


Research Institute for Nature and Forest (INBO)



Luc De Bruyn
Species Diversity Group
UA – Evolutionary Ecology

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Bats



All 17-19 species on the habitat directive

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Life history

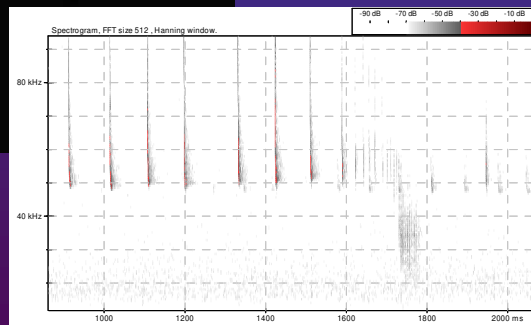
- Summer
 - Reproduction colony roosts (hollow trees, churches, ...)
 - Foraging areas (ponds, forests, ...)
- Autumn
 - Mating swarms (near hibernacula)
- Winter
 - Hibernation (fortresses, bunkers, ...)

- External effects
 - Environmental conditions (Climate change)
 - Human impact (Habitat destruction, disturbance, light, ...)



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Bat sonar



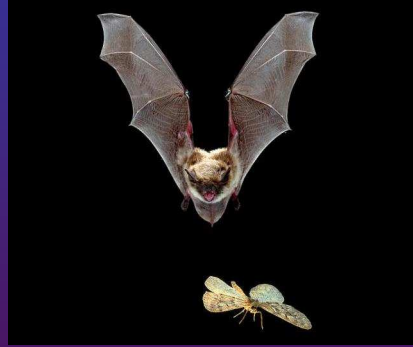
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Habitat fragmentation and bats

- Bats use different sites to feed, sleep and reproduce -> habitat network
- Habitats are heavily fragmented (in Flanders)
- important effects on bat species



Question:
How does habitat fragmentation affect bat communities and how can we improve the situation

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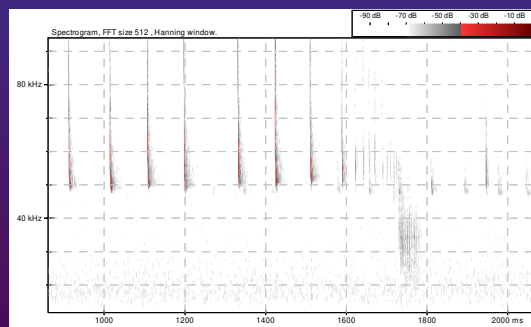
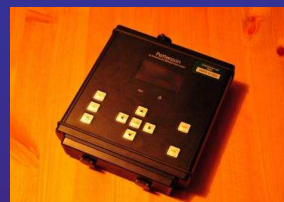
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Habitat fragmentation and bats

Tasks

- Fieldwork April-May and August-October
 - o Patchy network
 - o Focus on flight paths
 - o Automatic bat detectors
 - o Static (full night)
 - o Car transects

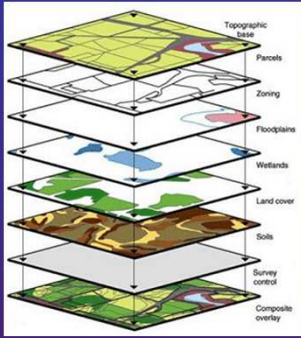


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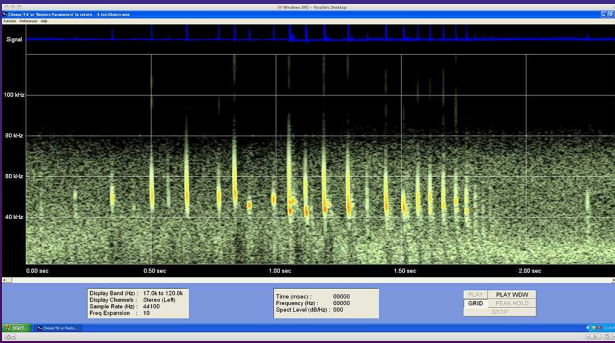
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Habitat fragmentation and bats



- Lab
 - o Analyses of sonograms (species identification)
 - o Landscape modelling (GIS)
 - o Statistical analysis (fragmentation, habitat quality, bat community)





Co-promotor:
Ralf Gyselings

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Hibernacula use and bat activity patterns (MP)

Question:
Why do bats select certain hibernacula?
When and why do they move during the winter?
How can we improve hibernacula?



Co-promoters: Ralph Gyselings

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Hibernacula use and bat activity patterns (MP)



Field = Winter

- Locating & counting (hibernating) bats
- Infrared bat counters
- Automatic ultrasound bat detectors
- Thermal camera
- Temperature and moisture loggers

Question:

Why do bats select certain hibernacula?

When and why do they move during the winter?

How can we improve hibernacula?



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Hibernacula use and bat activity patterns (MP)



Field = Winter

- Locating & counting (hibernating) bats
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Desk

- Species identification
 - Sonograms
- Thermal photo's
- Analyses



Co-promotors: Ralph Gyselings

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Agriculture and biodiversity

Intensification agriculture,
artificial fertilizers,
pesticides, ...

-> biodiversity loss




What can we do about it?
(Europe's New Green Deal)

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Conventional versus Organic orchards (MP)


Organic farming

- Organic fertilizers
- Biological pest control
- Crop diversity

Is organic agriculture better ?

Orchards

- 12 test areas of 3 sites
 - C: conventional
 - O: organic
 - N: Nature reserve (semi-natural grassland)



What are the effects on soil biodiversity?

Co-promoters: Olivier Honnay; Robin Daelemans (K.U.Leuven)

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Soil (functional) biodiversity

Fieldwork

- Soil & litter samples



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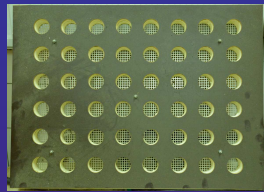
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Soil (functional) biodiversity

Animal extraction

- McFadyen apparatus



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Soil (functional) biodiversity



Lab work

- Arthropods – Collembola
 - Identification
 - Functional grouping
- Soil chemical composition
- Vegetation changes

Co-promotor: Rik Delhem

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