

Data issues in species monitoring: where are the traps?

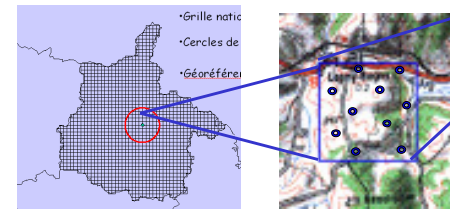
- dealing with heterogenous data
- working with multi-species multi-sites monitoring schemes
- from monitoring data to biodiversity indicators
- learning effect
- believe there is nothing in there

French breeding bird monitoring :

Animations locales :



Sampling design



**1370 carrés suivis
au moins une fois
entre 2001 et 2006**

105 espèces

Publication from the French Breeding Bird Monitoring scheme 2004-2007

Ecology Letter 2006, 2006

Global Change Biology 2004, 2007

Proceedings Royal Society B 2004

Conservation Biology, 2007

Oikos 2007

Global Ecology and Biogeography 2007

Biodiversity & Conservation 2005, 2006, 2006

Agriculture Ecosystem & Environment 2006

Biological Conservation 2007

Bird Study 2005

N = 14

Noé
Conservation



En
partenariat
avec



Observatoire
des
PAPILLONS
Jardins

Et avec le
soutien de



Impliquer le grand public dans le suivi de la biodiversité



28 espèces de papillons communs

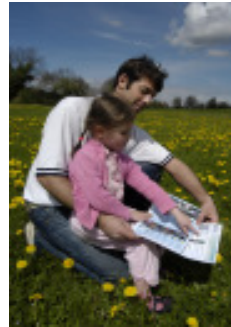


Suivi scientifique

Eveil de l'intérêt naturaliste



Changement de comportement



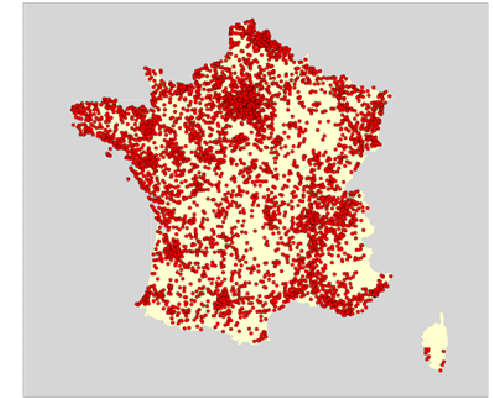
Un réseau national

14 695 personnes inscrites et abonnées à la lettre d'information

3502 jardins en 2006

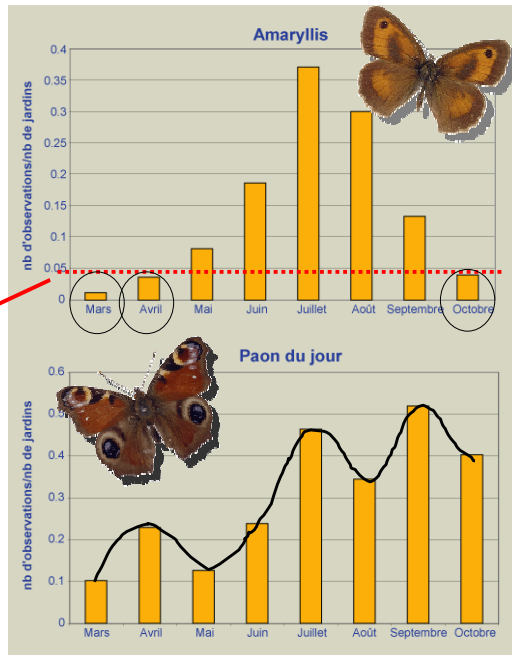
3981 jardins en 2007

235 000 papillons comptés

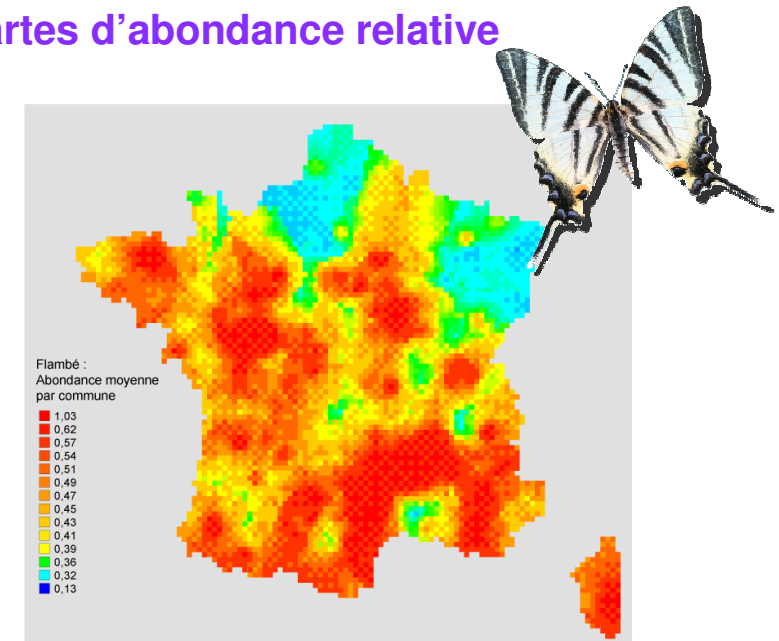


phénology data

Évaluation des « vrong positifs » (< 5%)

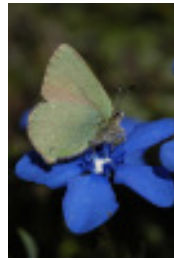


Cartes d'abondance relative



Objectif scientifique

Evaluer l'influence du paysage sur la diversité en papillons



Type de jardin : privé public

Environnement général : Urbain Péri-urbain Campagne

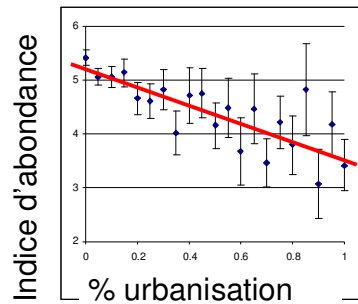
Surface du jardin sur laquelle vous comptez les papillons :

Distance aux zones rurales les plus proches :

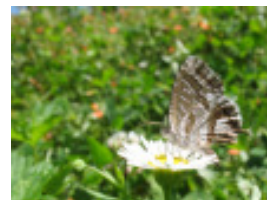
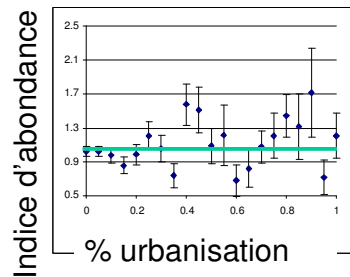
Bois le plus proche

Prairie la plus proche

Champ cultivé le plus proche



26 espèces / 28



Missing points are not a problem

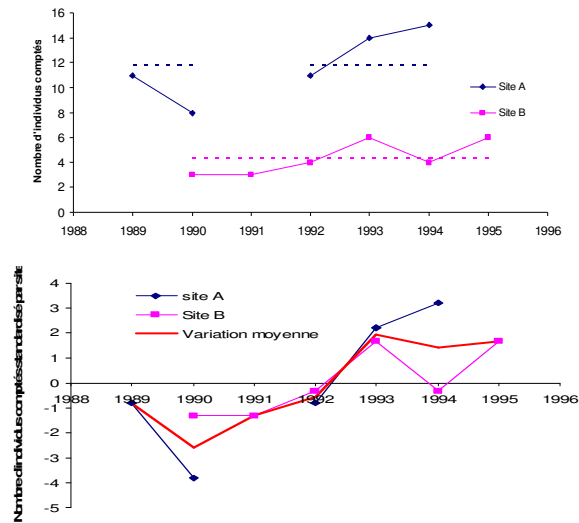
General case: volunteers cannot take measures at some sites in some years

Difficulty: site and observer effects make statistical units not interchangeable

Solution: standardization for site effect = **accounting for site effect in model**

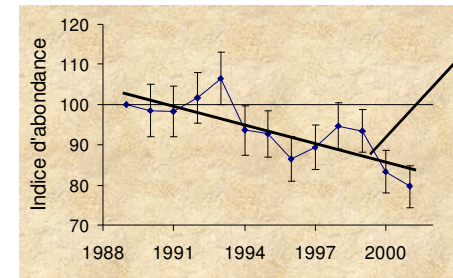
Thus **no need for continuity of time series**

Accounting for missing data & heterogeneity



Pool sites

Exemple : Skylark



-0.017 ± 0.006 per year

exponentiel $(-0.017 * 12) - 1$

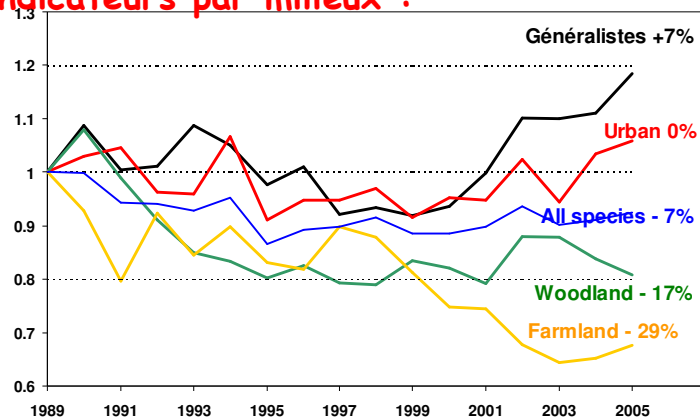
$\Rightarrow -18\%$

between 1989 et 2001

Pool species

• Indicateur toutes espèces :
-7 % d'oiseaux entre 1989 et 2005

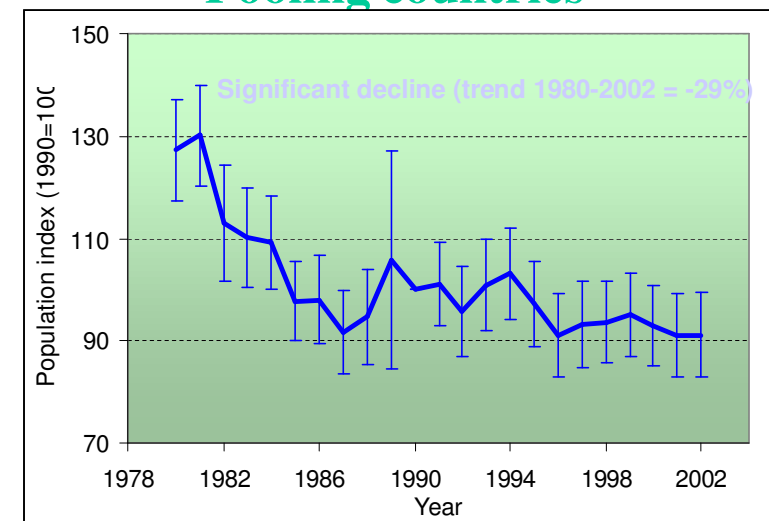
• Indicateurs par milieux :



Indicator of farmland birds in Europe



Pooling countries



Gregory et al. *Phil. Trans. R. Soc. Lond. B.* (in press).

Pooling, pooling, pooling

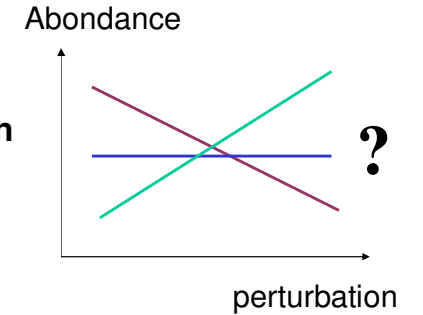
- We know how to do that,
- But if we stop there, we have mostly destroyed data: there is much to learn from the differences among sites, species etc.

Ex. winners and losers in fragmented lanscape

For each species :

abundance(*) ~ fragmentation

abundance(*) ~ perturbation

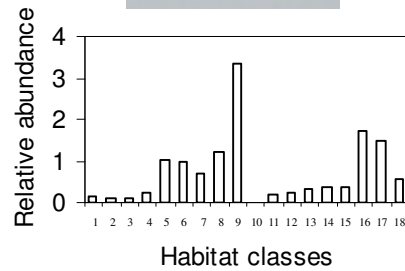
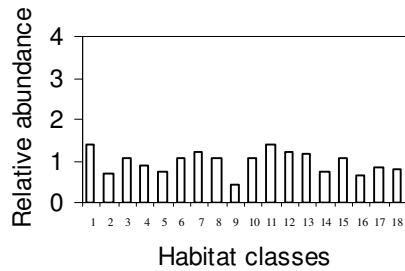


x 100 species

Species ranked according to habitat specialisation

() adjusted for habitat*

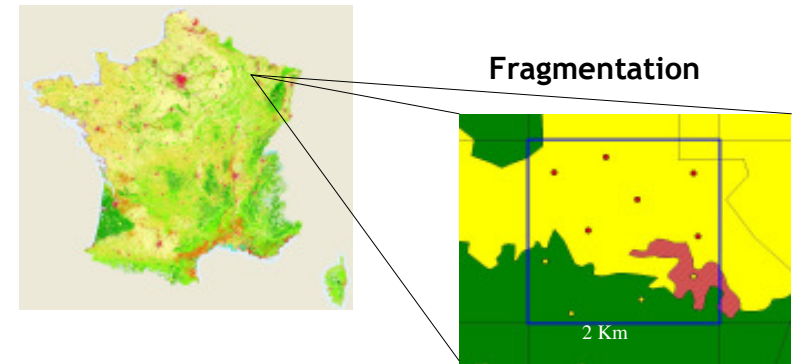
Estimation de la spécialisation



Indice de spécialisation = CV(abondance)

Descripteur du paysage (1)

CORINE landcover (1992)

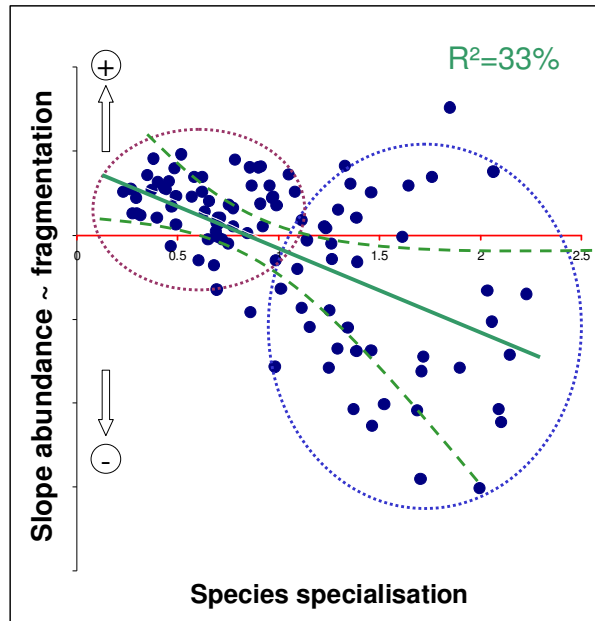


Résultats

Specialized species do not like fragmentation

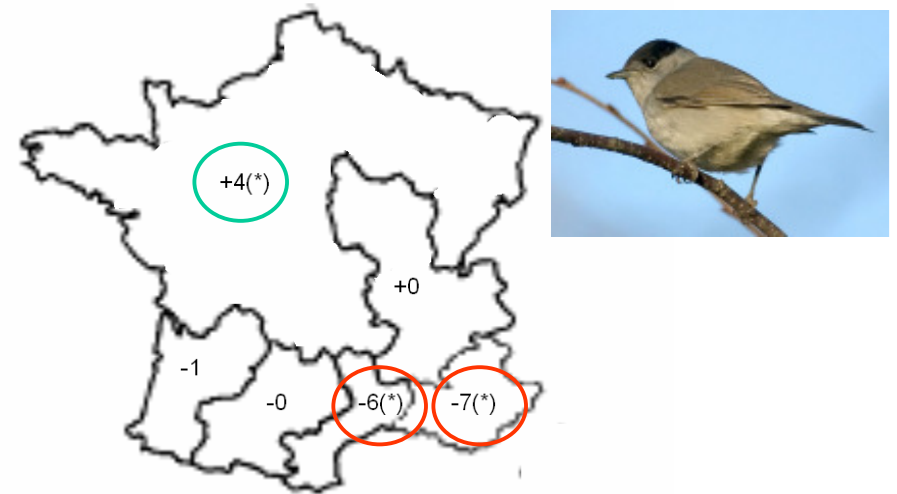
Generalist species are more resilient to fragmentation

Most generalist species actually enjoy fragmentation



Développer des indicateurs régionaux

Tendance 2001-2006 par région administrative

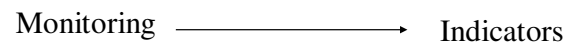


From monitoring data to biodiversity indicators

Strong demand for biodiversity indicators

=> monitoring requested

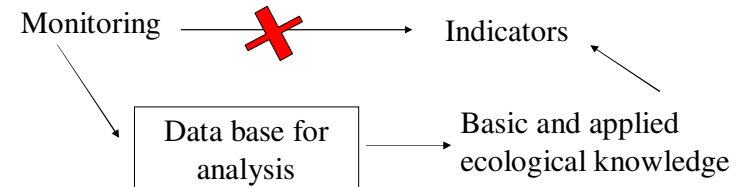
Trap n°1



From monitoring data to biodiversity indicators

Strong demand for biodiversity indicators

=> monitoring requested



From monitoring data to biodiversity indicators

Strong demand for biodiversity indicators

=> monitoring requested

Trap n°2

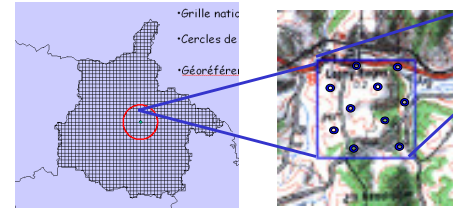
Monitoring ← Indicators

French breeding bird monitoring :

Animations locales :



Sampling design



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Learning effect in the FBBS

- Started in 2001, new participants every years
- From 2003, we compare changes between first and second year squares, with changes in « older » squares
 - => Observers tend to count **10% more** individuals after the first year, whatever the species

Learning effect in the FBBS

- Linked to random choice + point counts?
- Solution 1: remove first year
- Solution 2: use appropriate stats