

Long term monitoring programmes to support nature policy in Flanders

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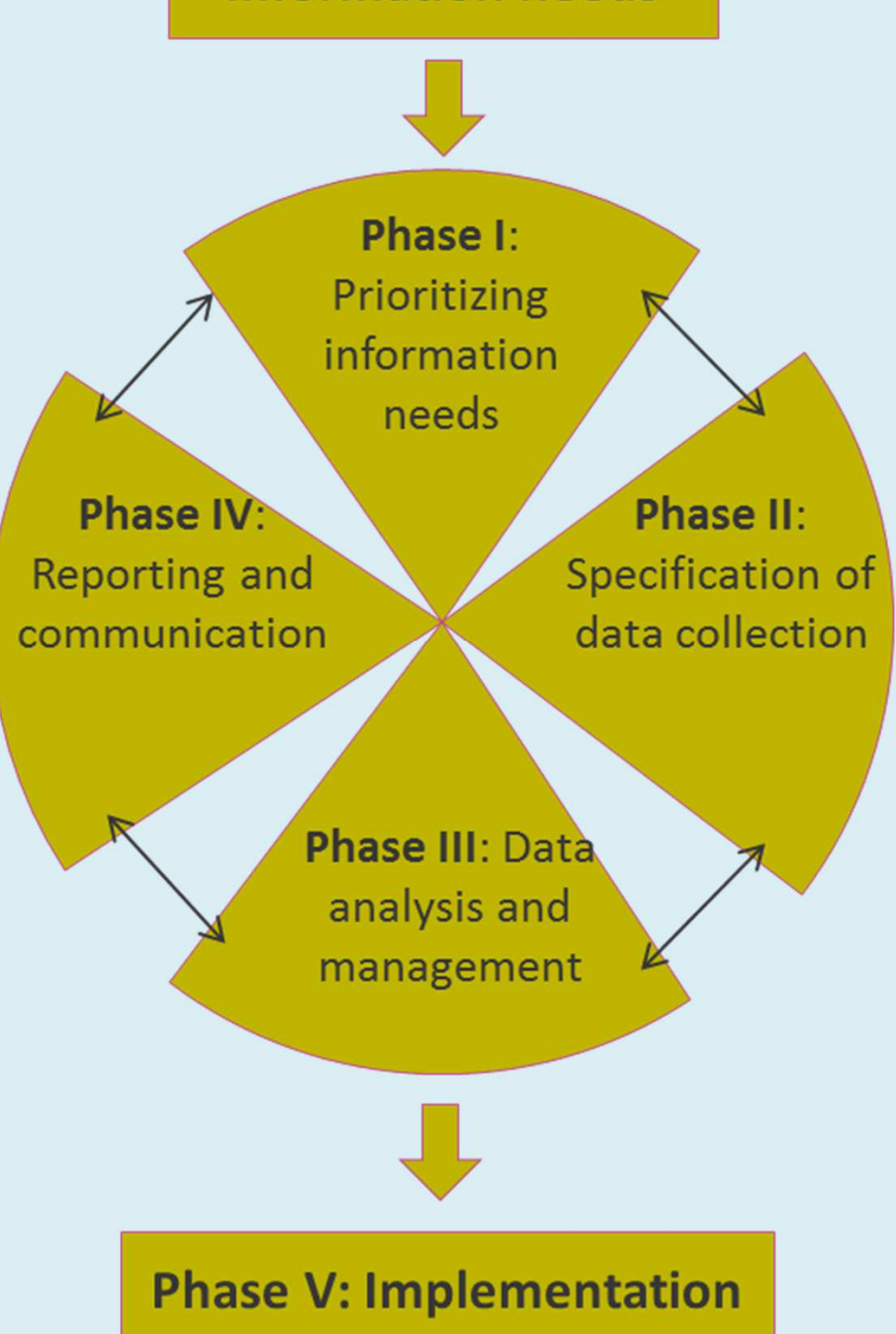


Introduction

- The Research Institute for Nature and Forest (INBO) developed a set of long-term monitoring programmes:
 - Monitoring programme for **habitat quality**
 - Monitoring programme for **species**
 - Monitoring programme for the **natural environment**
- Overall goal:** to support and evaluate nature policy in Flanders in the framework of the European Habitat and Bird Directive (Natura 2000)



Information needs



Designing monitoring programmes

INBO developed a practical guide for designing monitoring programmes to support nature and environmental policy.

- 5 phases
- Key points (often neglected or ignored):
 - Interaction between designer and policy maker is essential in every phase
 - Clearly define questions / targets
 - Prioritize
 - Avoid false expectations

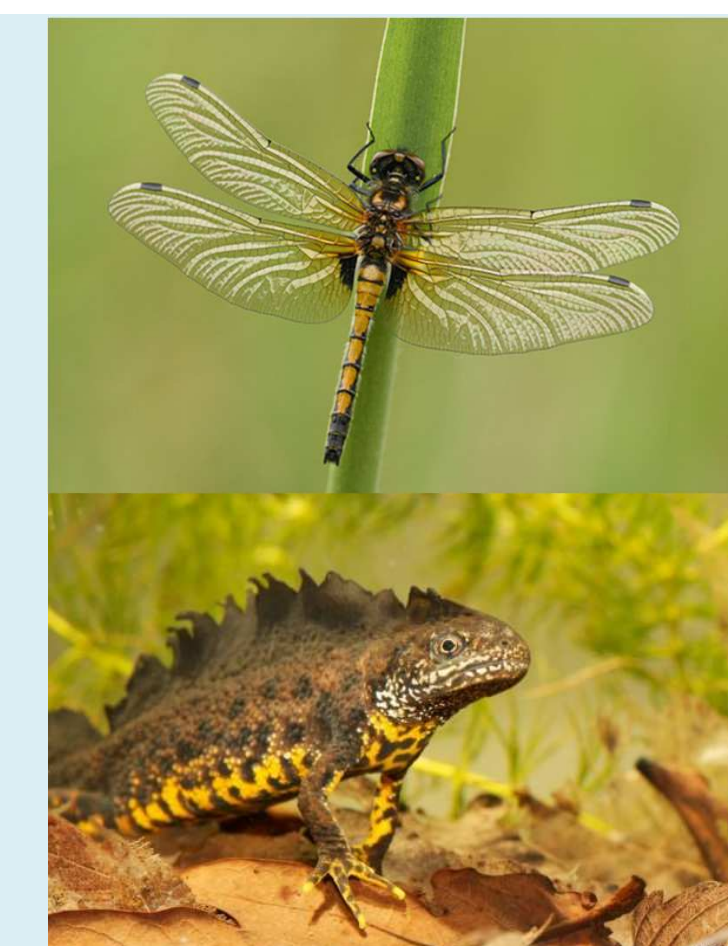
Monitoring programme for species

Aim

- Long term trends in (relative) species abundance
- European protected species (Natura 2000) and other priority species

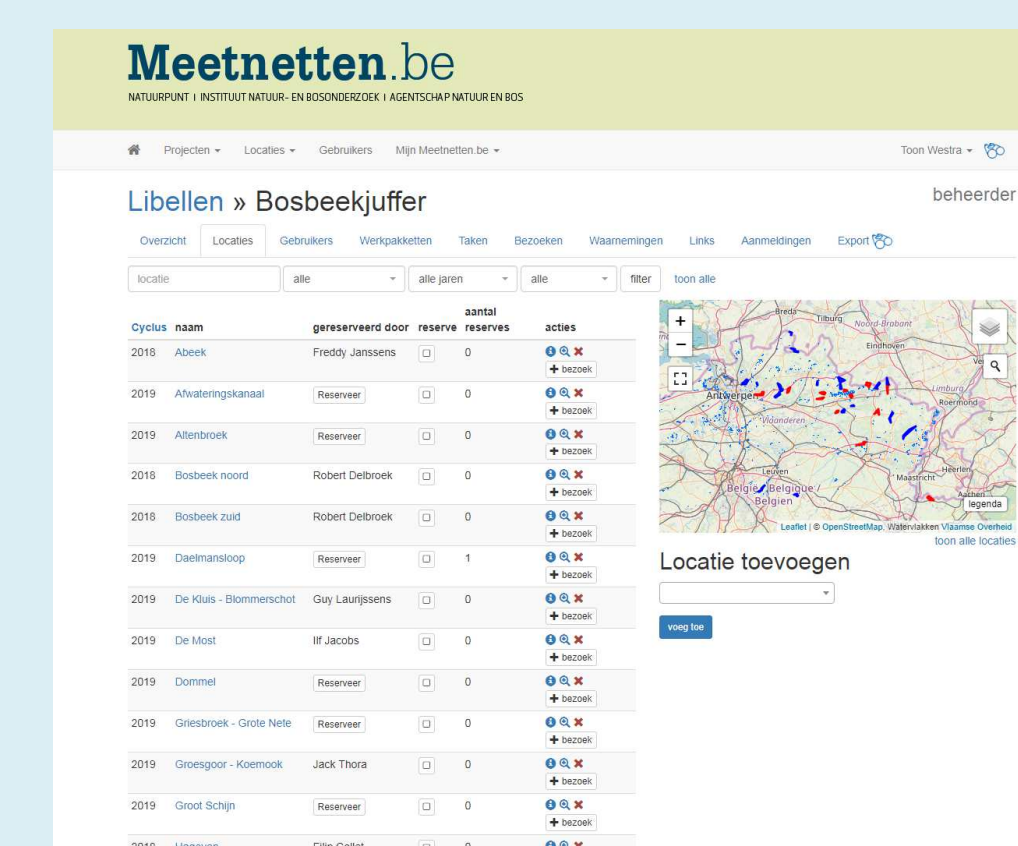
Design

- Fixed set of sampling locations
 - Rare species: all known locations
 - More common species: random sample
- Standardized field protocols



Data management and analysis

- Data portal (www.meetnetten.be) and mobile app for field work planning and data import
- Yearly evaluation of monitoring schemes based on intermediate data analysis



Implementation

- Data collected mainly by specialized volunteers
- Field work is coordinated by NGO Natuurpunt Studie
- Monitoring schemes for birds and fish were already implemented many years ago
- 2016 – 2018: a set of new monitoring schemes for 65 species (butterflies, dragonflies, amphibians, mammals, ...) were successfully implemented

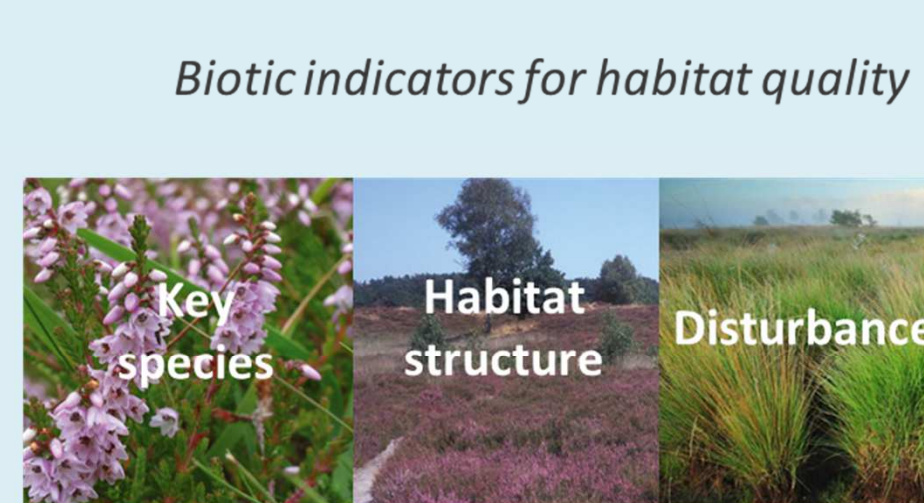
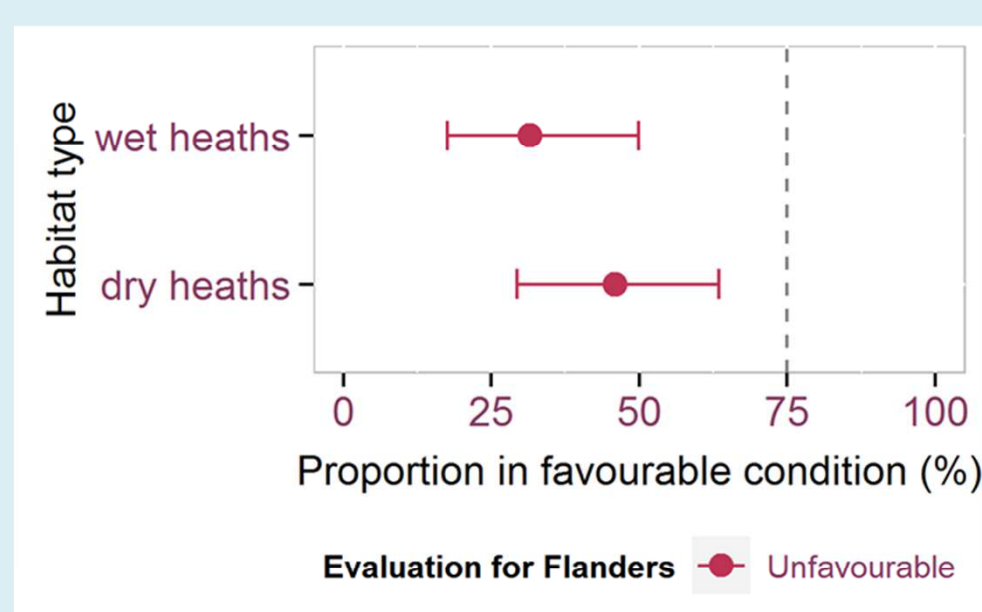
Monitoring programme for habitat quality

Aim

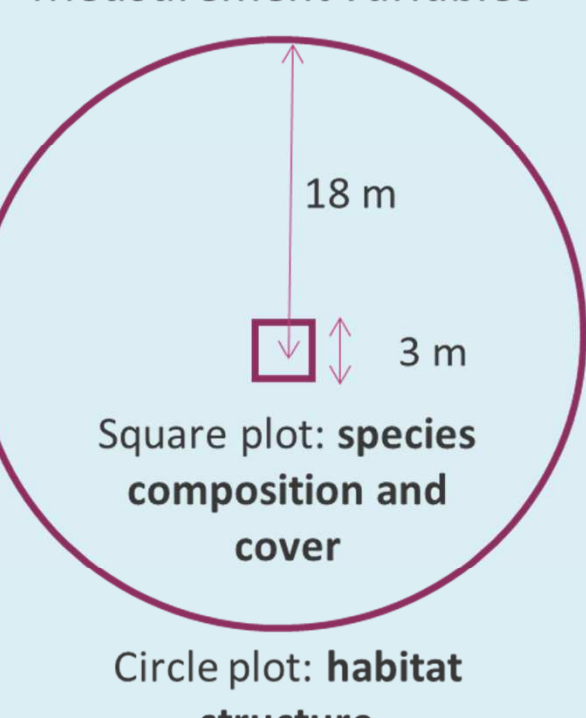
- Proportion of habitat in Flanders in a favourable condition (status and trend) based on biotic indicators
- Natura 2000 terrestrial and aquatic habitat types

Design

- Spatially balanced probability sample (GRTS)
- Synergy with existing monitoring schemes, such as the Flemish forest inventory
- Monitoring cycle of 12 years



Measurement variables



Data management and analysis

- Database of indicators and R-package for automated and standardized calculation and evaluation of habitat condition

Implementation

- Data collection by INBO en Nature and Forest Agency (ANB) started in 2014
- Data was analysed in support of habitat reporting to the EU for the 2013-2018 period

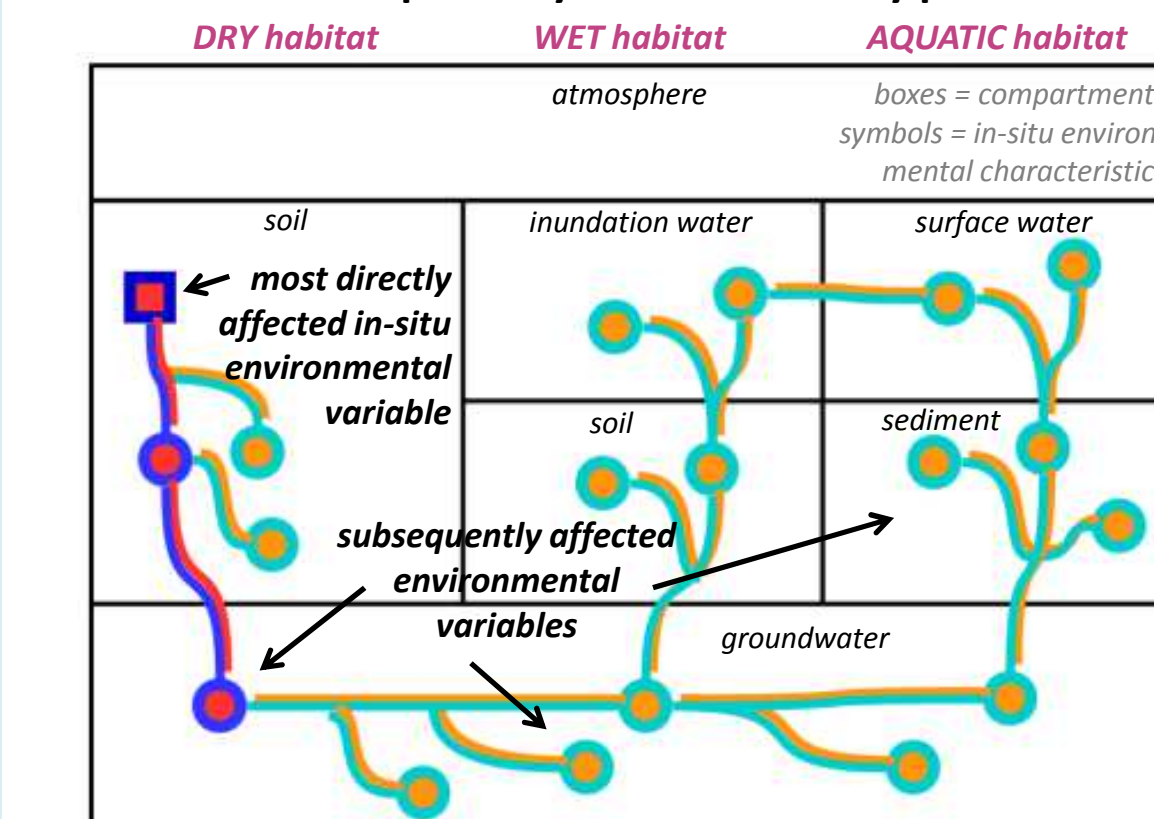
Monitoring programme for the natural environment

Aim

- Estimating Flemish status and trend of in-situ environmental variables that reflect **important environmental pressures** on (grouped) Natura 2000 habitat types
- Environmental compartments:** groundwater, surface water, soil, atmosphere, inundation water (~ flooding)



cause-effect pathway of soil chemistry pressures



Design

- Spatially balanced probability sample (GRTS)
- Number of locations + sampling frequency + involved habitat types depend on the environmental variable
- Continuation of several existing monitoring locations as long as needed

Implementation

- Expected in the coming years, i.e. compartment by compartment: *choosing sample sizes* → *drawing samples* → *implementation*
- Implementation concerns fieldwork + labwork + dataflow + analysis + reporting + management + QA/QC + revisions