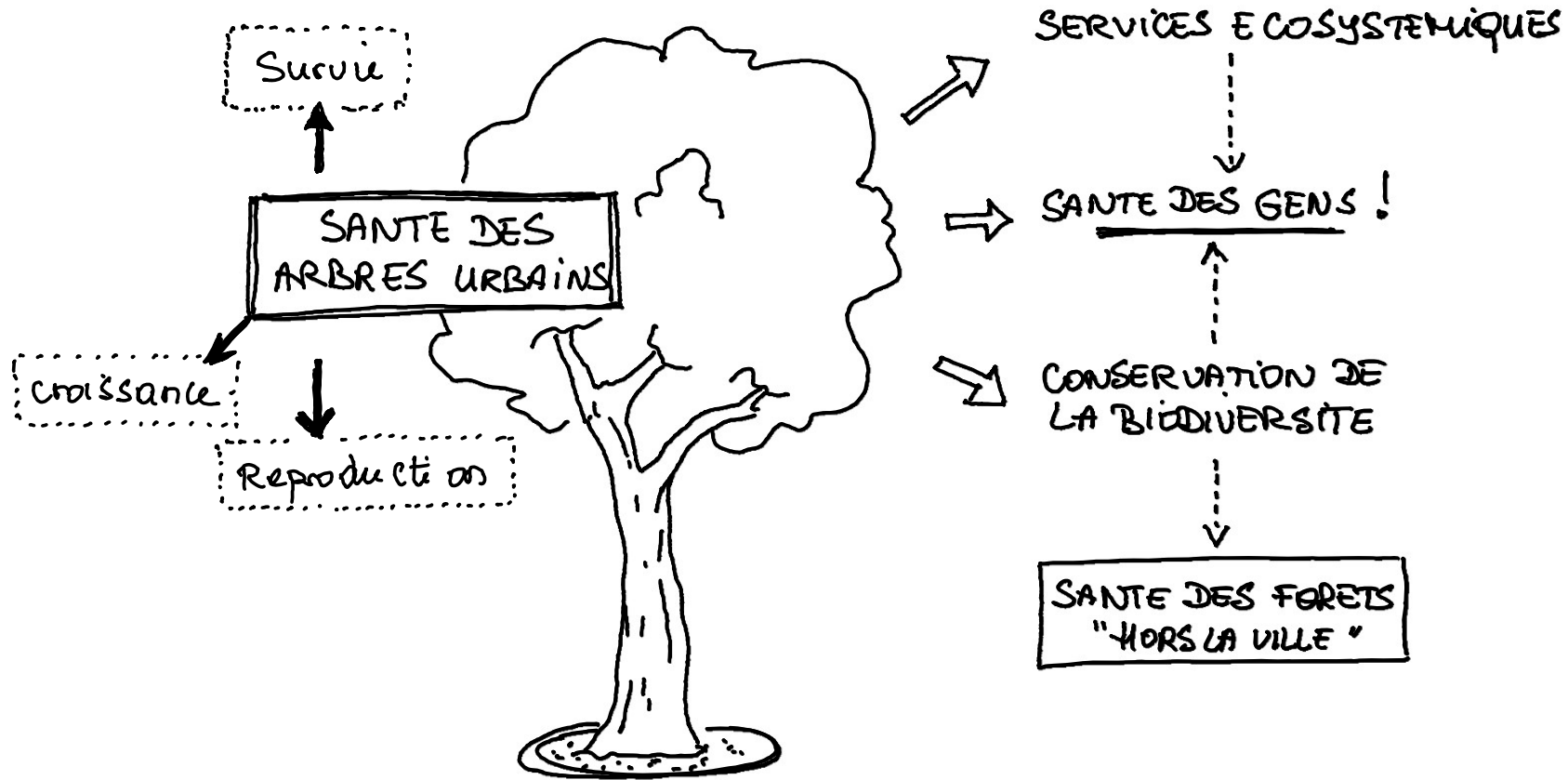
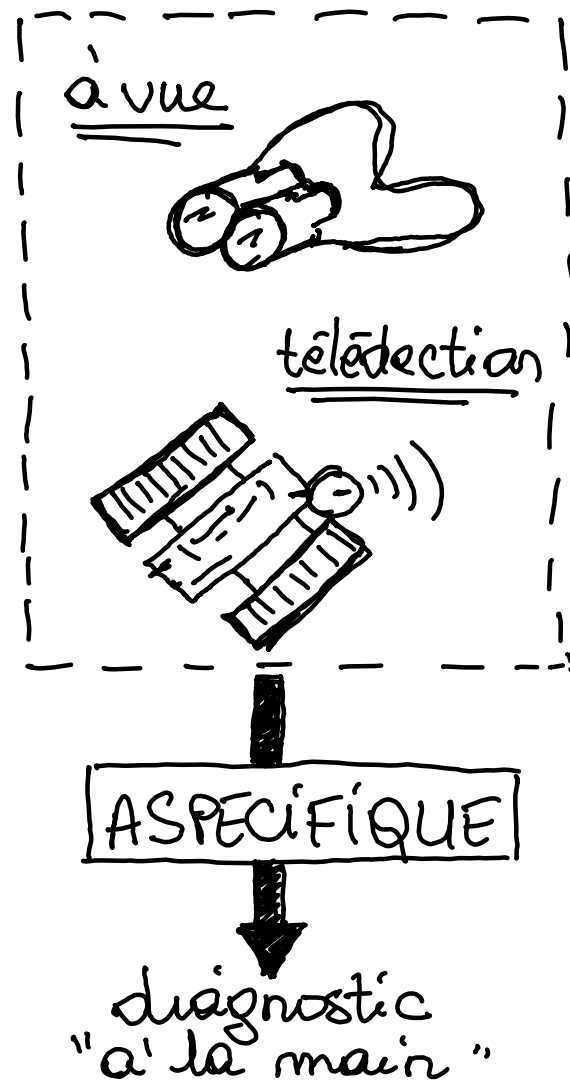
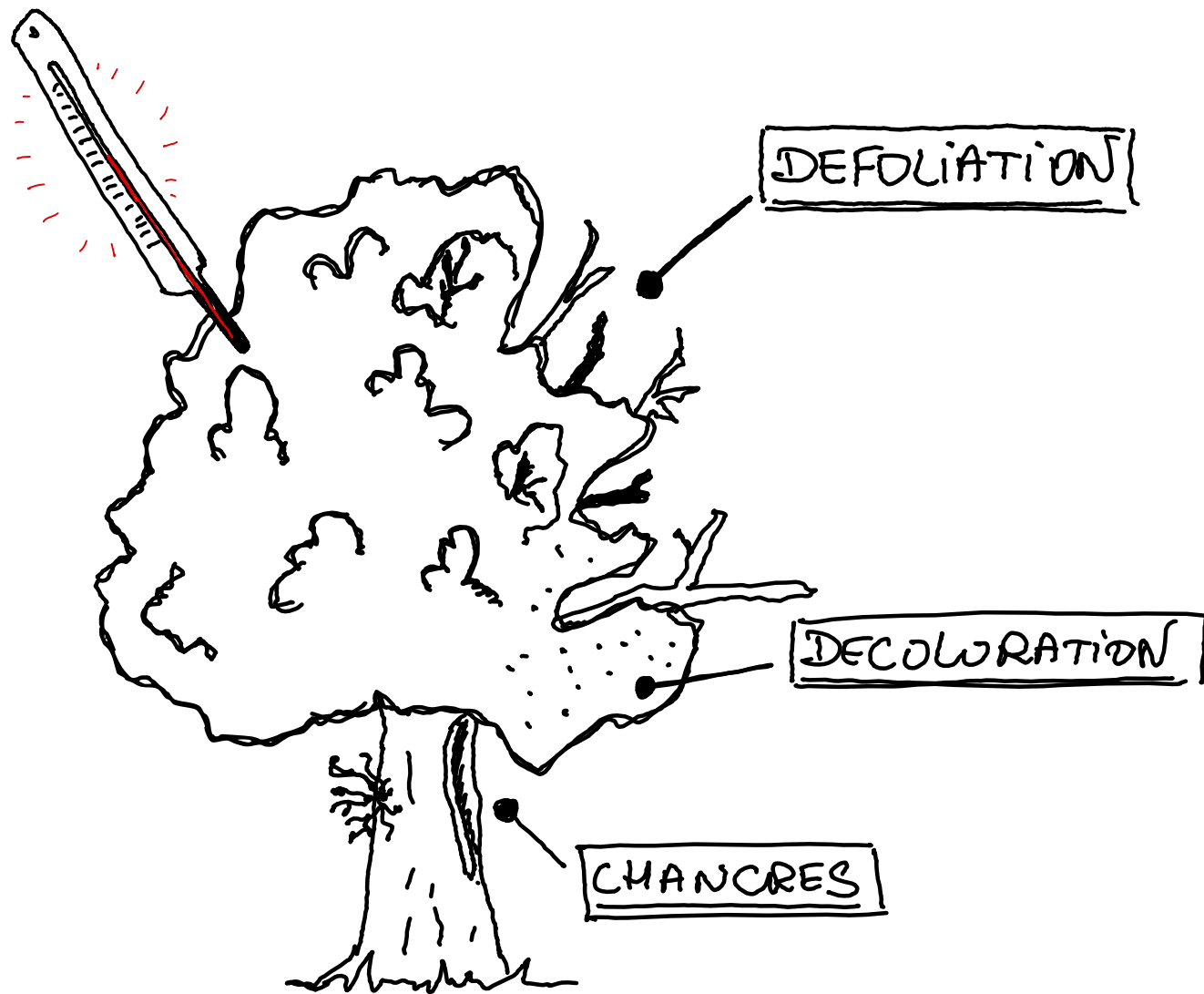


POUR DES **ARBRES** URBAINS
EN BONNE
SANTÉ
PENSEZ **BIODIVERSITÉ**

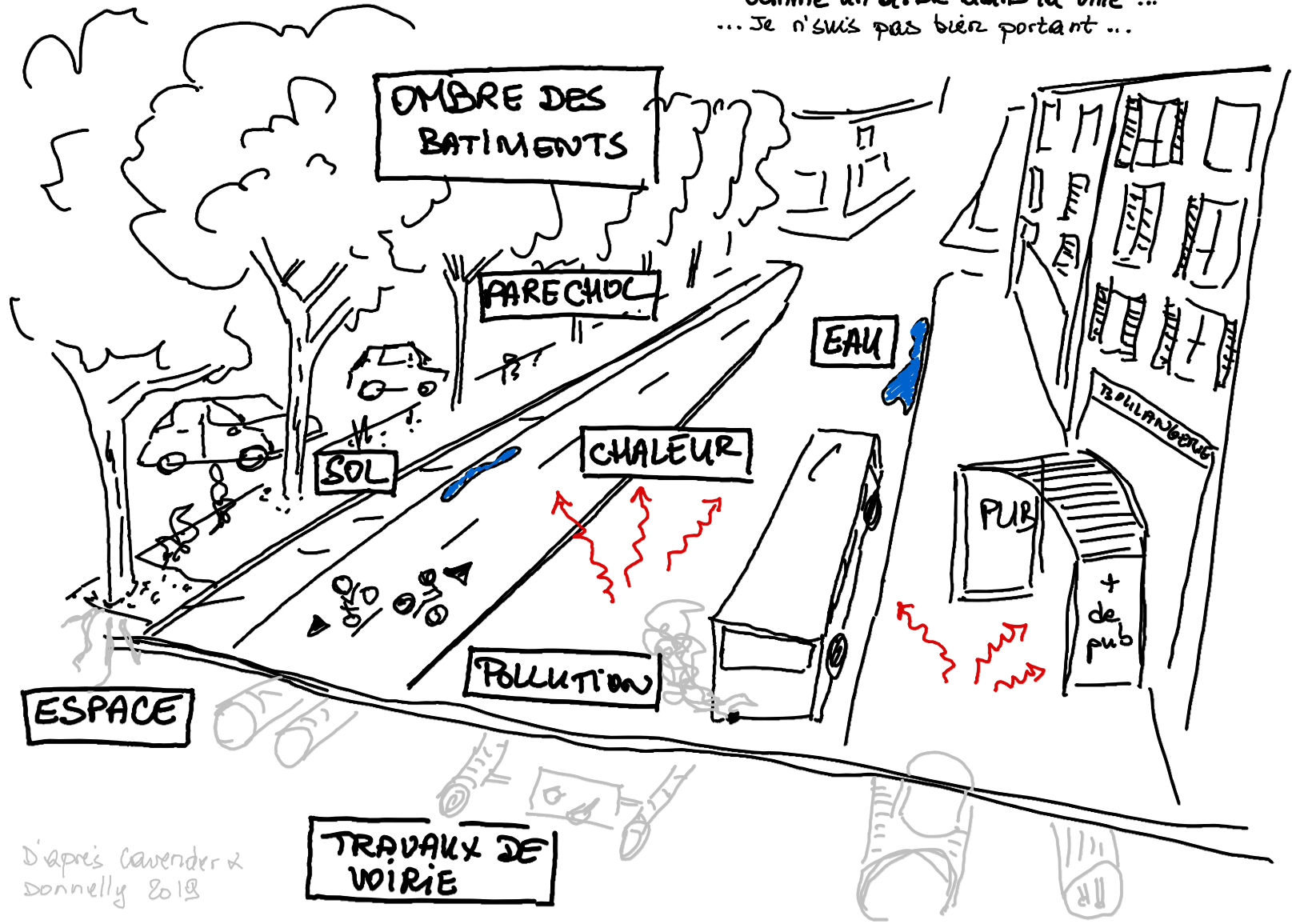
Bastien Castagneyrol - INRAE - UMR BioGECO

✉ bastien.castagneyrol@inrae.fr
🐦 @Castagneyrol



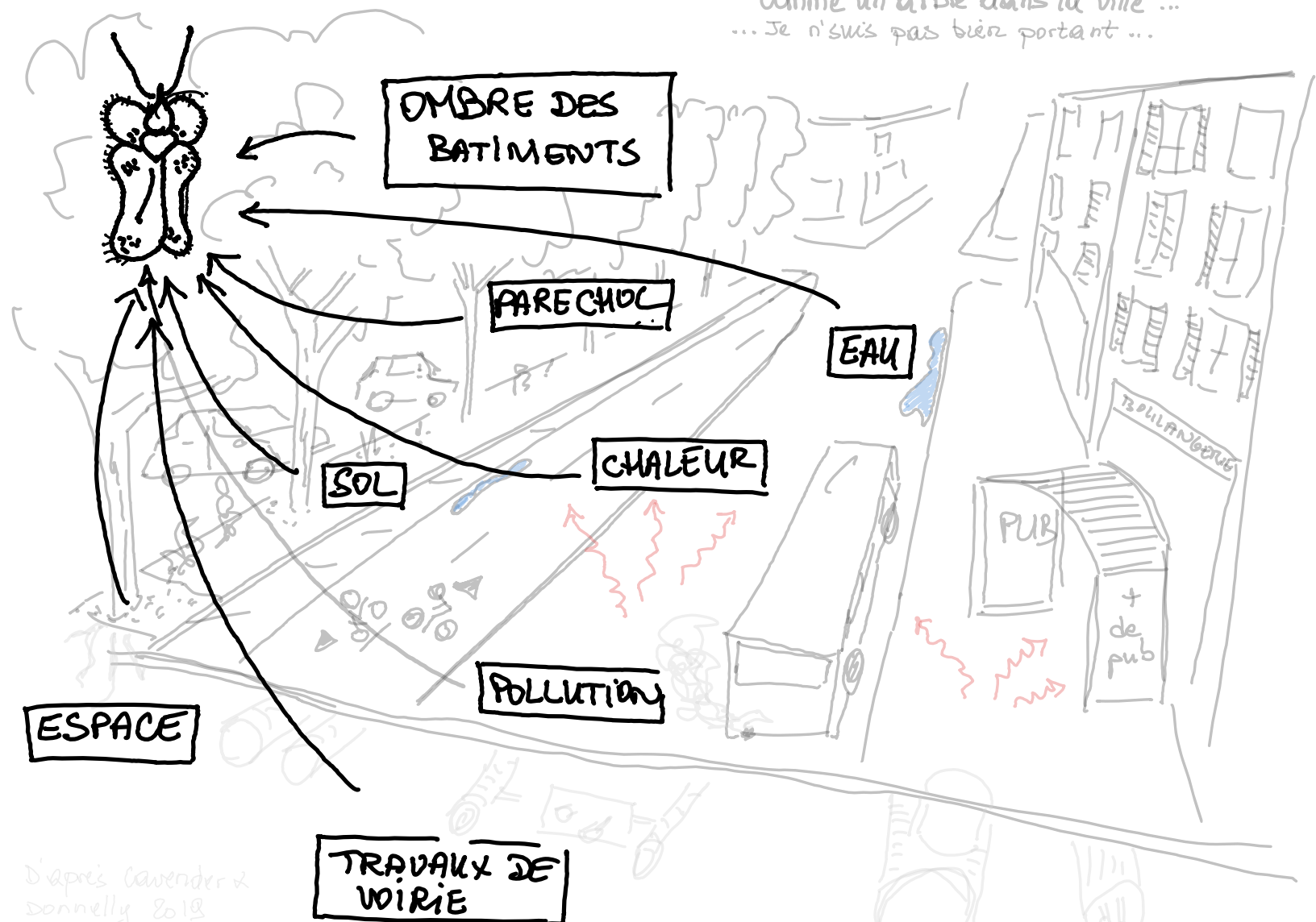


"Comme un arbre dans la ville ..."
... Je n'suis pas bien portant ...



D'après Cavender &
Donnelly 2018

"Comme un arbre dans la ville ..."
... Je n'suis pas bien portant ...



D'après Cavender &
Donnelly 2018

FAIBLE



Corytucha arcuata

FAIBLE



Corytucha arcuata

MOCHE



Cameraria orchidella

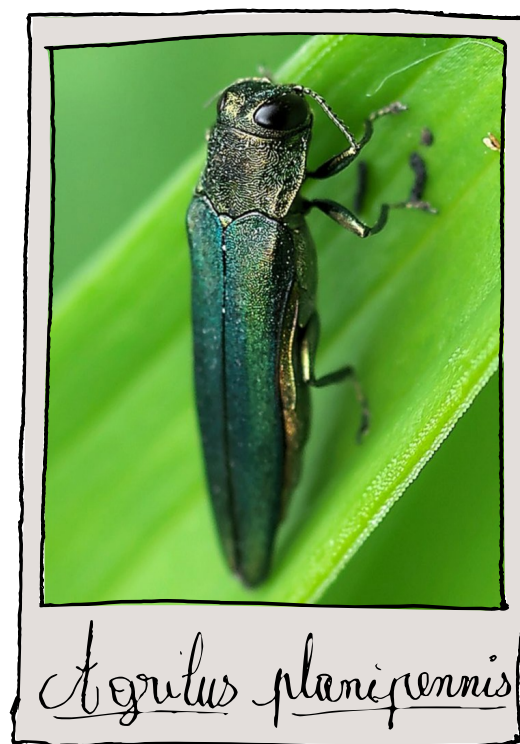
FAIBLE



MOCHE



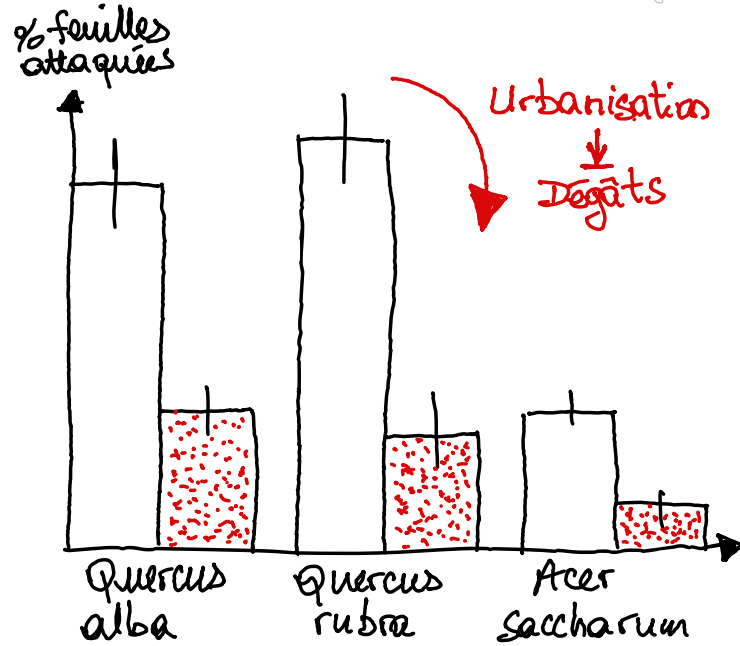
MORT



Toutes des espèces exotiques
± critiques pour la santé des
arbres urbains (et pas que...)

Comparison ville/campagne

Schueller et al. (2019) Urban Ecosystems

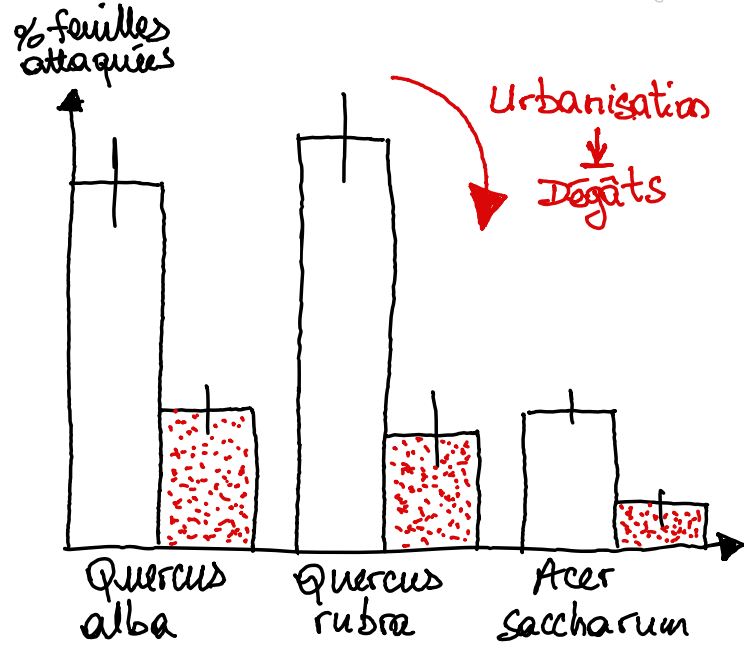


Urban - autour de l'université Ann Arbor (Michigan)

Forested - 36 ha⁺ de forêt

Comparison ville/campagne

Schueller et al. (2019) Urban Ecosystems

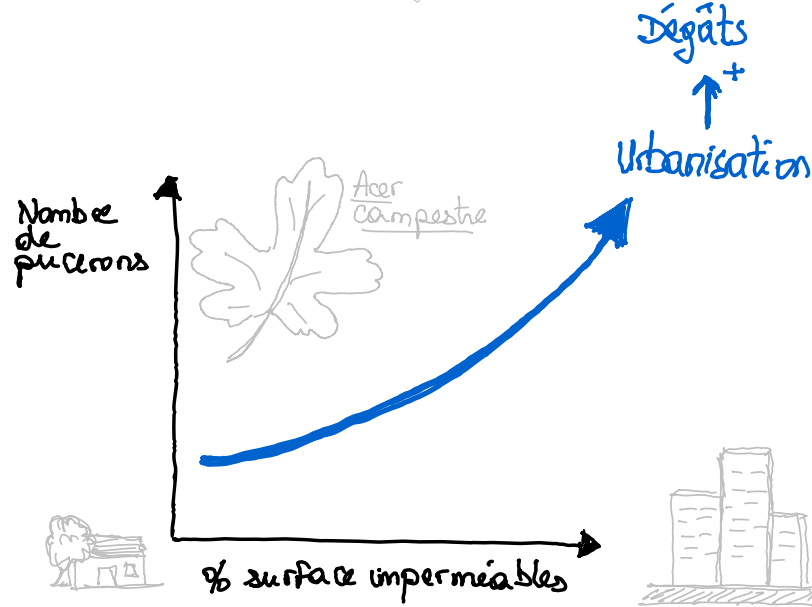


Urban - autour de l'université Ann Arbor (Michigan)

Forested - 36 ha⁺ de forêt

Gradient d'urbanisation

Koranyi et al. (2020) Urban Ecosystems

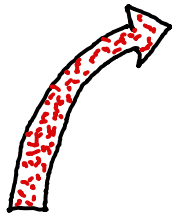
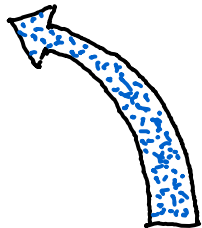


Urbanisation - % surfaces imperméables autour des arbres

+



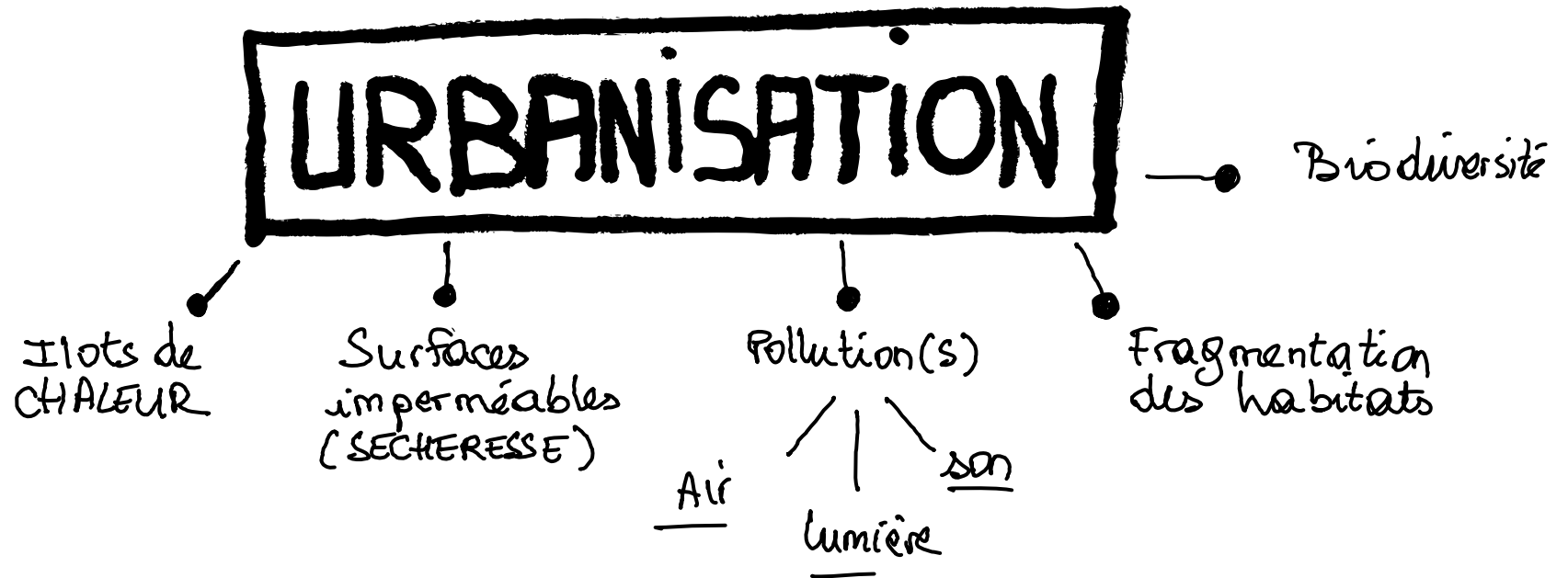
(+)

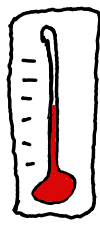


URBANISATION

Comment on l'explique?

- ☒ Clinique
- ☒ Diagnostique
- ☐ Causes du mal
- ☐ Prophylaxie

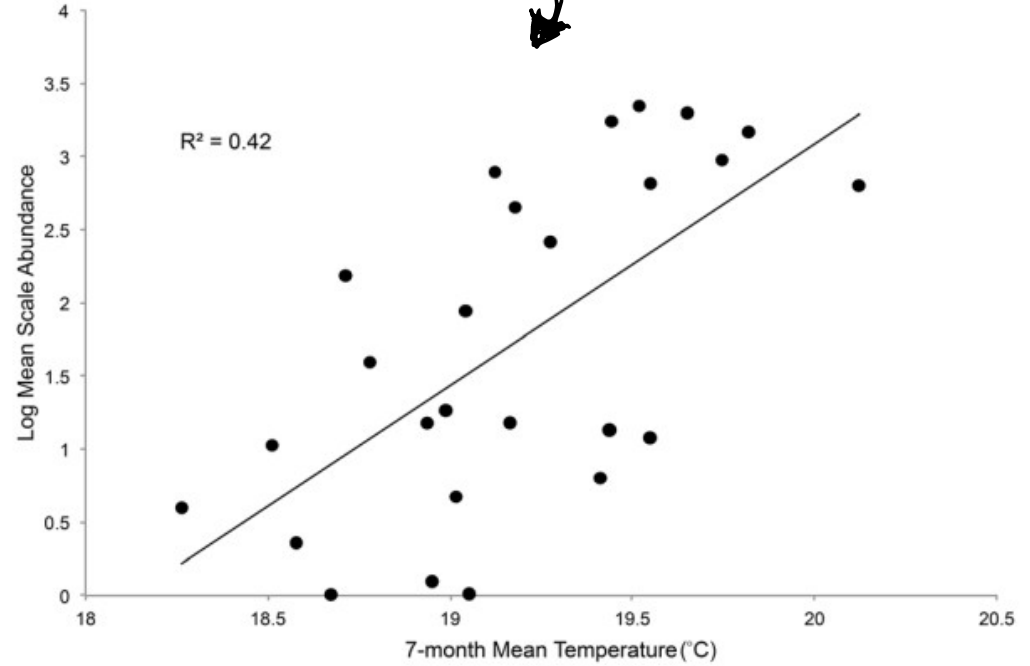
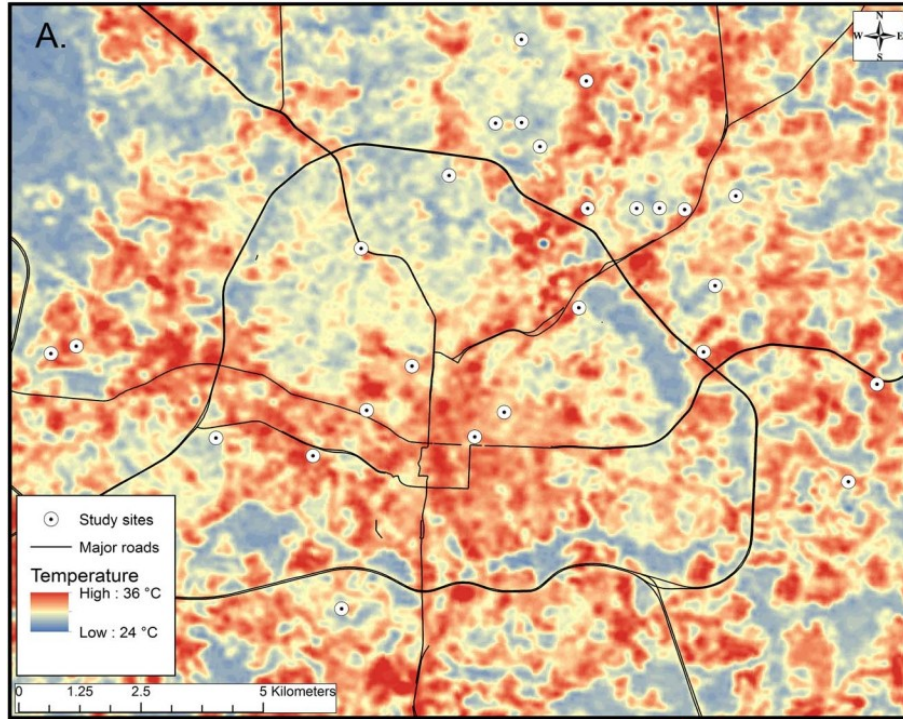




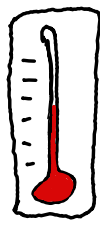
→ ⊕ Poecilothermes

Dale & Frank (2014) Plos One

Abondance des **COCHENILLES**
sur les érables

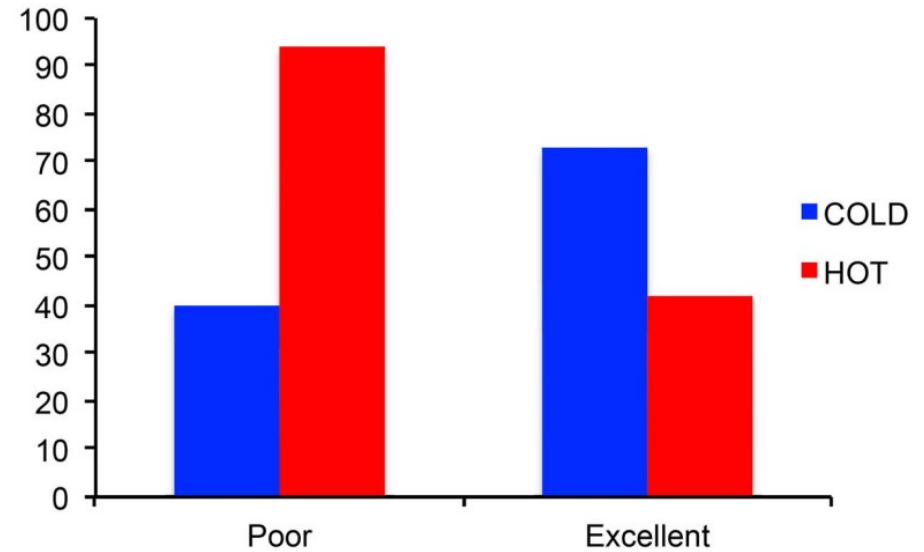
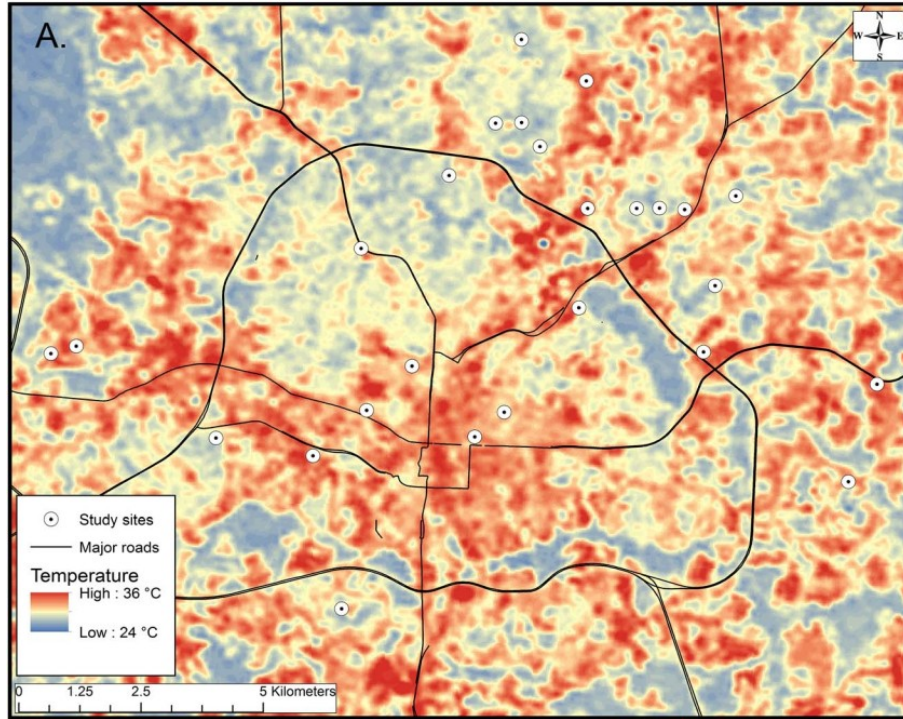


↳ là où il fait chaud à Raleigh



→ ⊕ Poecilotermes

Dale & Frank (2014) Plos One

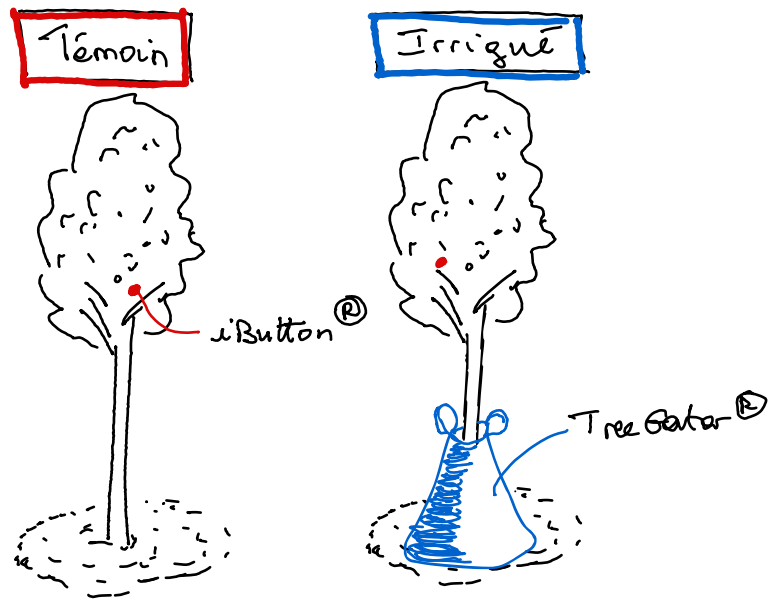


Tree Condition

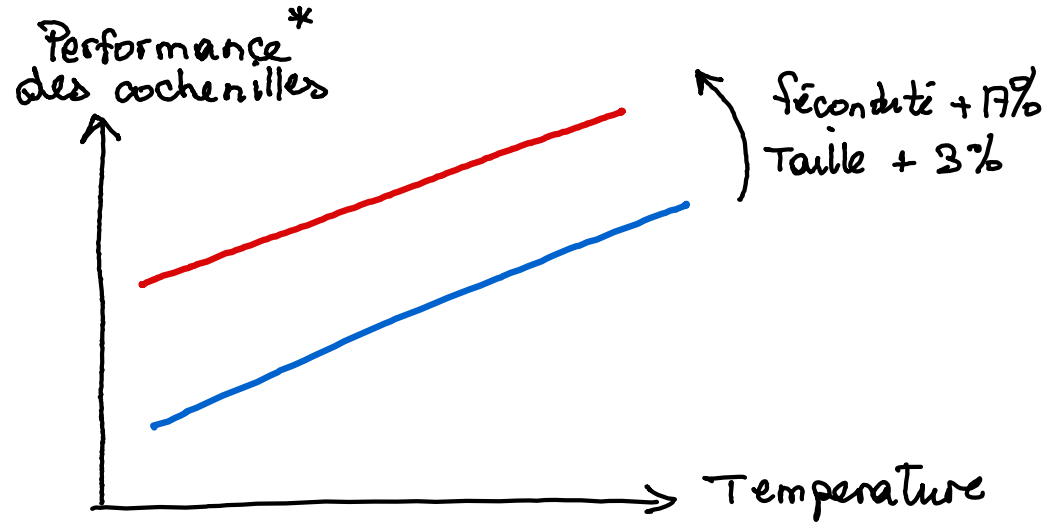
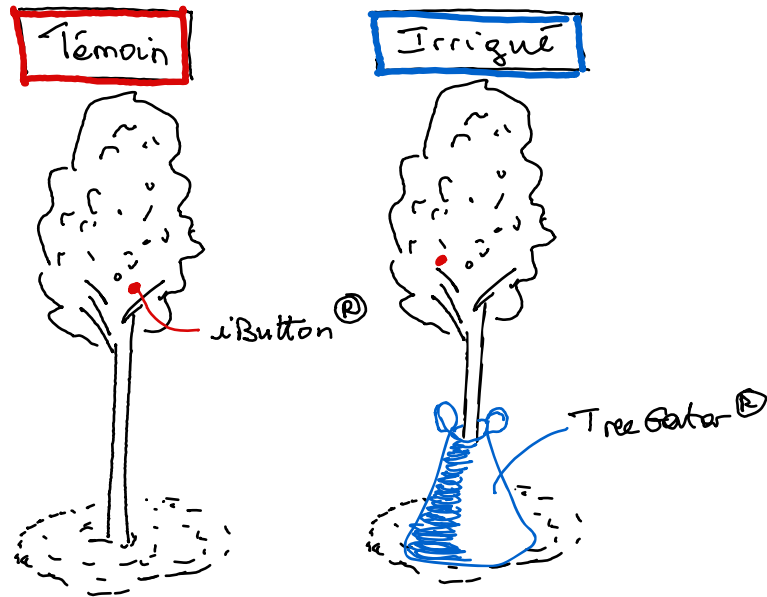
Etat sanitaire
des arbres

↳ là où il fait chaud à Raleigh

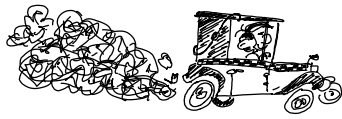
TEMPERATURE (ET) STRESS HYDRIQUE ONT DES EFFETS DIRECTS ET INDEPENDANTS



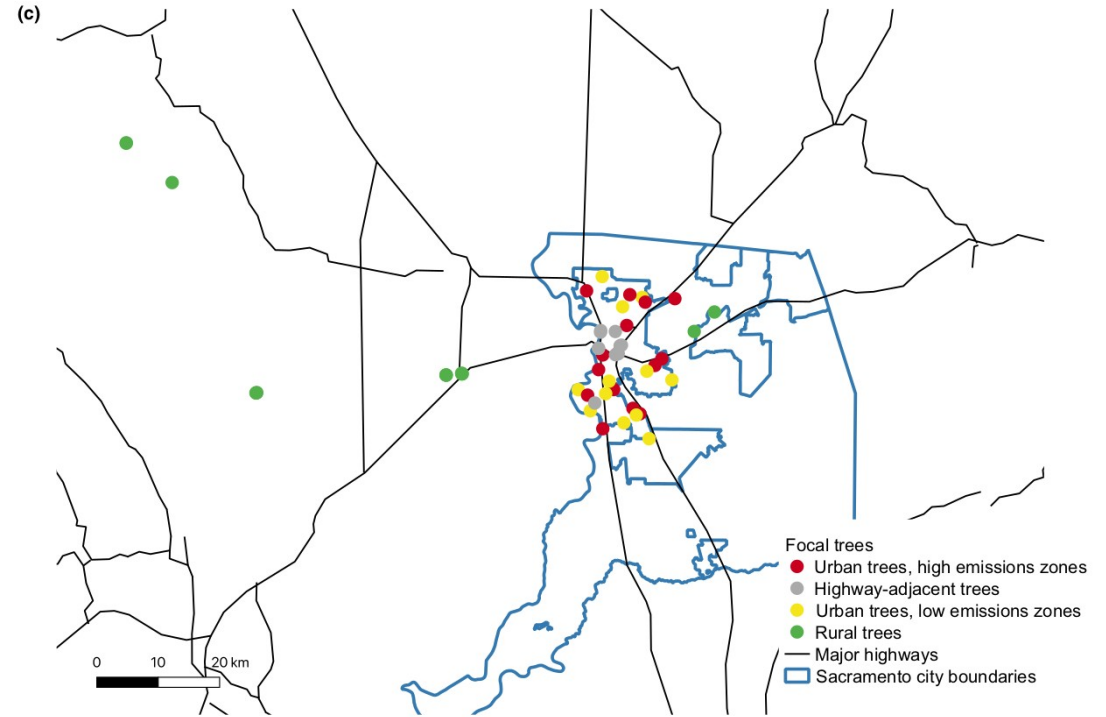
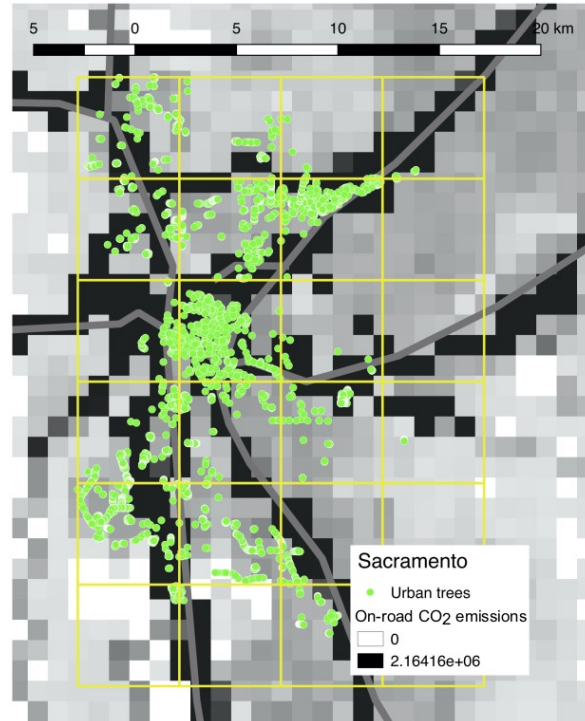
TEMPERATURE (ET) STRESS HYDRIQUE ONT DES EFFETS DIRECTS ET INDEPENDANTS

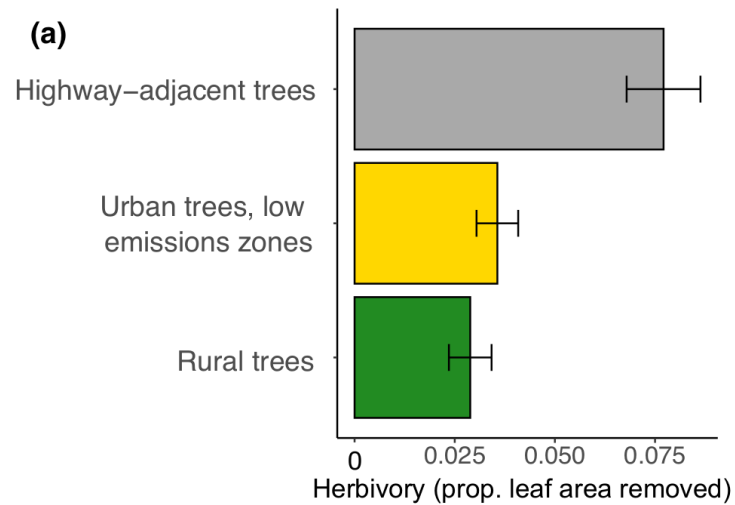
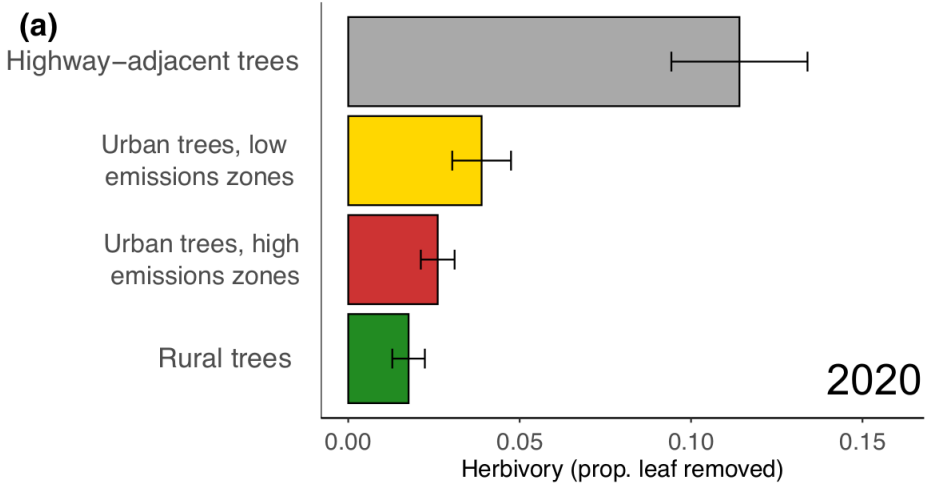
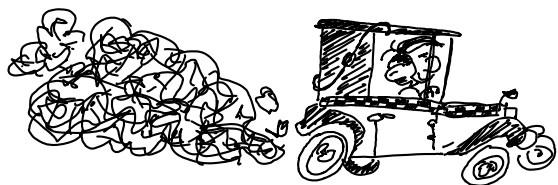


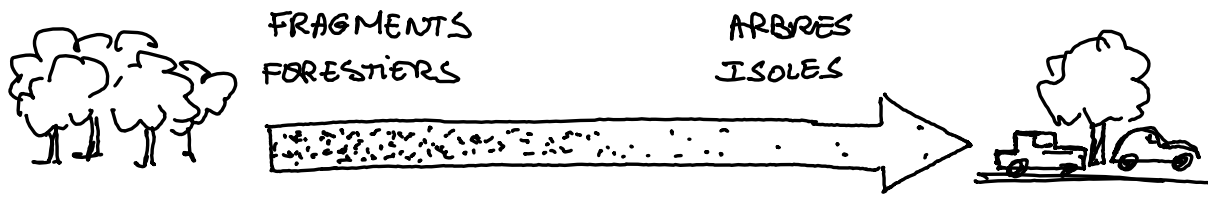
(*) Taille corporelle $\propto$ fécondité



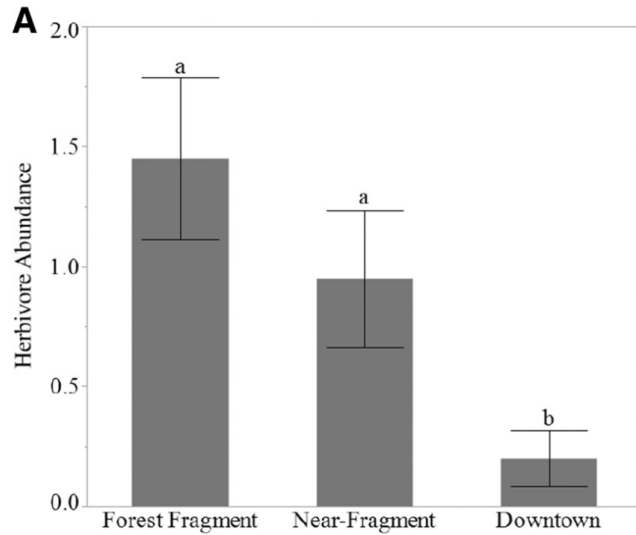
Quercus lobata Sacramento (California)



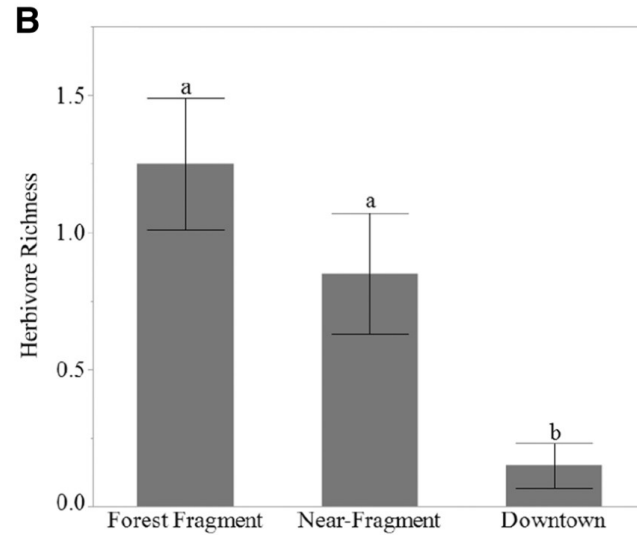




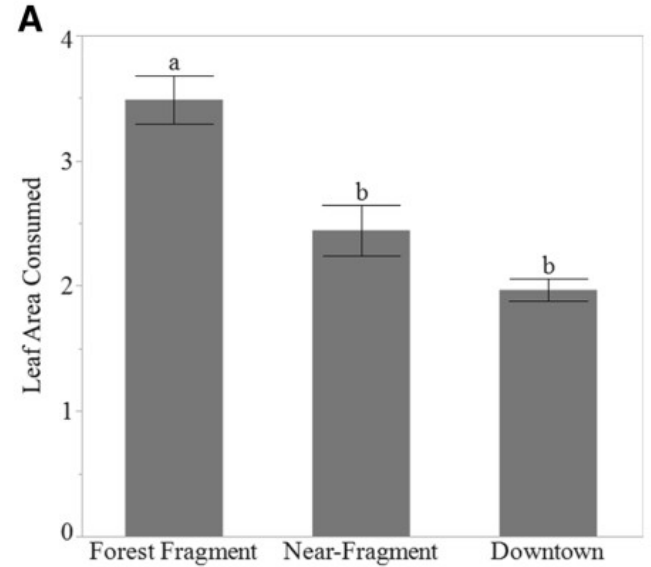
ABONDANCE



RICHESSSE

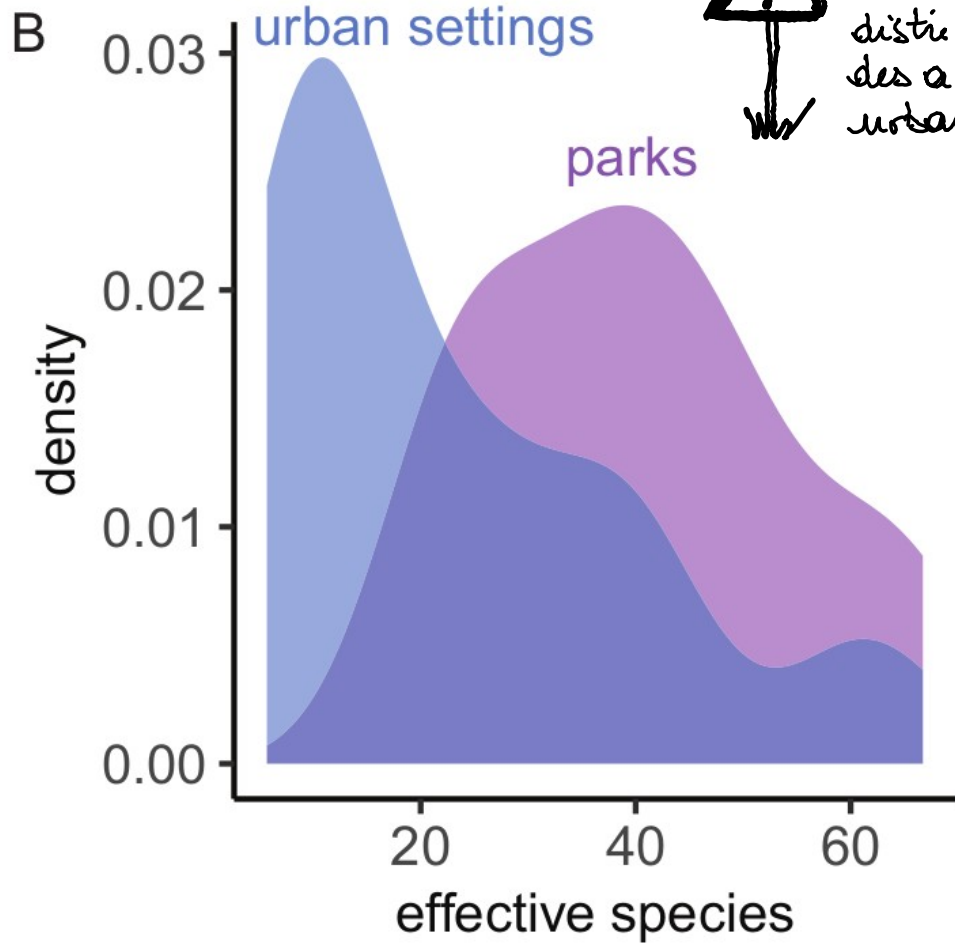


DÉGATS



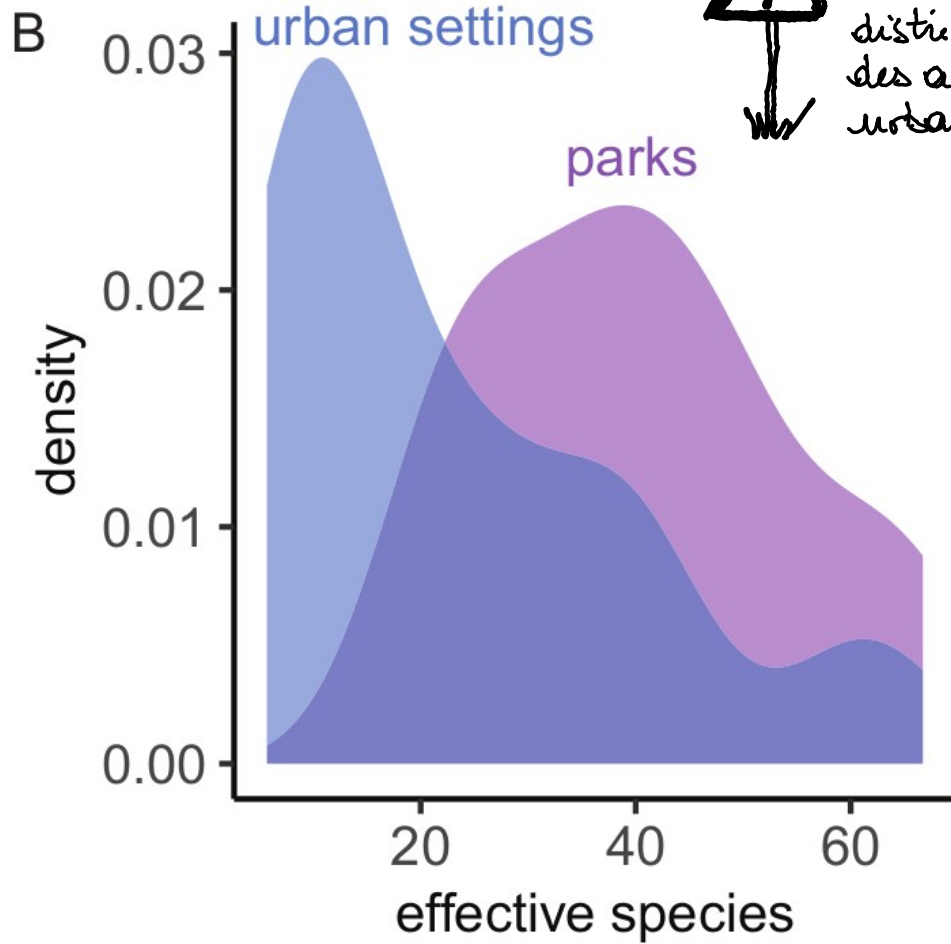
BIODIVERSITÉ

Laquelle ?
Où ça ?

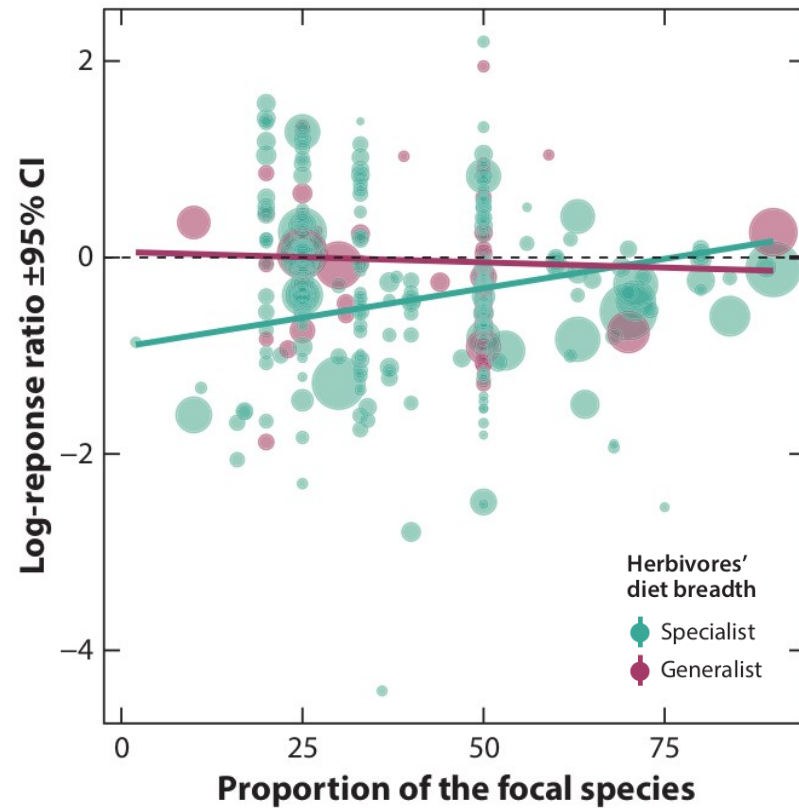


63 villes 
Diversité et
distribution
des arbres
urbains

McCoy et al. (2022) slide



63 villes 
Diversité et
distribution
des arbres
urbains



Mc Coy et al. (2022) slide

Règle de Santamour

10 % même espèce

20 % même genre

30 % même famille

mais ça ne
suffit pas

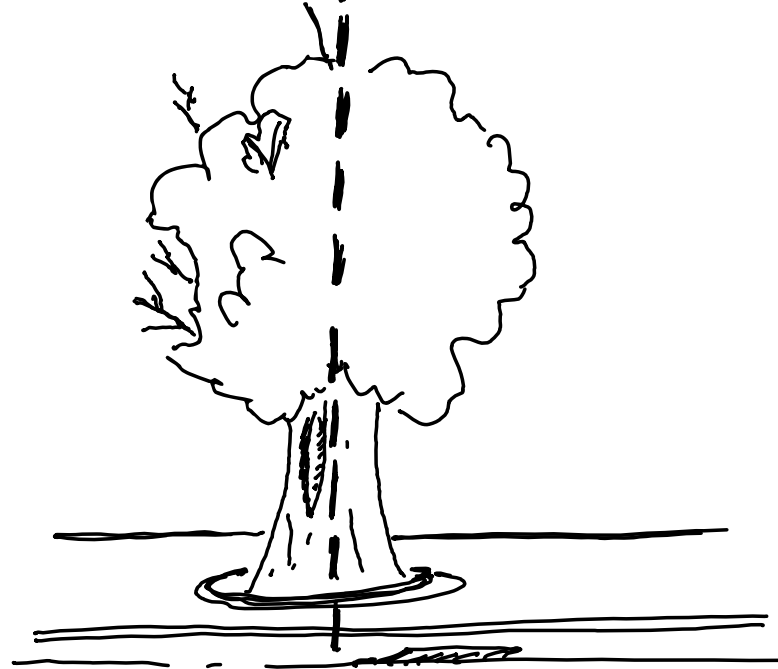


DISTRIBUTION DANS L'ESPACE

à différentes échelles (α, β, γ)

Quercus robur
(Natif)

Quercus rubra
(Exotique)



Microhabitats

Etat sanitaire

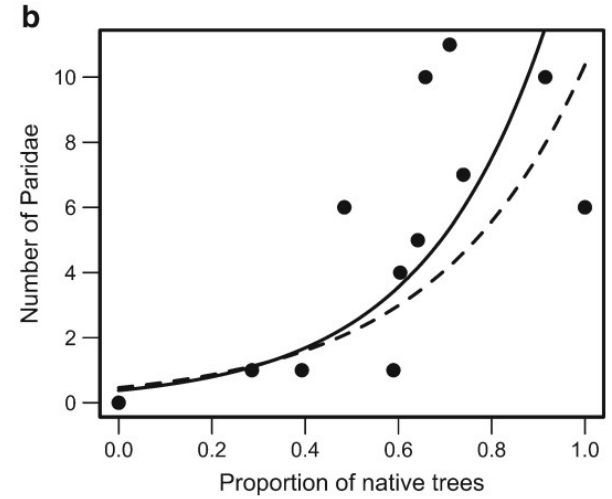
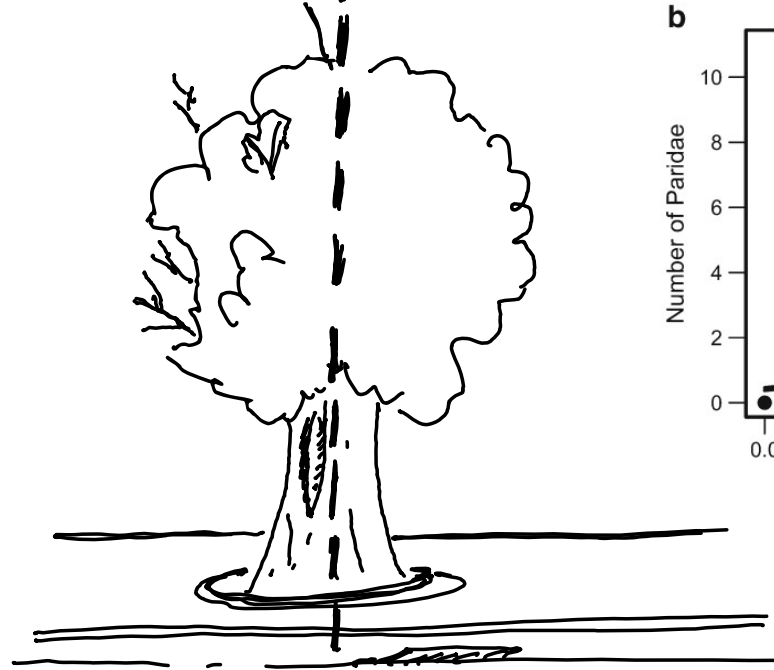
Activité 



Laux et al. (2022) Sc. Total. Environnement

Quercus robur
(Natif)

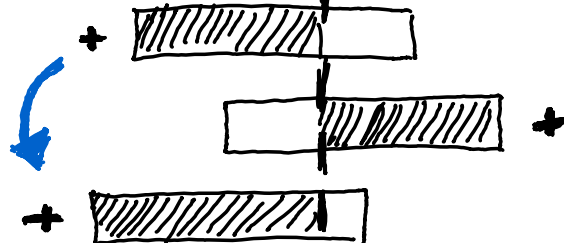
Quercus rubra
(Exotique)



Microhabitats

Etat sanitaire

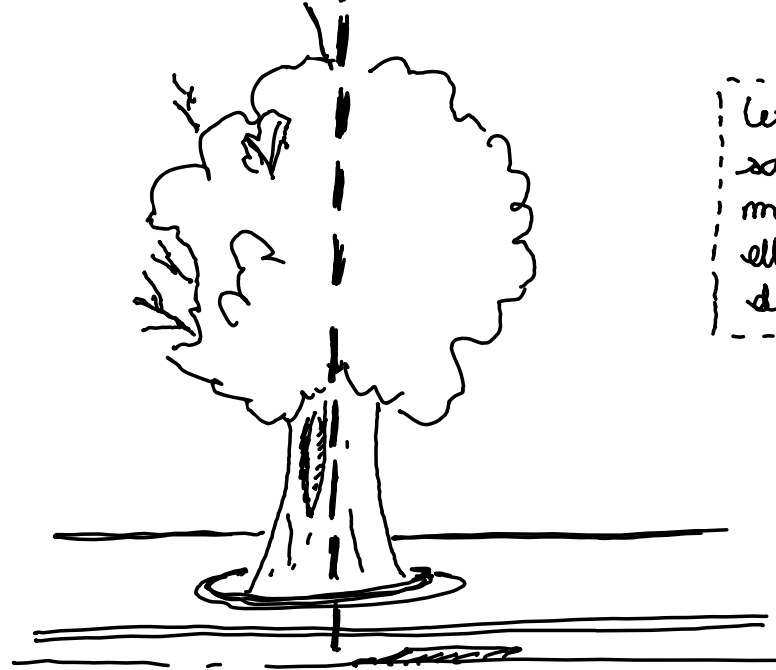
Activité 



Laux et al. (2022) Sc. Total. Environnement

Quercus robur
(Natif)

Quercus rubra
(Exotique)

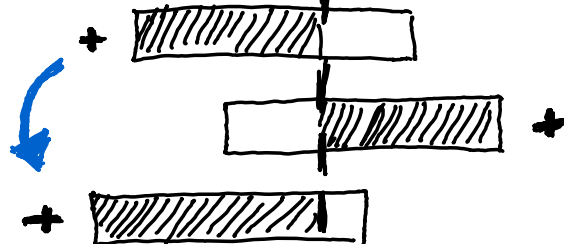


Les espèces exotiques
sont peut être en
meilleure santé, mais
elles supportent moins
de biodiversité

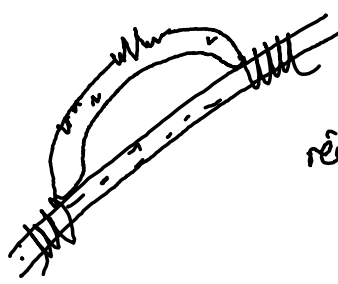
Microhabitats

Etat sanitaire

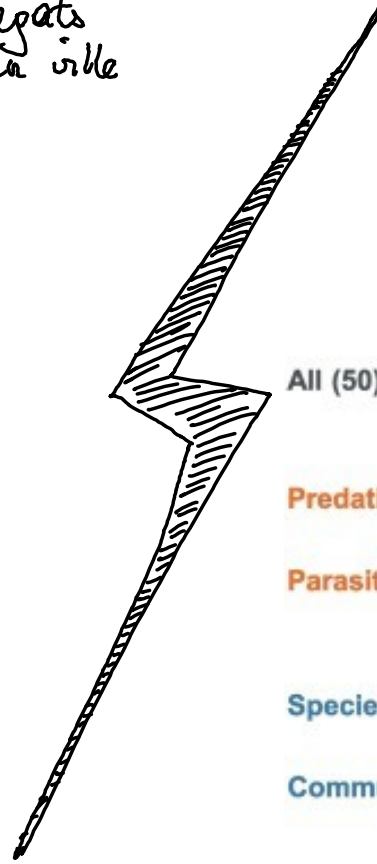
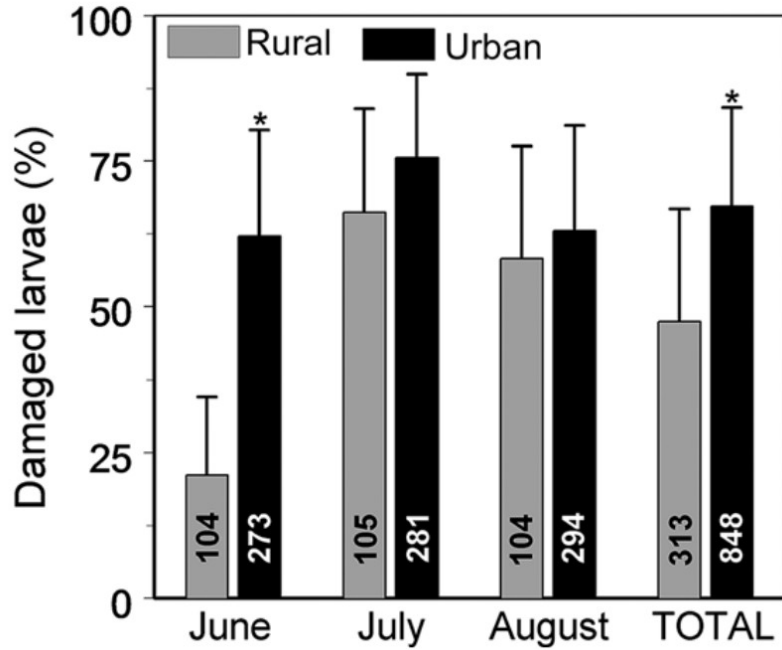
Activité 



Laux et al. (2022) Sc. Total. Environnement



① les oiseaux contribuent à réguler les dégâts d'insectes en ville



All (50)

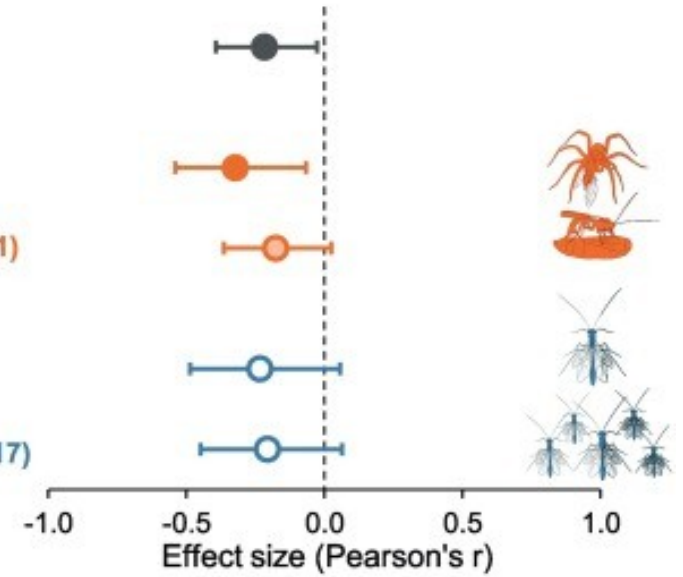
Predation (9)

Parasitism (41)

Species (33)

Community (17)

Biological control



Kozlov et al. (2017) GEB

Koranyi et al. Sci. Tot. Env. 2022

CHALLENGES

Réduire la vulnérabilité

- la bonne espèce, au bon endroit, de la bonne manière

Lutte par conservation de la biodiversité

- Ennemis naturels
- Conservation vs. pullulation

Surveillance

- Introduction d'espèces exotiques

Diversité et distribution des essences

- Natif / exotique
- Hétérogénéité.