# *Creating distribution maps from monitoring data and casual observations*

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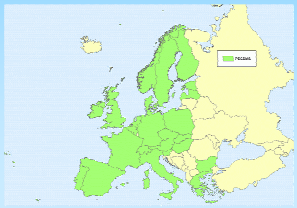
*EBCC Spatial Modelling Group (SMOG)*


## Pan-European Common Bird Monitoring Scheme

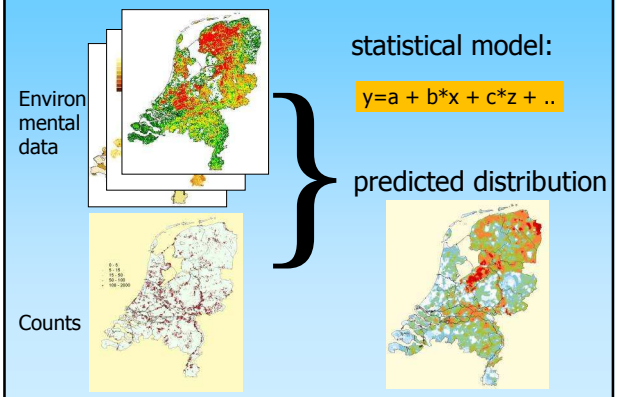
- Combination of the results of national monitoring schemes



## Monitoring projects

- primarily set up for gathering trend information
- also useful for the generation of distribution patterns
- obtain insight in possible driving forces for changes

## Spatial models




## EBCC Spatial Modelling Group (SMOG): *Pan-European bird mapping initiative*

Combining monitoring data

Mapping of distributions

Mapping of population trends

## EBCC Spatial Modeling Group

Aim:

facilitate production and use of distribution maps and trend maps from monitoring data

## Main initiatives 2005-2011

- Pilot study on farmland birds
  - First pan-European maps
  - Issues to address
  - High Nature Value farmland designation
- SCALES
- TRIM*maps*

## Main issues to be addressed

1) data access constraints
2) spatial coverage & representation
3) availability of environmental data
4) heterogeneity of the observations
5) statistics

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## Issues to address (4):

data heterogeneity

## Detectability

number of observed birds (C )

≠

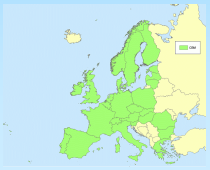
birds present (N)

C = N * p

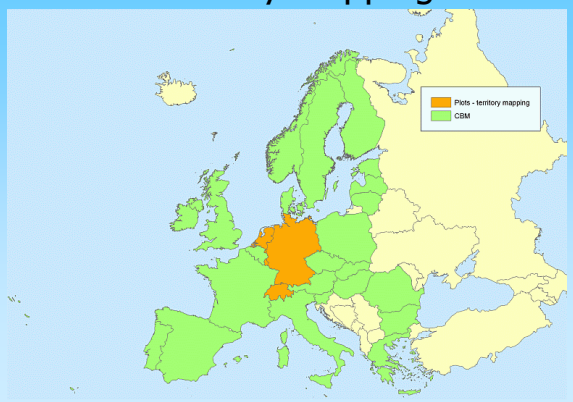
(p = detection probability)

## Field methods used by schemes across Europe

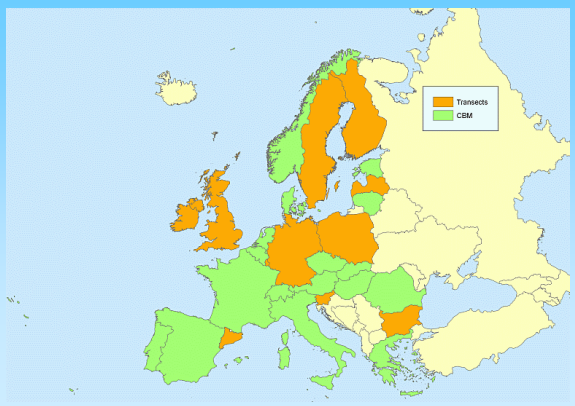
| Method | No. schemes |
|---|---|
| Line transects | 11 |
| Point counts | 18 |
| Territory mapping | 4 |



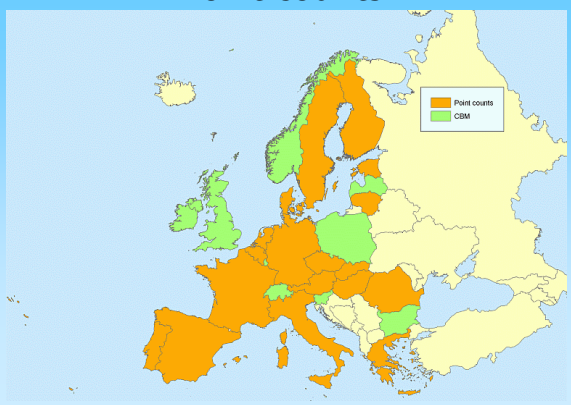
## Territory mapping




## Transects




## Point counts




## Proposed solutions

- create maps from one scheme or groups of schemes
- combine different maps ("map mosaicking")
- maps show combinations of relative abundances

## How to calibrate between different monitoring methods ?

## (some) calibration possibilities

- Two different methods in the same region
- Set of plots with standardized method across Europe
- Multi-scale modelling approach

## Calibration

- Two different methods in the same region
- Set of plots with standardized method across Europe
- Multi-scale modelling approach

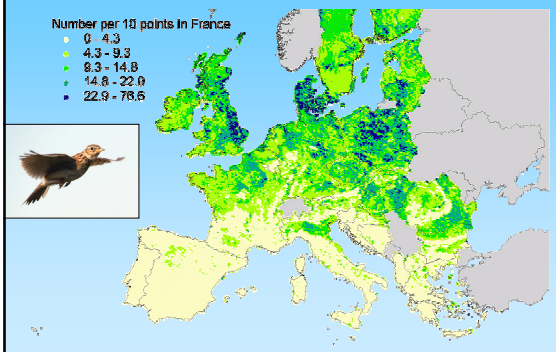
## Multi-scale modelling

- First make international models with monitoring method as co-variate
- Then make national maps
- Combine national maps using calibration factor to account for different monitoring methods

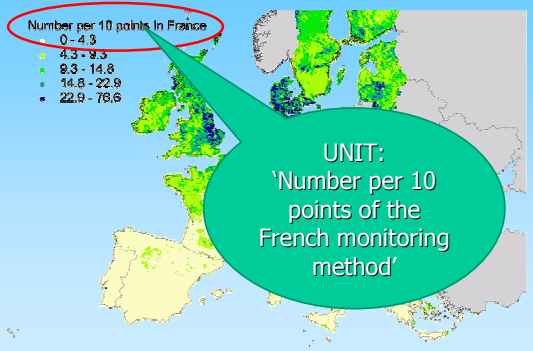
## International scale

- International models with monitoring method as co-variate
- Data per sample site is necessary
- Only possible with international co-variables

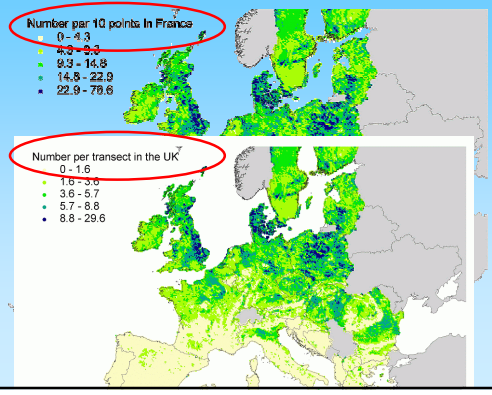
## International scale



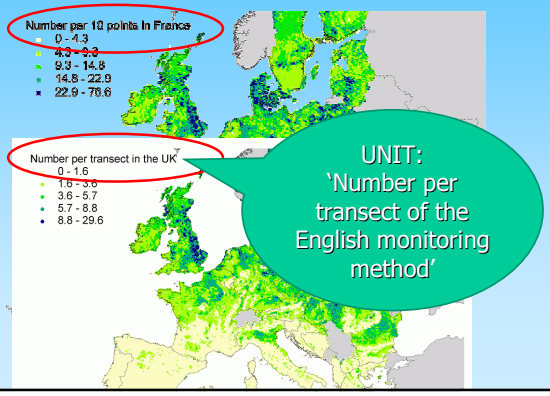

## International scale




## International scale



## International scale



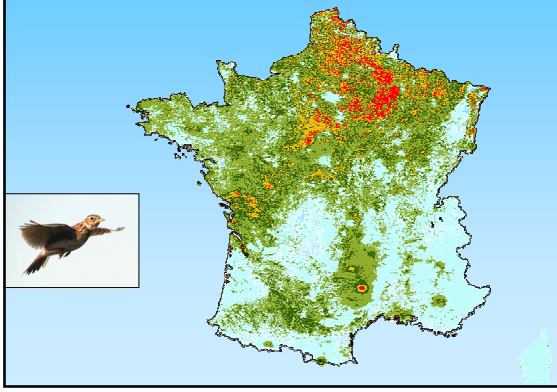

## International scale

- Results:
  - o International models and maps
  - o Calibration factor between monitoring schemes

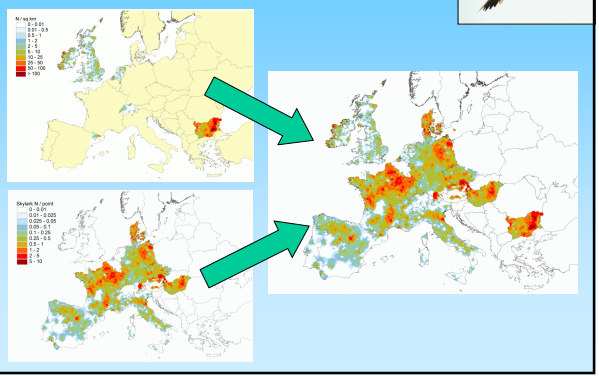
## National scale

- Create high-quality map with international ánd national covariables

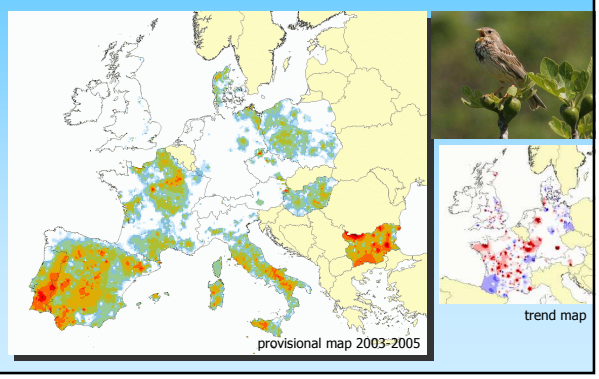
## National scale



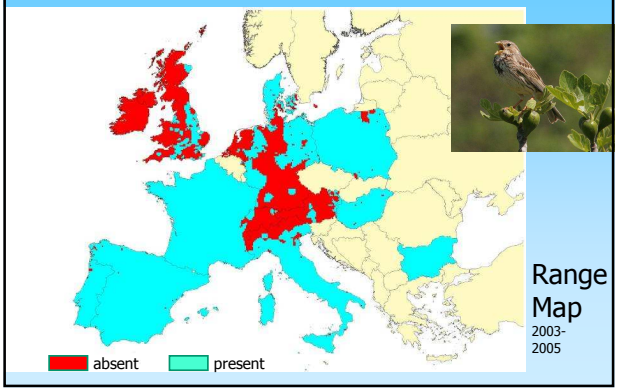
## Combined map



## Corn Bunting



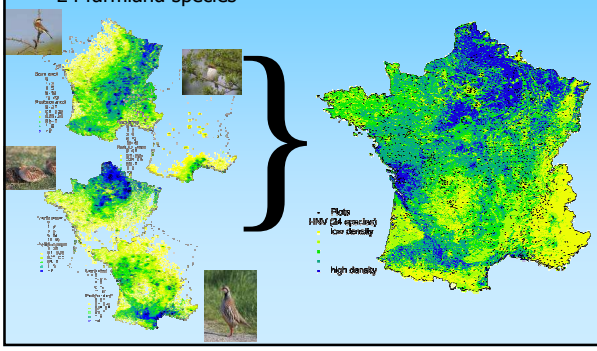
## Corn Bunting: range map




Range Map 2003-2005

## High Nature Value farmlands

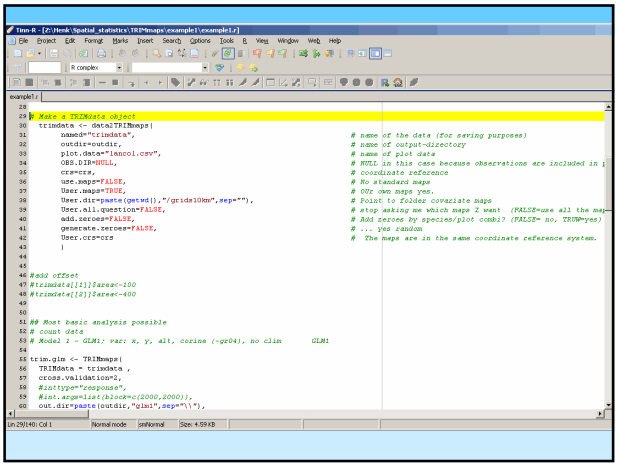
24 farmland species




TRIM*maps*

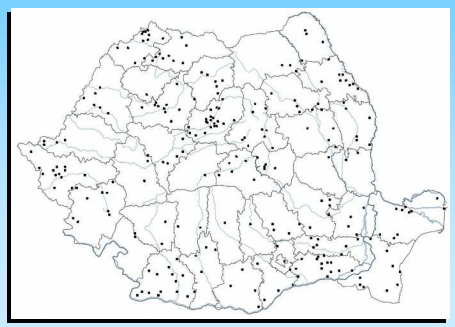
## TRIM*maps*

- Facilitate production of maps from monitoring data
- R-programme
- Open source / freeware

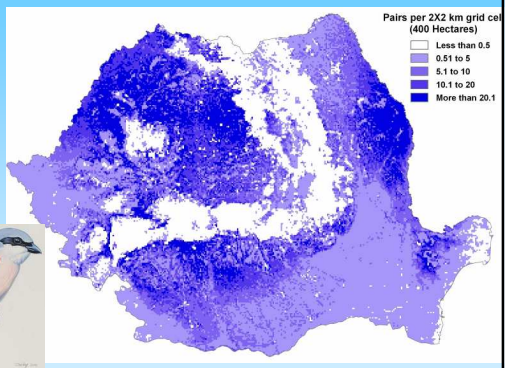


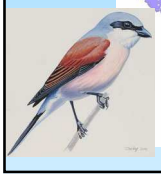
## Applications of TRIMmaps

## Romania: point counts



## Red-backed Shrike



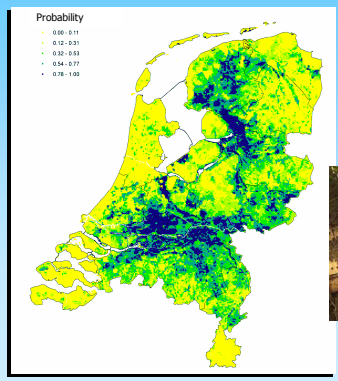



Szabo, Domsa et al

## Casual observations

Weatherfish
*Misgurnus fossilis*

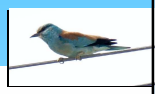
## Probability map

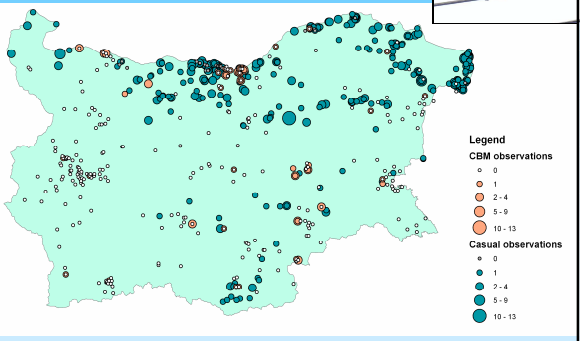



Weatherfish
*Misgurnus fossilis*

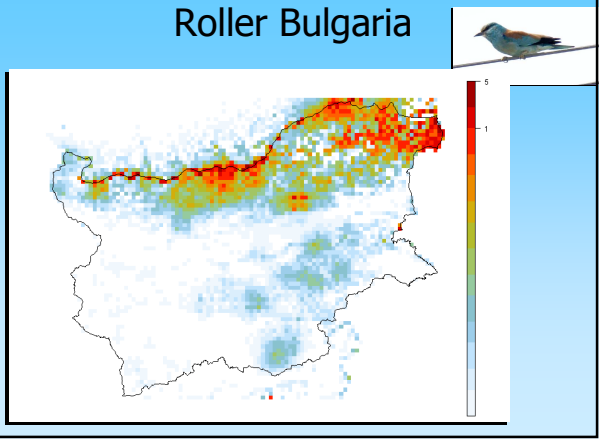
## Combining CBM-data and casual observations

## Roller Bulgaria





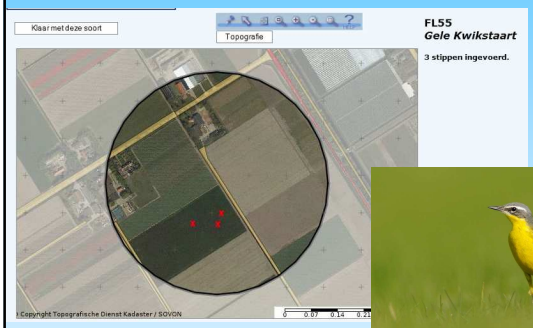
## Roller Bulgaria



## Inferring territory density maps from point counts: Dutch farmland birds

- 5 min point counts
- All observations mapped
- Automated clustering to territories
- Distance function per species
- Real density maps

## Observations Yellow wagtail



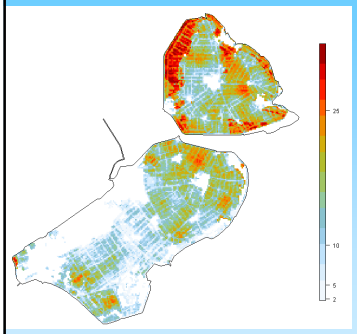



## Territory map Yellow wagtail

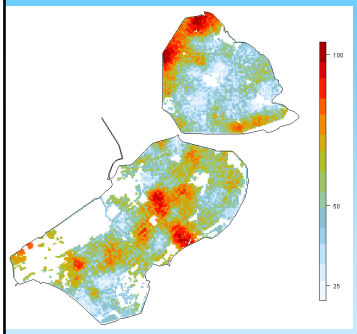
created with automated clustering



## Density map Yellow wagtail




## Density map farmland birds



## More information on TRIMmaps

- Today 17:30 – 19:00
- Main room

## Thank you for your attention…

…and special thanks to all the organisations and volunteer fieldworkers who make this possible !