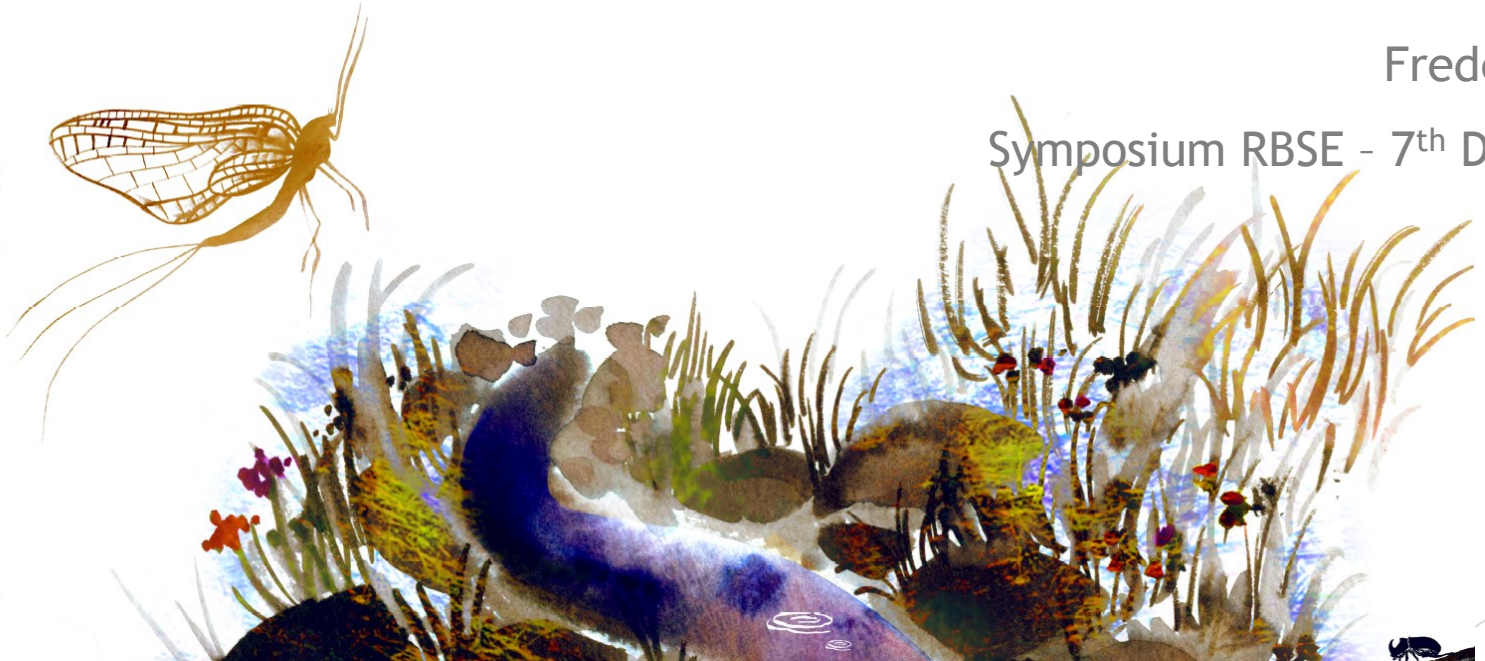
Insects and Nature management - Introduction

Frederik Hendrickx

Symposium RBSE – 7th December 2018

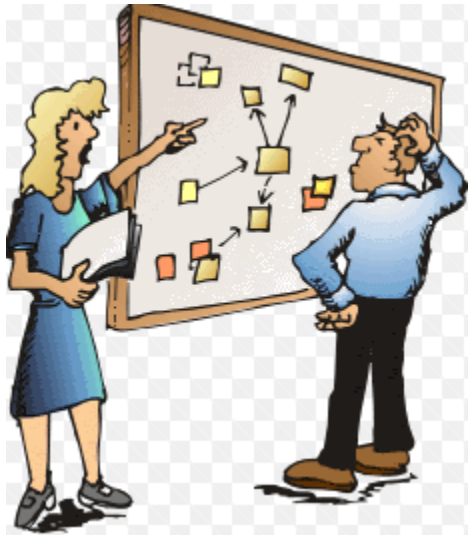


Twitter: #entomanage

Purpose

Entomologists

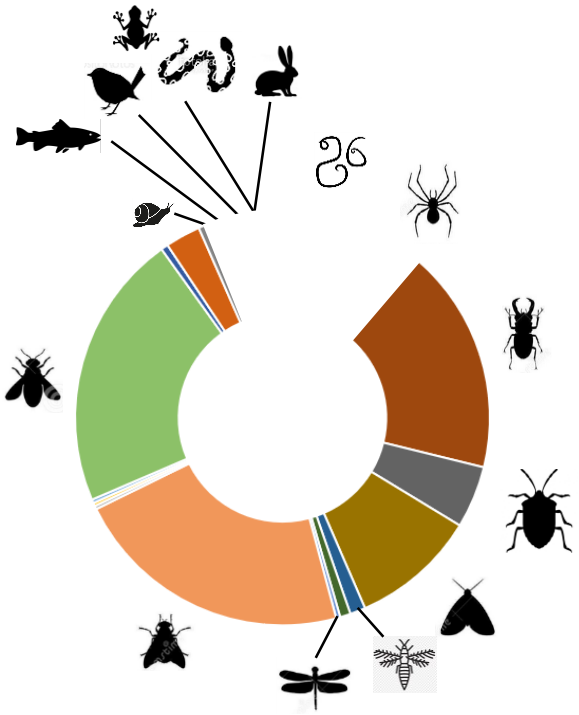
Managers



Planners – Policy makers

1. Biodiversity component

- Aim: "*To conserve, restore and develop a high and typical biodiversity*"
  - >75% of Belgian animal species are insects!



JARDIN BOTANIQUE
JEAN MASSART

	1.097
	305
	364
	160
	...
Σ	2.233

www.species.be

A. Drumont *pers. comm.*

Twitter: #entomanage

1. Biodiversity component

- We cannot protect everything
- Restore abiotic conditions (nutrients, hydrology) and landscape structure
- Focus on few taxa (plants, birds,…).
- **But what about the entomofauna?**

1. Biodiversity component

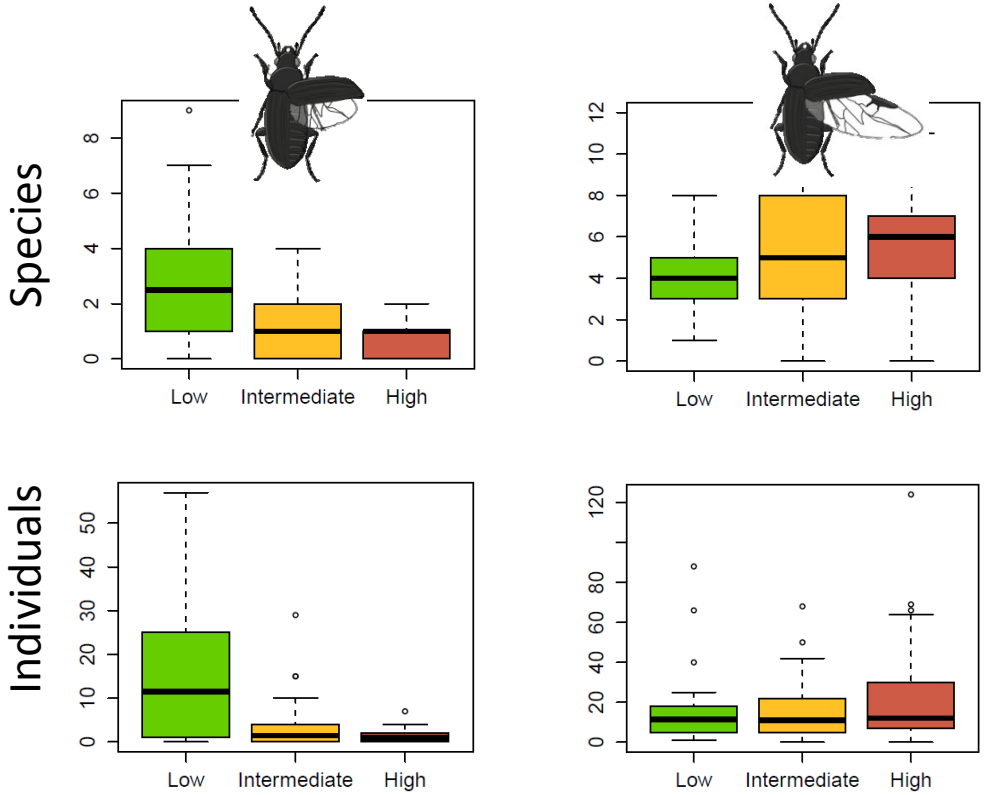
- Richest entomofauna and **threatened** insects
  - old, undisturbed, (micro)habitat patches.
  - not necessarily rich in other taxa (e.g. open dunes, reed belts,…)
- **Small relict populations** that are very prone to (local) extinction
- **Fine-scaled habitat structure** often more important than abiotic characteristics
  - e.g. dead wood, reed litter

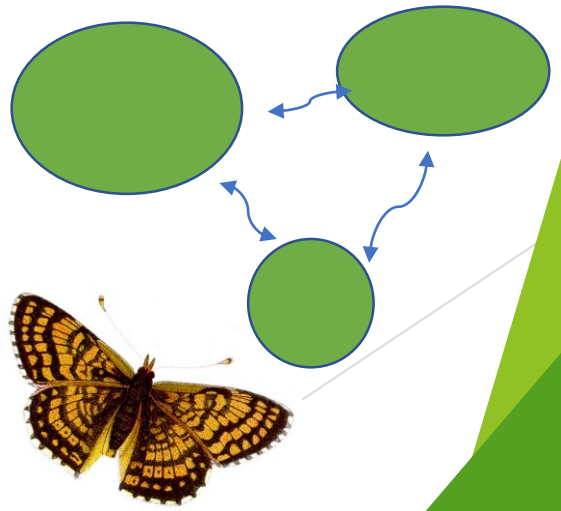
1. Biodiversity component

- **Challenges of contemporary nature management**
  - Replacement of extensive management practices
  - Area ↑↑=> Efficiency ↑↑ (man power ↓- time ↓)
  - Quick-win
- **Consequences**
  - High disturbance
  - Small and large scale homogenization

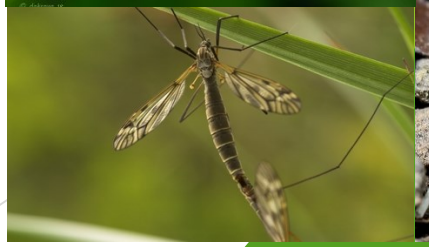
1. Biodiversity component

- Expected effects on threatened insects
  - Loss of small-scale habitat structure
  - Metapopulation structure (*)
  - Highly dispersal limited in space and time (no seed bank)





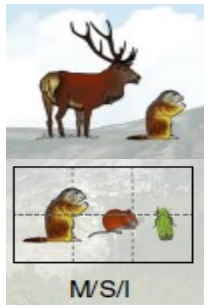
2. Functional issues

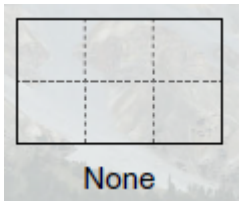


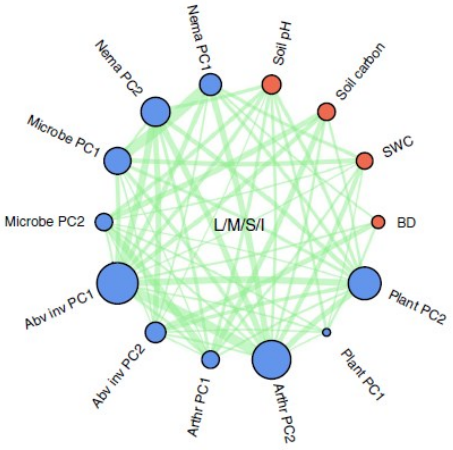
2. Functional issues

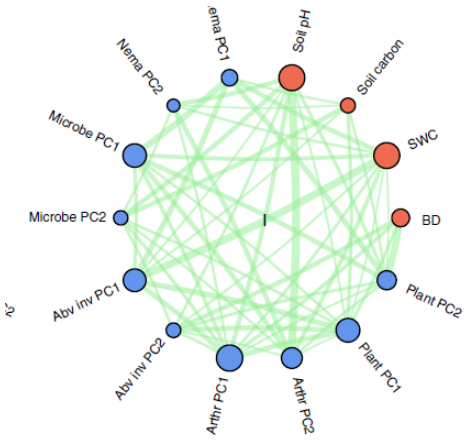
- Which critical functions (root and leaf grazing, predation, nutrient control, pollination, ..) are performed by these insects ???
- Could be crucial for proper habitat development!
- Decrease in dominant plant species if soil organisms are present

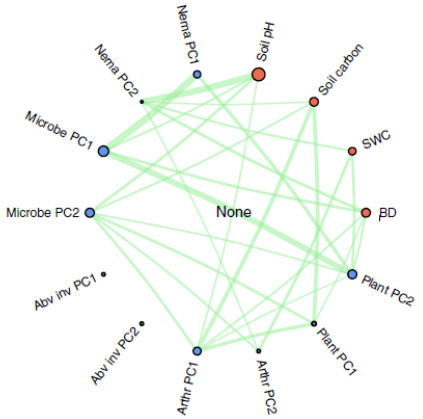
Ecological relations



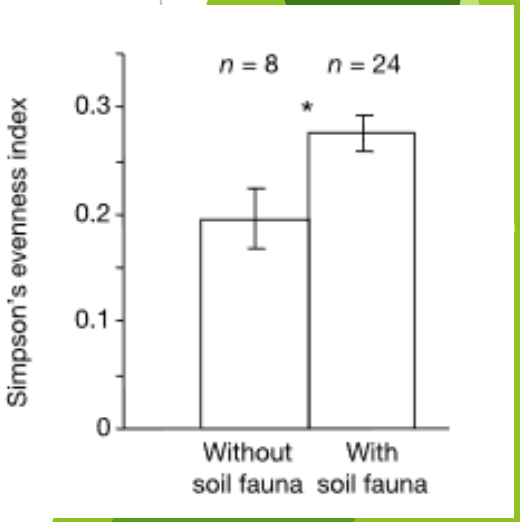








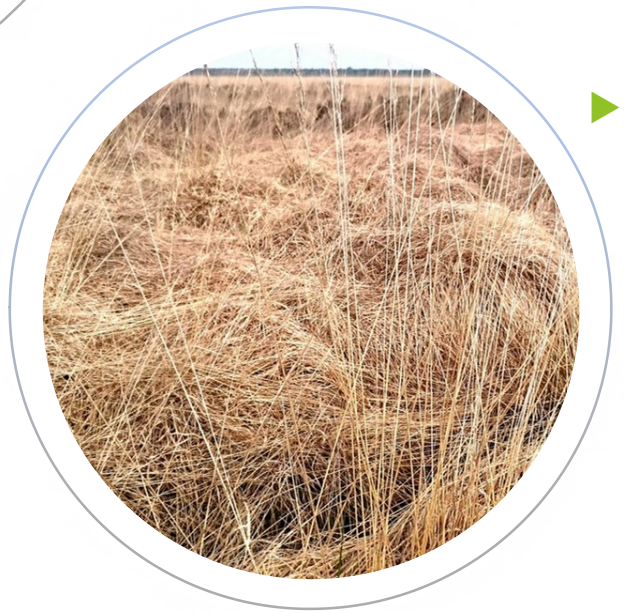
Plant diversity

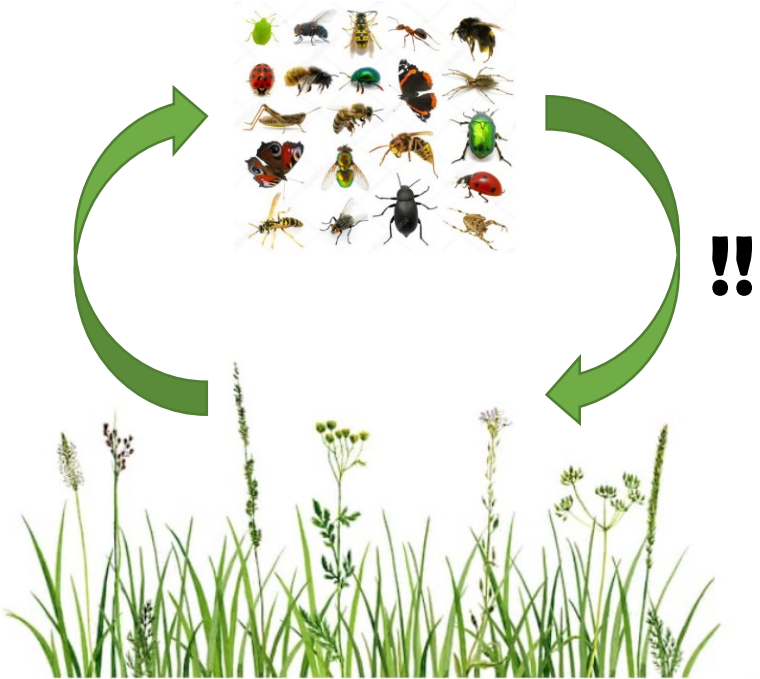


Risch et al. 2018 *Nat Comm*, De Deyn et al. 2003 *Nature*

2. Functional issues

- Unexpected effects after nature development
  - Unsuitable **biotic** environment could be at least as important!
- Ecological feedbacks
  - Habitat can turn into **alternative state** that is very difficult to restore! (cfr. “ripe habitats”)
  - *“Drowning by numbers”*





Insects and nature management

- **Entomologists**
  - Transmit knowledge to managers
  - Include ecologically relevant information (Red Lists, habitat) such as traits (e.g. dispersal capacity)
  - Focus on functionally important groups

- **Managers/Planners**
  - Not only focus on abiotic conditions or landscape structure
  - "*tabula rasa*" and high disturbance management practices should be kept to a minimum
  - Better slow and small-scale than quick and large-scale

"Insect conservation not only a goal,
but also a tool in nature management"

Thanks to the speakers !!

Dirk Bogaert

Twitter: #entomanage