

Institute of Environmental Sciences Leiden (CML)

Willie Peijnenburg – 26/10/2009

 Universiteit Leiden

Institute of Environmental Sciences (CML)
Faculty of Science

Subject Person

Education | Research | Organisation | Publications | Software and Data | News | Contact



← CML

ABOUT CML

**General Information**
Overview of activities of Institute of Environmental Sciences
▶ Read more

**Education in Environmental Sciences**
The Educational Programme of the CML
▶ Read more

**Research in Environmental Sciences**
Description of the research programme of the CML
▶ Read more

⊕ **Prospective students**

⊕ **Students**
Study information, contact and registration

⊕ **Commissioners**
Research projects and services

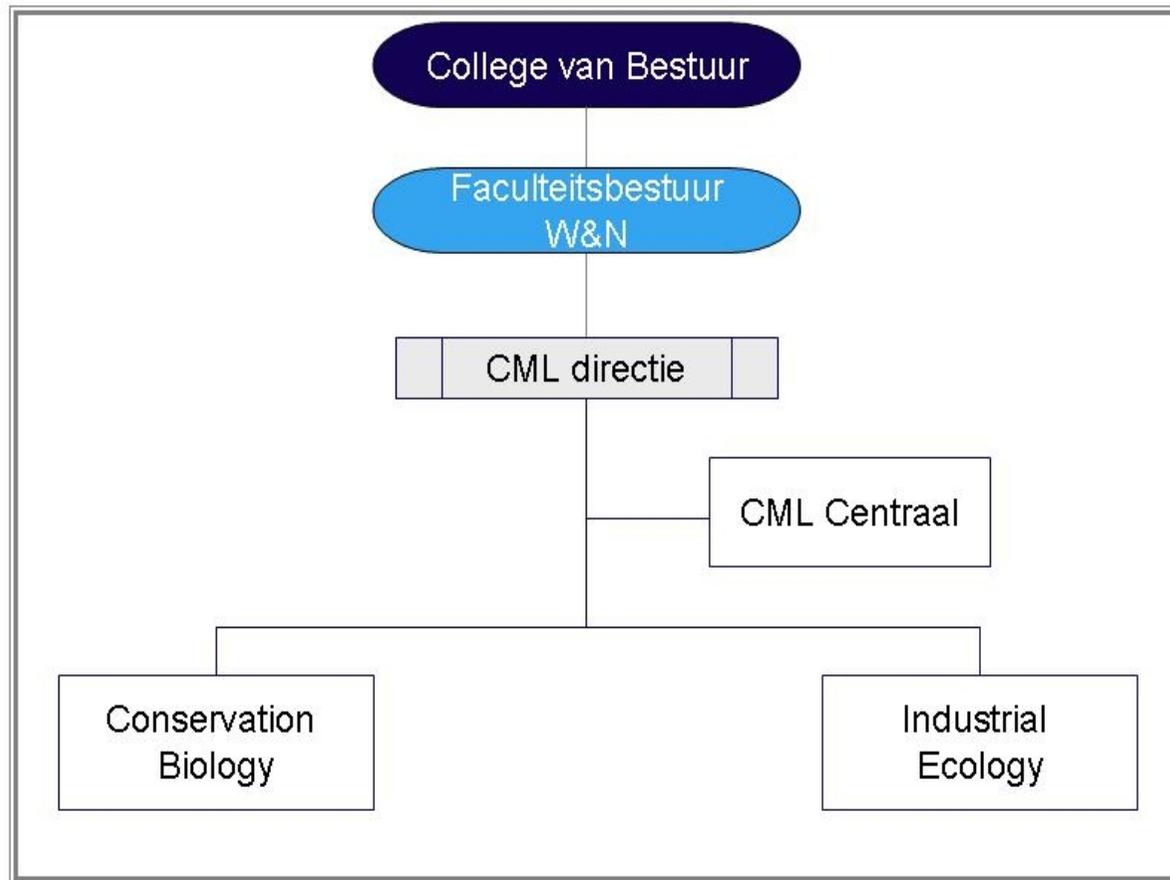
⊕ **Research**
Research, PhD, Software, Data and Publications

⊕ **Visitors**
Contact CML general
Visiting address

DIRECT LINKS:

- Bachelor programmes
- Milieuwetenschappen (Dutch)
- Master programmes
- Research Conservation Biology
- Research Industrial Ecology
- Master track Evolution, Biodiversity and Conservation
- Master Industrial Ecology
- Minor Sustainable Development

Organisation CML



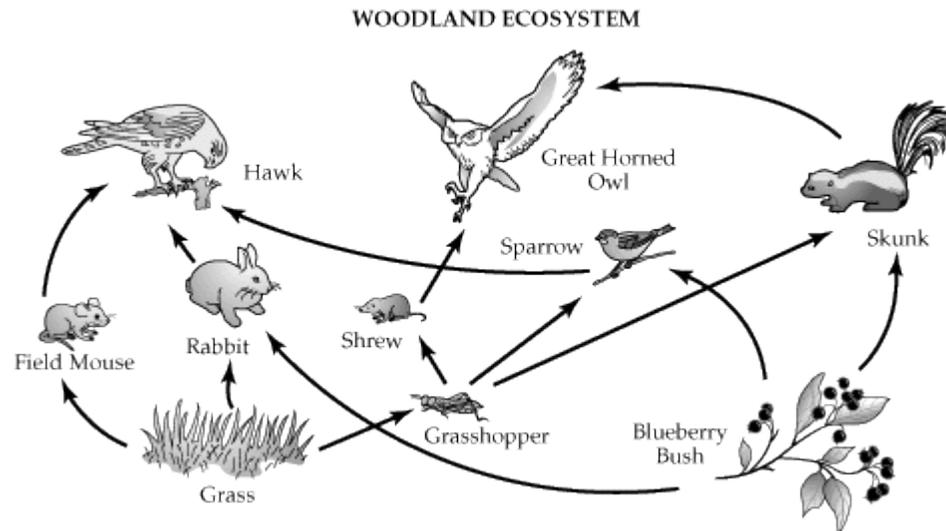
Education CML

- Chemistry
 - Partner Bsc. MST (Molecular Science Technology)
 - Ma Industrial Ecology (UL – TUD) (2009)
 - Biology
 - Partner in Bsc. Biology
 - Ma-track Biology: Evolution, Biodiversity & Conservation (IBL, NHN, Naturalis)
 - Minor Sustainable Development (2009)
-

Department Industrial Ecology

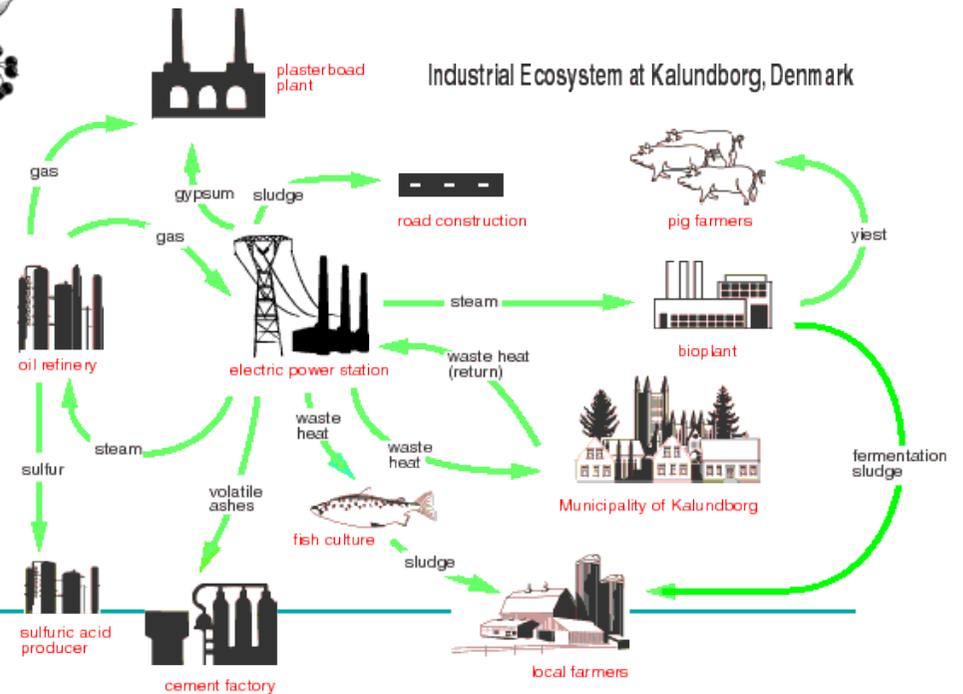


Industrial ecology?



A biological ecosystem

An industrial ecosystem



CML-IE research

- Methodology development (world standard)
 - Life-Cycle Analysis (LCA), Material Flow Analysis (MFA)
 - Use of scientific tools for analysis of sustainability problems
 - (bio-)energy
 - resources / materials
 - waste (water) treatment, life styles, chlorine industry, metals
 - Conceptual research for policy support
 - strategic resource management
 - ecological footprint (carbon footprint, water footprint)
-

Department Conservation Biology



Biodiversity research Leiden

IBL

Biodiversity
Evolution

CML

Conservation/use
Biodiversity

**Naturalis /
NHN**

Biodiversity
Taxonomy

Conservation Biology research

Research focus: impacts of...

1. Chemical and biotic stress on biodiversity

- pesticides, metals etc.
- genes, invasive species



2. Land use changes on biodiversity

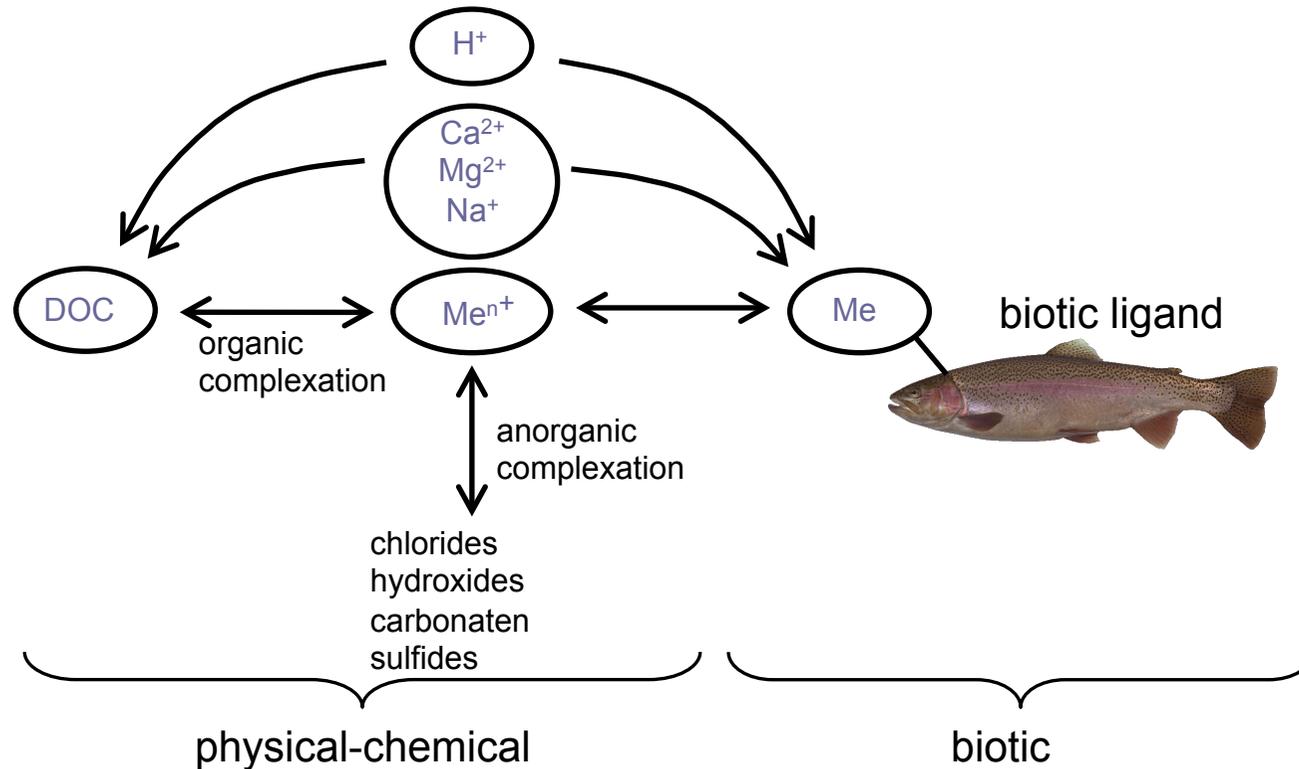
- nature conservation on farmland, extensive land use



Some examples from EU, Philippines (Denyse Snelder) and Cameroon
Indonesia: Hans de longh, Gerard Persoon

Environmental problem?

Biotic Ligand Modelling

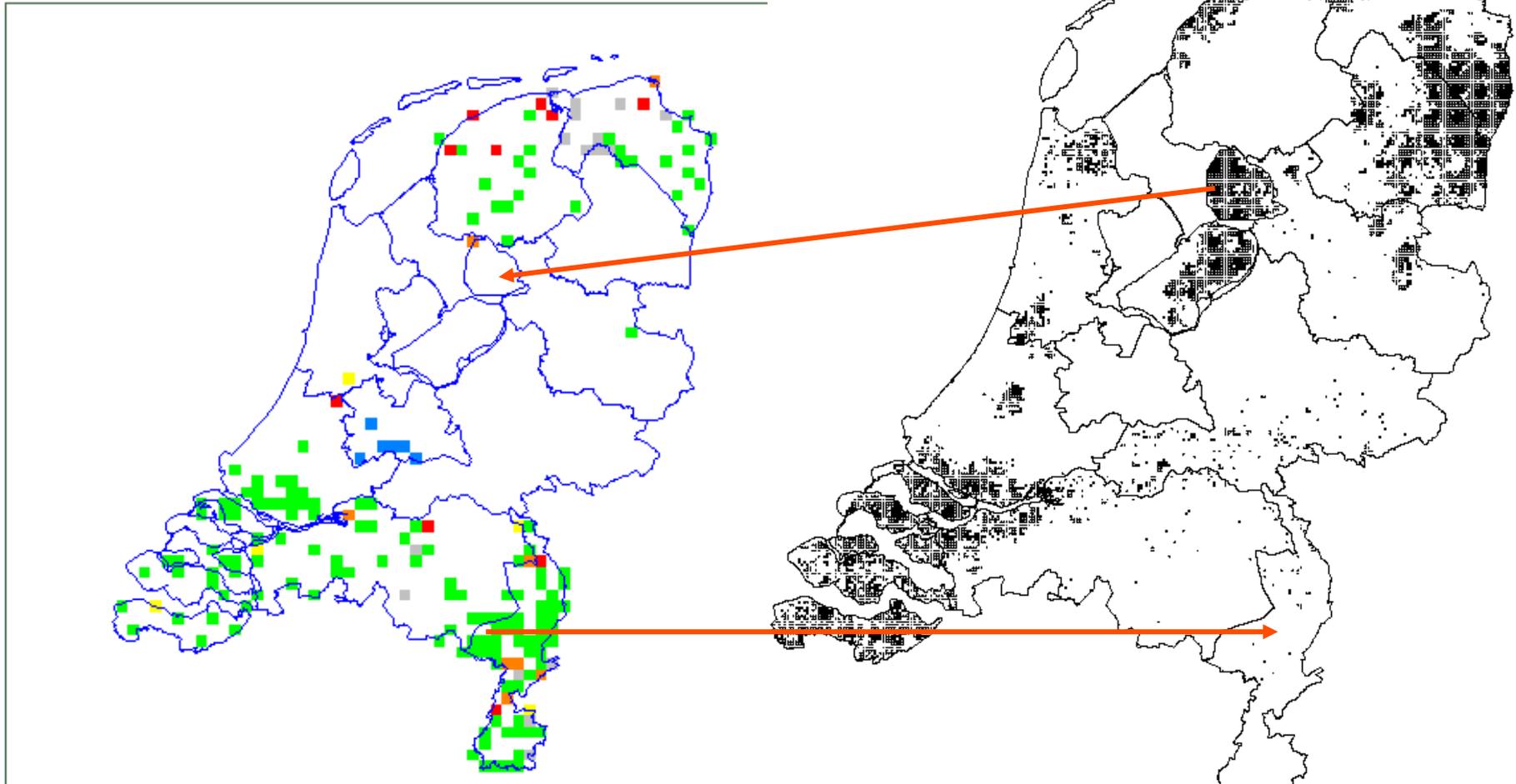


- Metals (Cu, Zn etc.)
- Cooperation RIVM: special chair (09-2009)

Spatial-temporal analysis monitoring data

www.pesticidesatlas.nl (4000 maps)

Metribuzine (MTR) & potatoes (99%)



Impact: validation of models, link land use and biodiversity

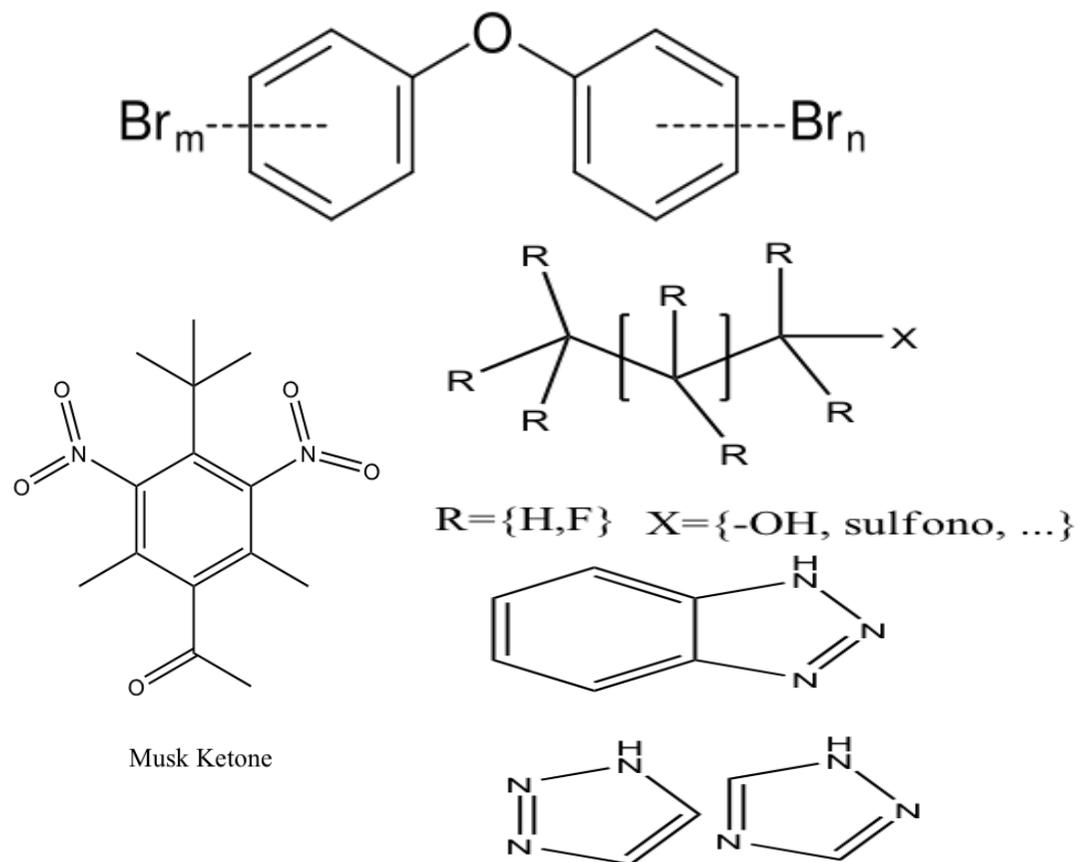
Predictive Toxicity

Case studies on the Development and Application of *in silico* Techniques for Environmental hazard and Risk assessment (CADASTER) – FP7

Goal

Our project will exemplify the integration of information, models and strategies for carrying out safety-, hazard- and risk assessments for large numbers of substances to the new categories of risk assessors within REACH .

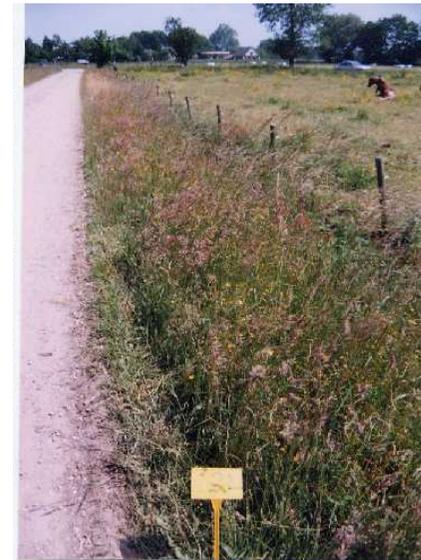
We will deliver real risk estimates according to the basic REACH philosophy of minimizing animal testing, time and costs . CADASTER will show how to increase the use of non-testing information for regulatory decision whilst meeting the main challenge of quantifying and reducing the level of uncertainty of predictions.



Impact: development + validation of predictive models, reduce animal testing, develop ITS

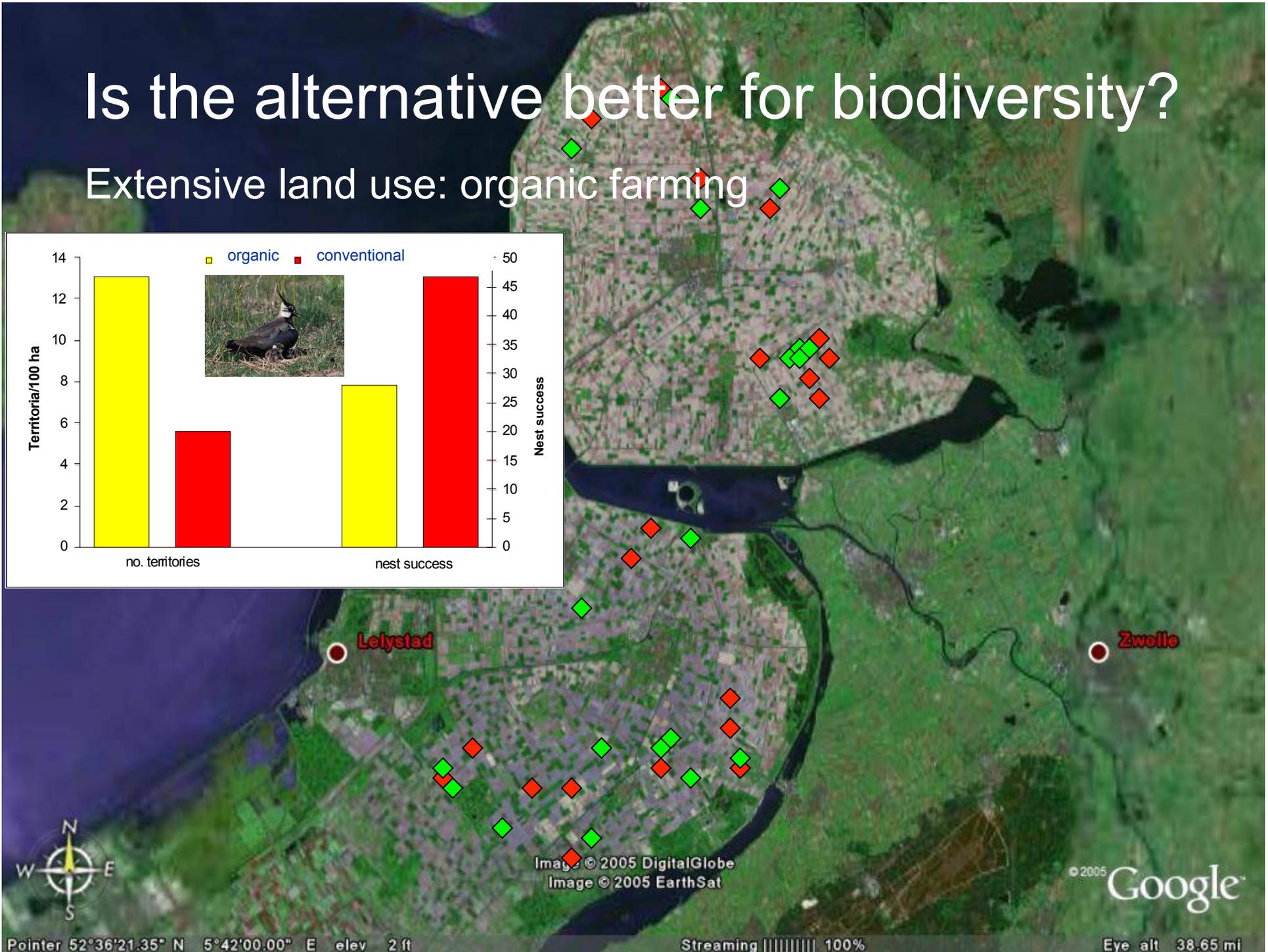
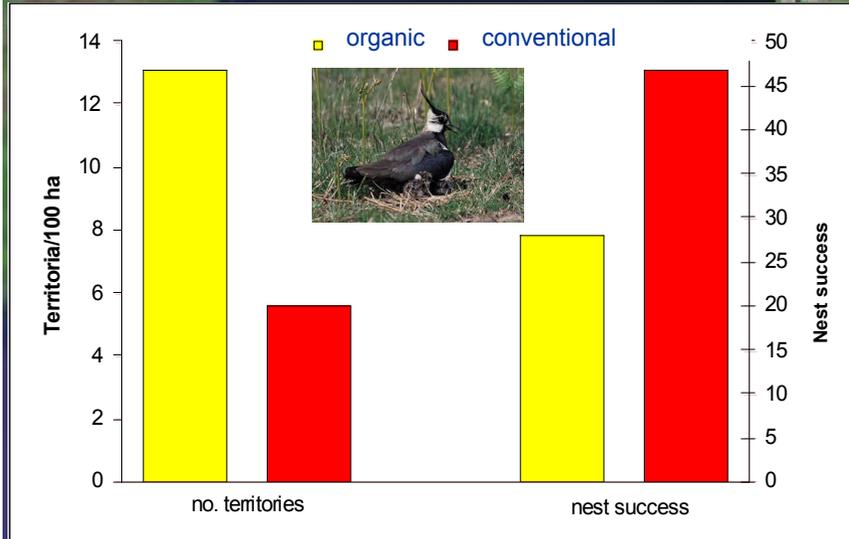
Impact on biodiversity?

- Bio-assays & experimental field studies
 - Field study concerning effects of herbicides of GM crops on natural ecosystems



Is the alternative better for biodiversity?

Extensive land use: organic farming



Research topics within ECO

1. **Task 2.5:** Models for quantifying the toxicity of chemical mixtures

- Pesticides, metals etc.
- Multiple stressors
- Model development
- Focus on field validation of impact of mixtures



2. **Task 2.11:** Fate/effects nanomaterials + factors affecting actual exposure/effects

- Link with Nanointeract – Dik van de Meent/Joris Quik (RIVM + RUN)

