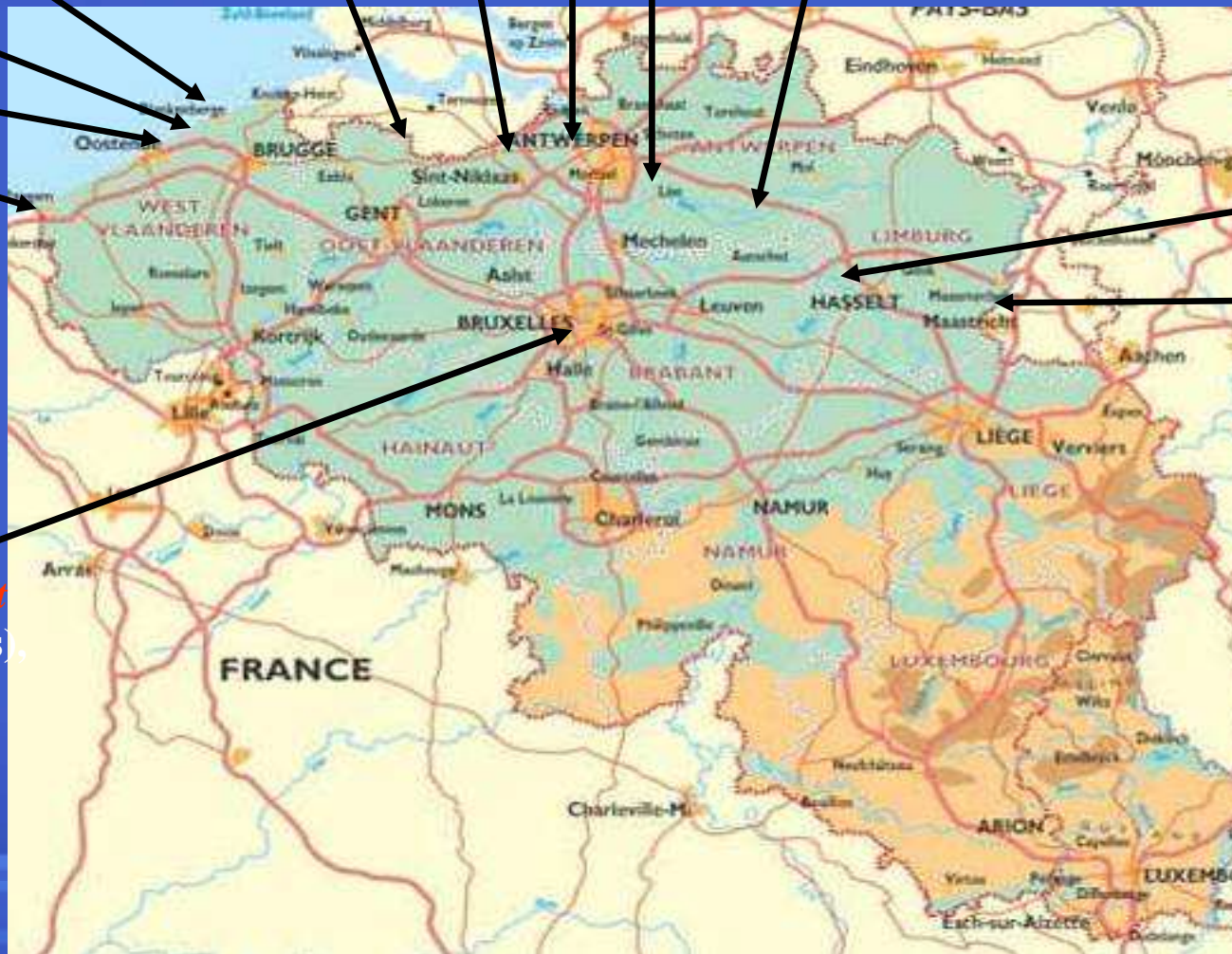
Diegem,

Ganshoren,

Ukkel,

Schaarbeek,

...



Heusden-Zolder

Dilsen-Stokkem,
Boorseme-Kotem,
Uikhoven

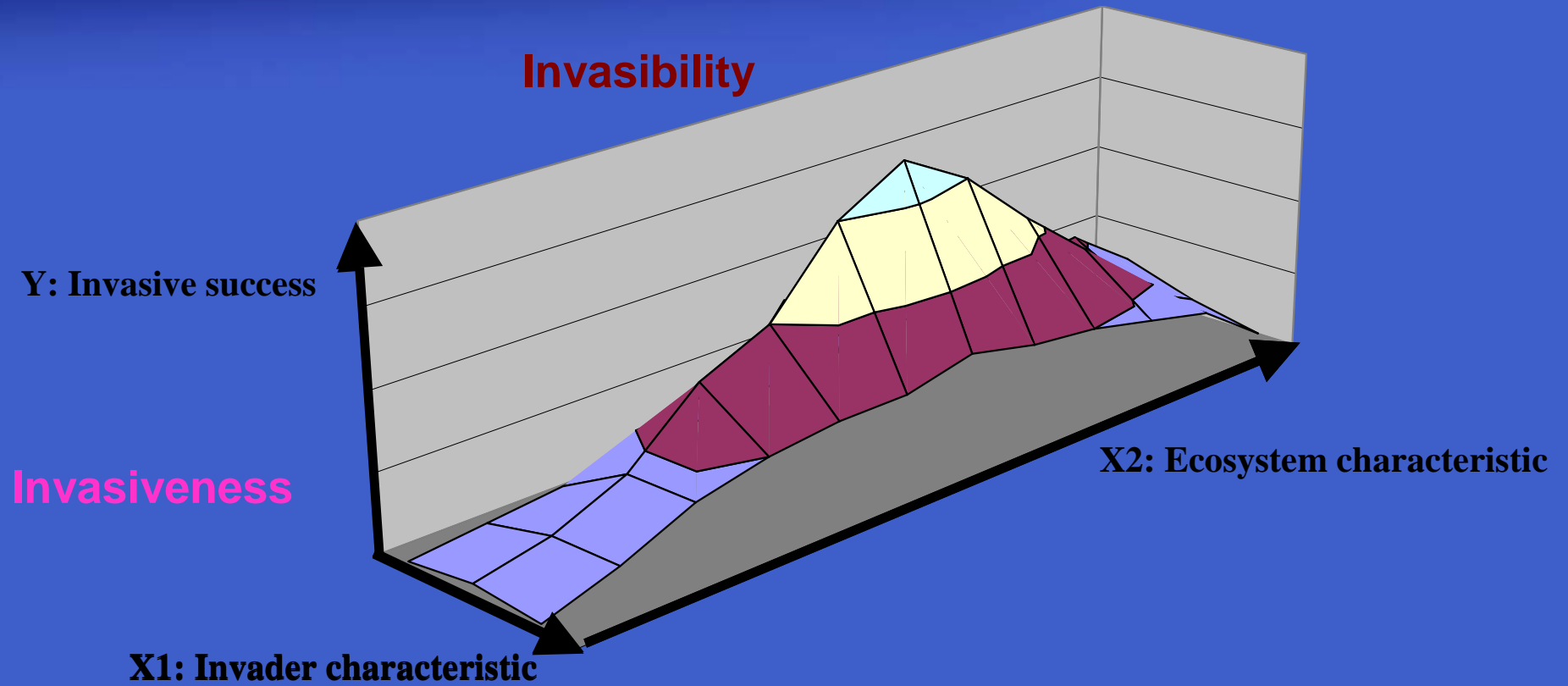


Goal

Design

Results

Invasiveness and invasibility



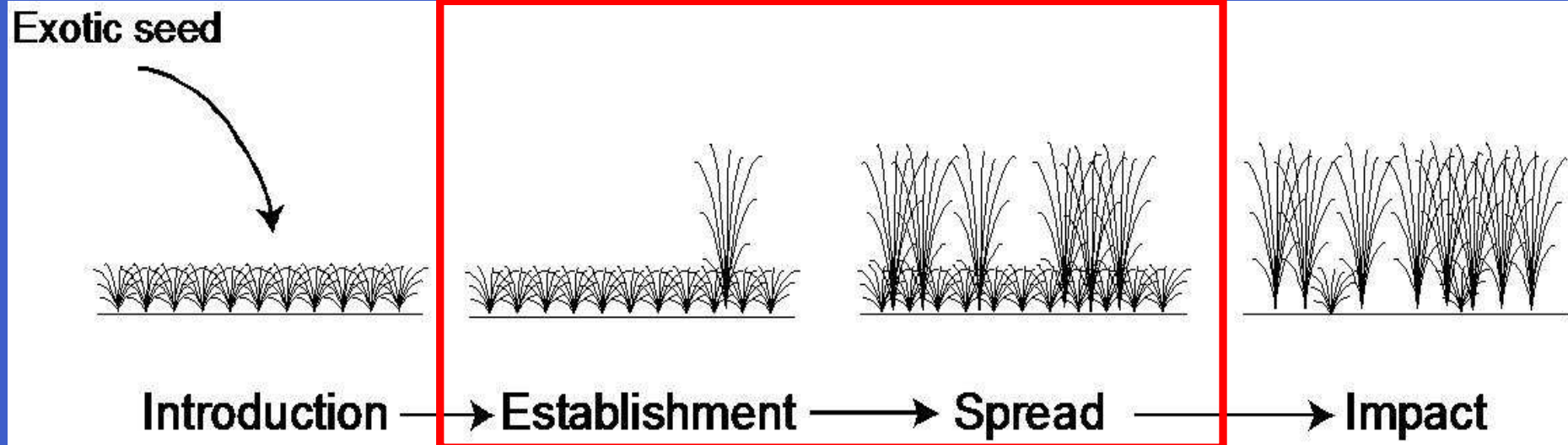


Goal

Design
Stages

Results

Success = invasiveness + invisibility



$$\begin{aligned} \text{Success}_{\text{invasion}} &= (\text{invasiveness} + \text{invasibility})_{\text{introduction}} \\ &+ (\text{invasiveness} + \text{invasibility})_{\text{establishment}} \\ &+ (\text{invasiveness} + \text{invasibility})_{\text{spread}} \\ &+ (\text{invasiveness} + \text{invasibility})_{\text{impact}} \end{aligned}$$



Goal

Design

Results

Growth

Unsuccessful
invader

Efficient resorption

Carbon young

SLA

Successful
invader

Efficient resorption

Carbon young

SLA

Ecosystem
unsuccessfully
invaded

Biomass

Nutrients

Light

Temperature

Humidity

Ecosystem
successfully
invaded

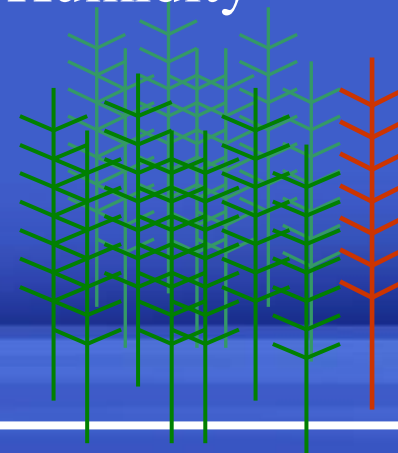
Biomass

Nutrients

Light

Temperature

Humidity



Success





Goal

Design

Results

Fitness

Unsuccessful
invader

Height & biomass
Carbon young
LMR
Nutrients senescent

Successful
invader

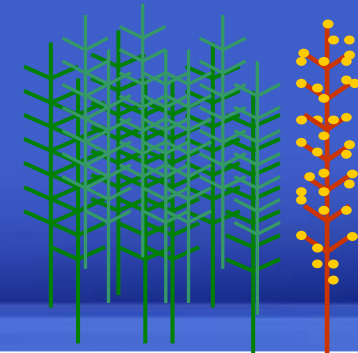
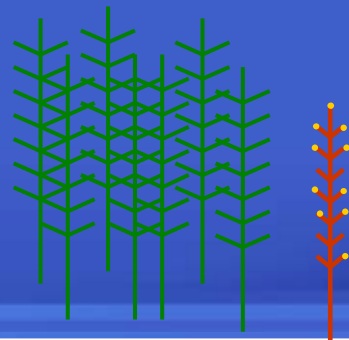
Height & biomass
Carbon young
LMR
Nutrients senescent

Ecosystem
unsuccessfully
invaded

Light
Carbon soil

Ecosystem
successfully
invaded

Light
Carbon soil



Success



Goal

Design

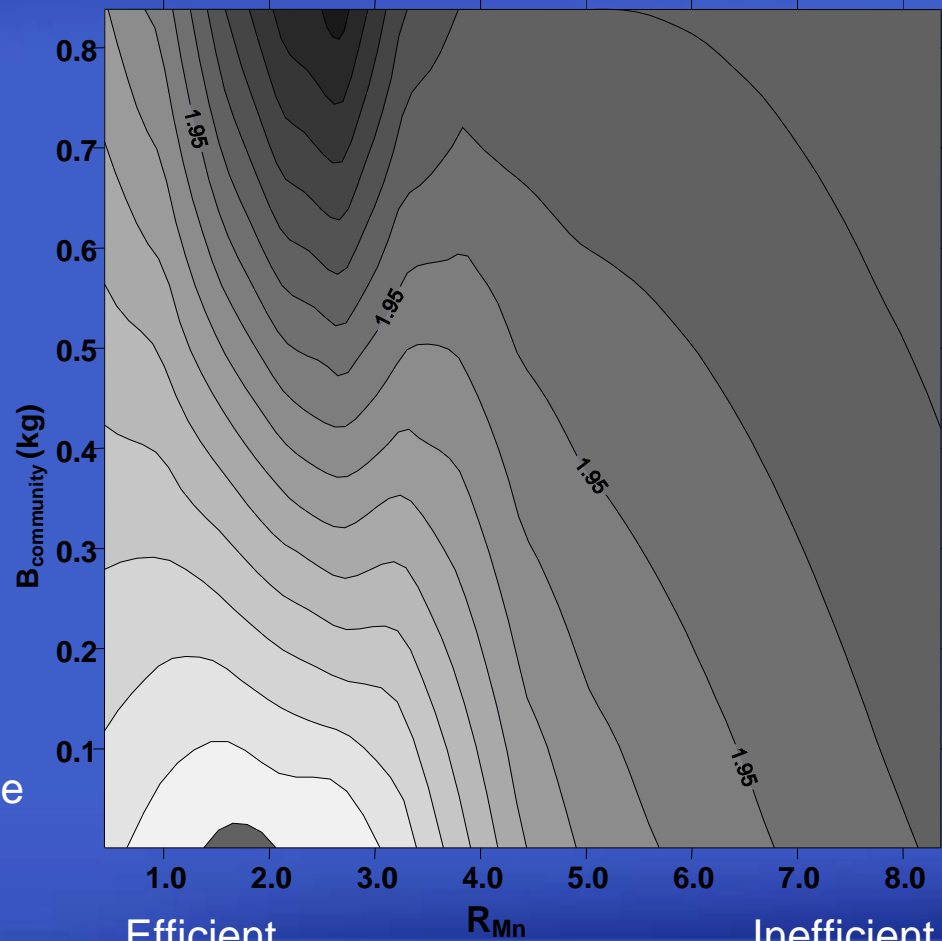
Results

Example

Invader height = $f(\text{resorption efficiency of manganese, biomass of vegetation prior to invasion})$

Productive ecosystem

Unproductive ecosystem



Efficient
nutrient
resorption

Inefficient
nutrient
resorption

