The grass is always greener on the other side my deer: Fawn baseline glucocorticoids negatively relate to body mass in roe deer (*Capreolus capreolus*)

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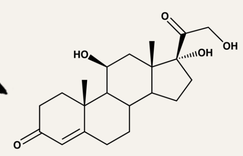
Background

- ✓ Animals live in a **fluctuating** environment
- ✓ Environmental variations are either predictable or **unpredictable**
- ✓ The **stress response** allows an individual to adjust to face unpredictable challenges[1]



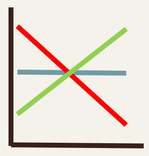
Glucocorticoids (GC) production

Theory / Observations

Short-term GC elevation → **Beneficial** for fitness[2]

Long-term GC elevation → **Adverse consequences** on fitness[1]

Relationship between elevated baseline GC levels and fitness-related traits is equivocal[3]!



Need to account for both **external[4] (*i.e.* ecological)** and **internal[3] (*i.e.* condition, sex, life-history stage, …)** factors

How do baseline GC levels and body mass relate on the short- to long-term in a free-ranging ungulate, the roe deer ?

- ✓ Body mass is an important driver of fitness and reflects body condition in income breeders such as this small ungulate

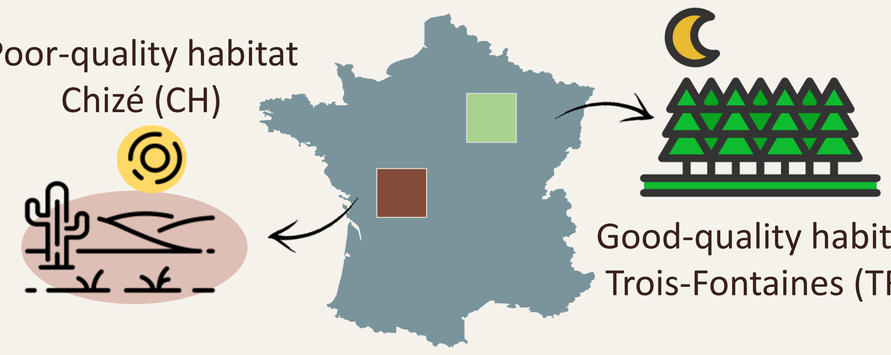
Populations & Methods

Longitudinal data on 2 contrasted roe deer populations

- ✓ Capture-Marking-Recapture program since 1976 (body mass)
- ✓ Glucocorticoids since 2010

→ Measured as metabolites in

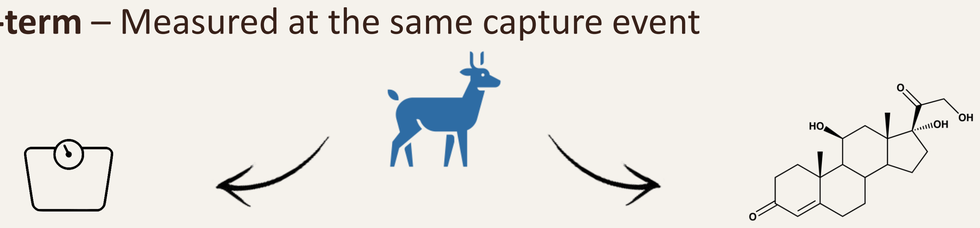
Poor-quality habitat
Chizé (CH)



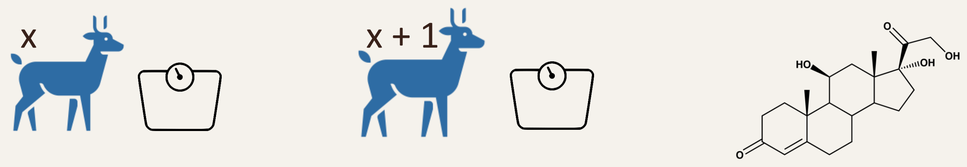
Good-quality habitat
Trois-Fontaines (TF)

Relationship between GC levels and body mass:

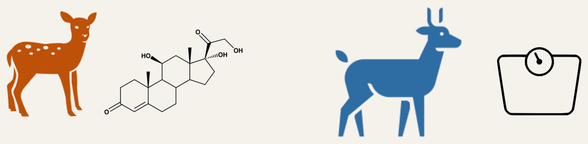
1) Short-term – Measured at the same capture event



2) Medium-term – Body mass change between two consecutive years

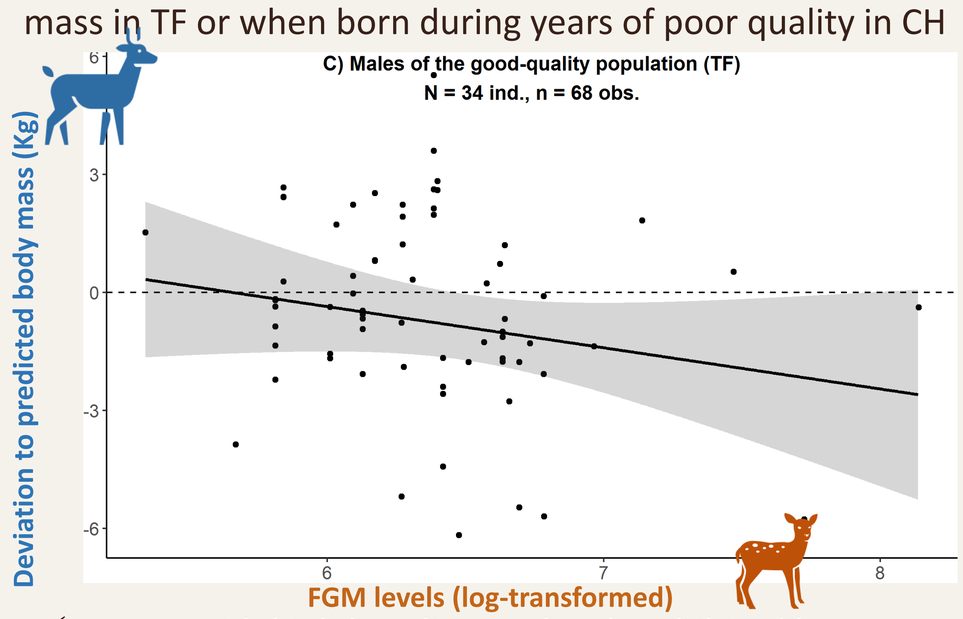


3) Long-term – Fawn GC levels and adult body mass



Results

- ✓ Fawns with high baseline GC levels exhibited lower body mass in TF or when born during years of poor quality in CH



- ✓ Fawns with high baseline GC levels exhibited lower adult body mass in TF

Key-Messages

- ✓ **Early-life** is a key period during which stress can be linked to body mass
- ✓ **Males** seem to be more sensitive than females to variations in baseline stress levels since no significant relationship was detected in females
- ✓ **Environmental conditions** plays a role to a certain degree: individuals of the poor-quality population could be adapted to higher GC levels but this could also be due to a stronger viability selection on juveniles in CH than TF

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