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Effect of experimenters on behavioural and stress responses in Montagu's harrier chicks (*Circus pygargus*) throughout monitoring in natural conditions

J. Rabdeau, I. Badenhauer, J. Moreau, V. Bretagnolle et K. Monceau



Centre d'Études
Biologiques de
Chizé



Zones
Ateliers

LTSER FRANCE PLAINE ET VAL DE SÈVRE



Animals and humans: Difficulties to cohabit

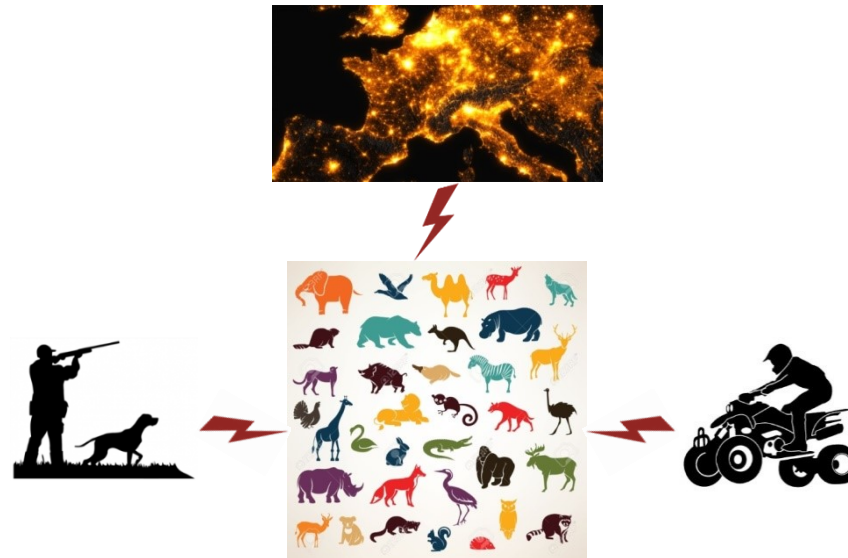


- Human = predation risk
 - Anthropogenic disturbance
- ➔ Behavioural and physiological modification of the animal

Animals and humans: Difficulties to cohabit



- Human = predation risk
 - Anthropogenic disturbance
- ➔ Behavioural and physiological modification of the animal



Interactions often negative for the animal but sometimes positive



Decrease of behavioural/physiological responses

- Repeated stimulus
- Improvement in animal welfare



Decrease of behavioural/physiological responses

- Repeated stimulus
- Improvement in animal welfare

➔ Farming

➔ Domestic animals



Discrimination between familiar and non-familiar human



Research and/or conservation

- Repeated handling on the same individual
 - Recognition of the experimenter
- ➔ ± important responses



Research and/or conservation

- Repeated handling on the same individual
- Recognition of the experimenter

→ ± important responses

Positives : habituation

Negatives : attacks and alarms
for next interactions





Research and/or conservation

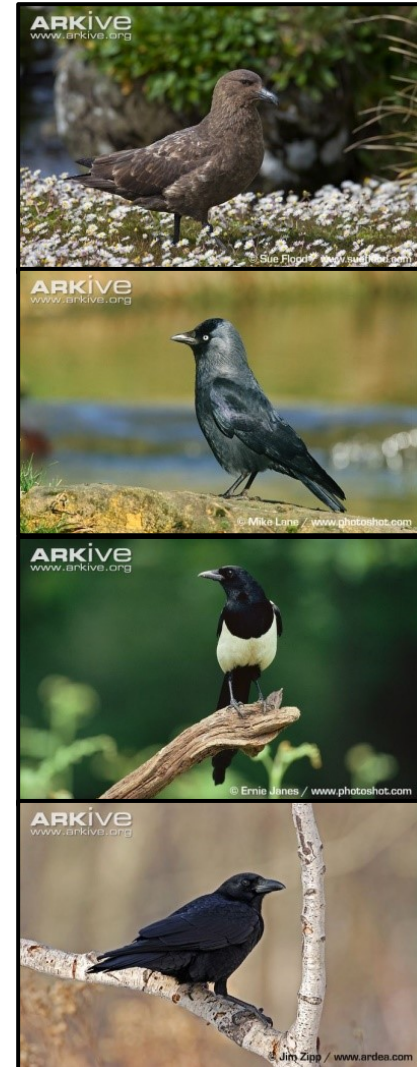
- Repeated handling on the same individual
- Recognition of the experimenter

→ ± important response

Positives **s** : habituation

Negatives **s** : attacks and alarms
for next interactions

Adult individuals pre-exposed to humans



Objective



Behaviour of naive individuals

➔ Nests monitoring of Montagu's harrier (*Circus pygargus*)

Repeated visits to the nest



Objective



Behaviour of naive individuals

➔ Nests monitoring of Montagu's harrier (*Circus pygargus*)

Repeated visits to the nest



Experimenters
identity



Impacts on behaviour
and physiology

Objective



Behaviour of naive individuals

→ Nests monitoring of Montagu's harrier (*Circus pygargus*)

Repeated visits to the nest



Experimenters
identity



Impacts on behaviour
and physiology

Hypothesis:

→ Recognition of experimenters

→ Chicks - aggressive and/or – stressed **je ne vois pas l'Hypothèse qui concernent le**

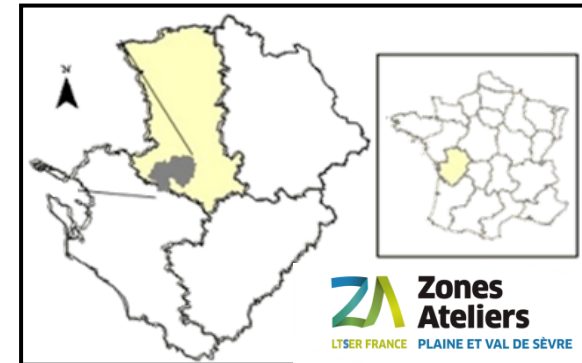


Montagu's harrier (*Circus pygargus*)

- Patrimoniaire and protected species
- Long term monitoring since 1994 on ZA-PVS
- Nestlings without interaction with human



Zone Atelier Plaine et
Val de Sèvre (ZA-PVS)



Studied species and population

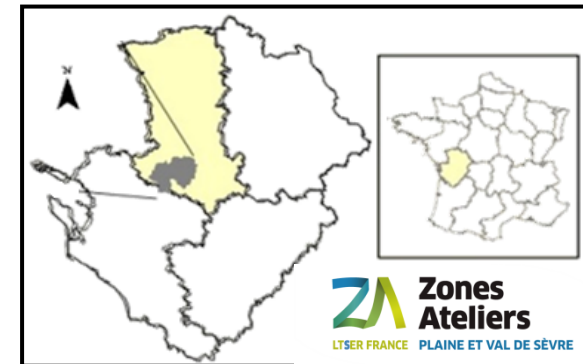


Montagu's harrier (*Circus pygargus*)

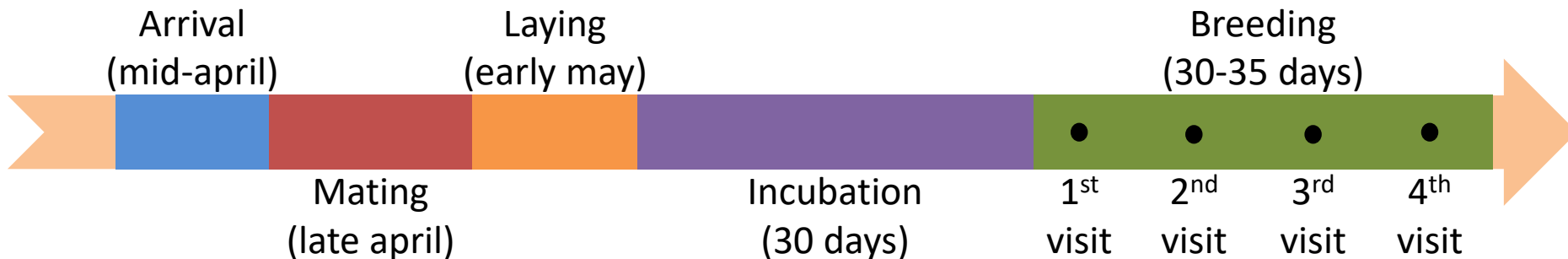
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Zone Atelier Plaine et Val de Sèvre (ZA-PVS)

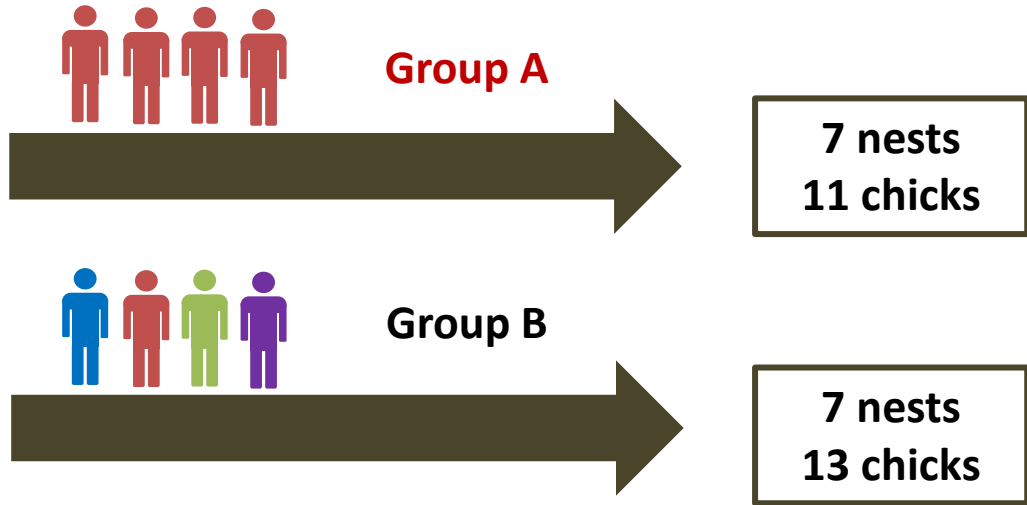


Phenology :



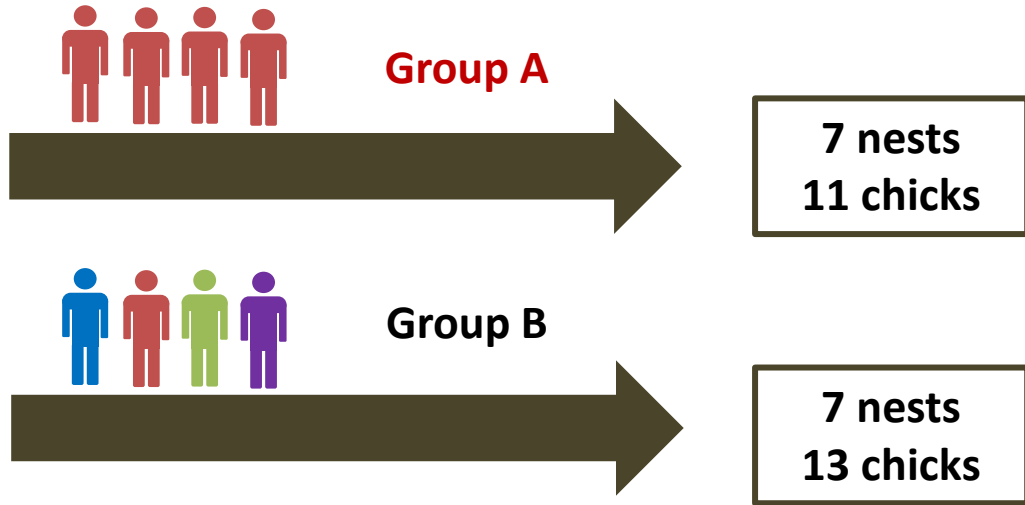


Two groups of nests





Two groups of nests



- 2 blood samples: basal and stress-induced

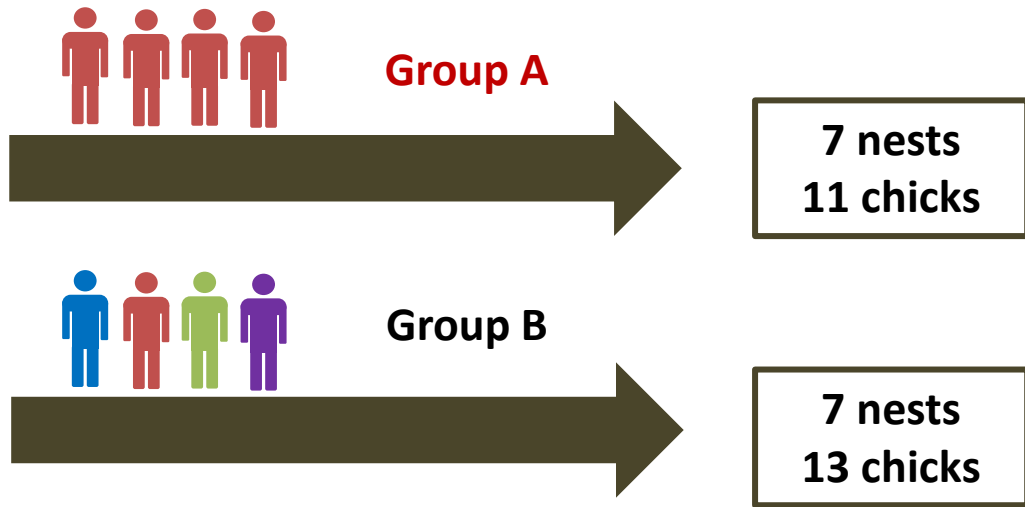
→ **Corticosterone**



Methods

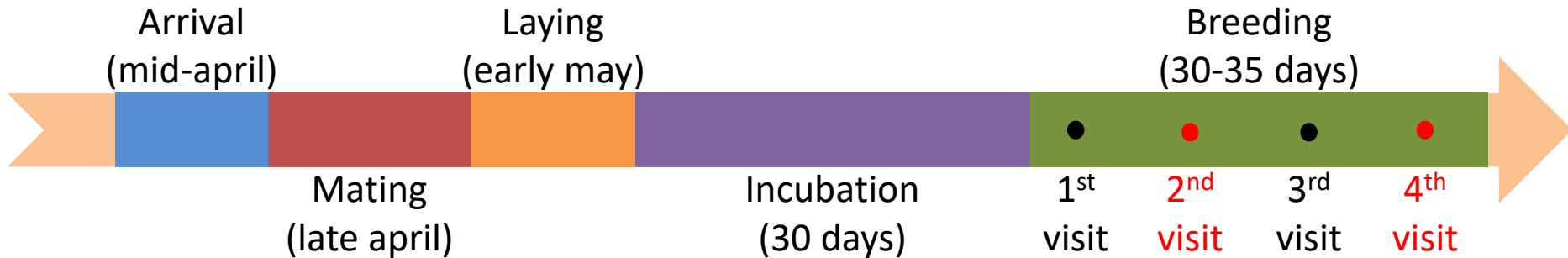


Two groups of nests



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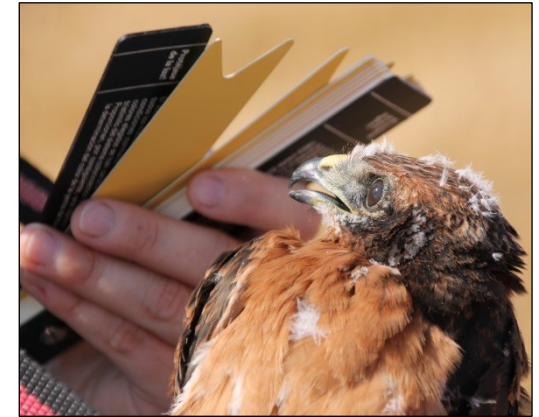




Behavioural responses of chicks

Movements scores

- Approaching the nest
 - Handling
- ➔ PC1 Movements





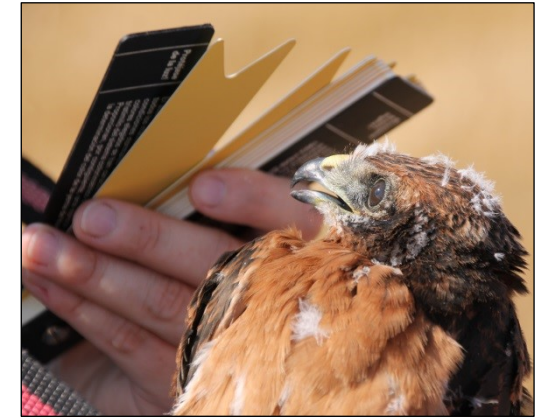
Behavioural responses of chicks

Movements scores

- Approaching the nest
- Handling

➔ PC1 Movements

J'aurais tendance à montrer les corrélations entre PC et variables initiales (ou l'ACP) pour connaître le sens (+ ou -) des v et l'interprétation; idem pour ci dessous



Attacks rates

- Beak
- Claws

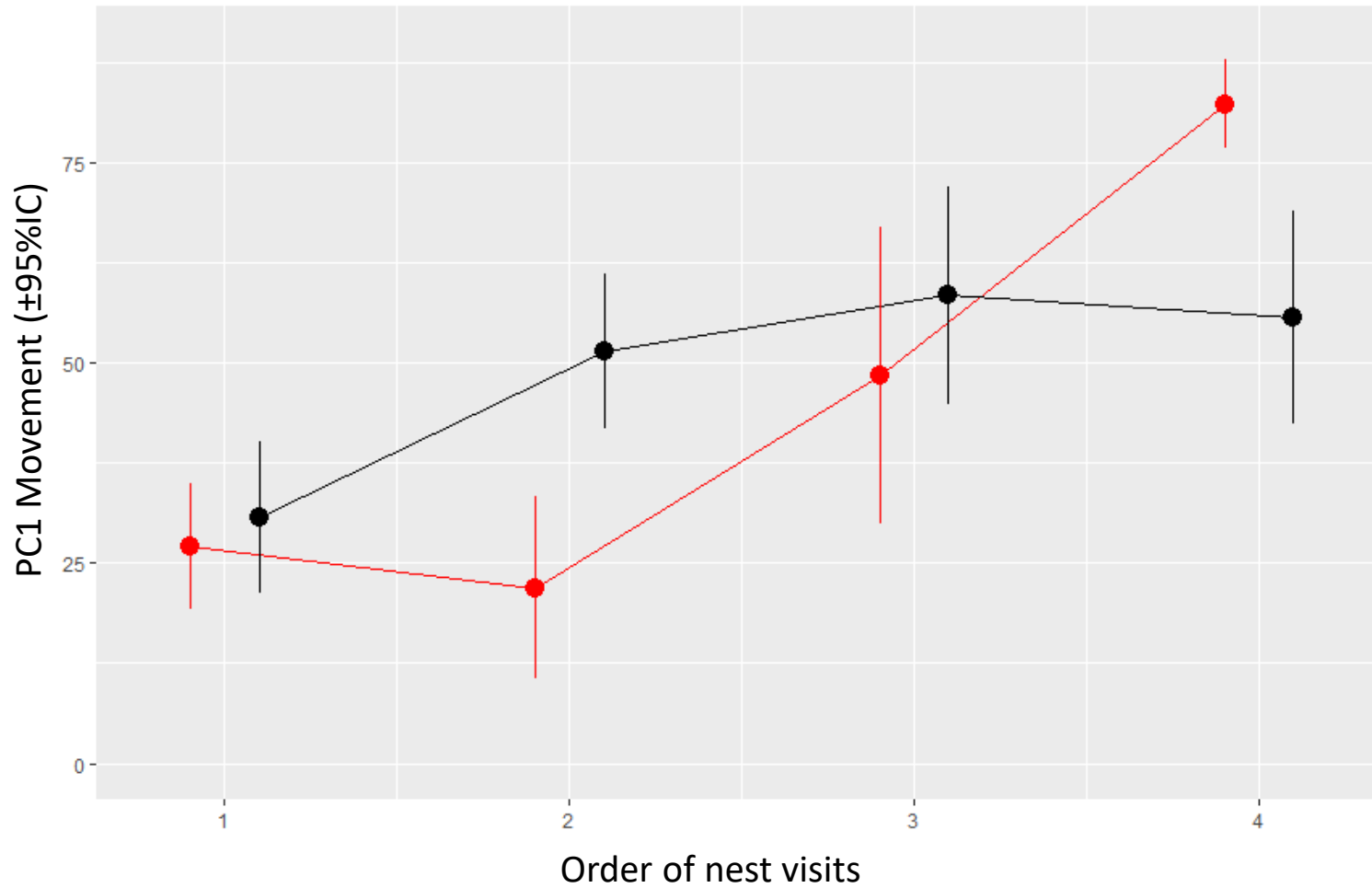
➔ PC1 Attacks



Results



PC1 Movement behaviours



Groupe A



Groupe B



Results

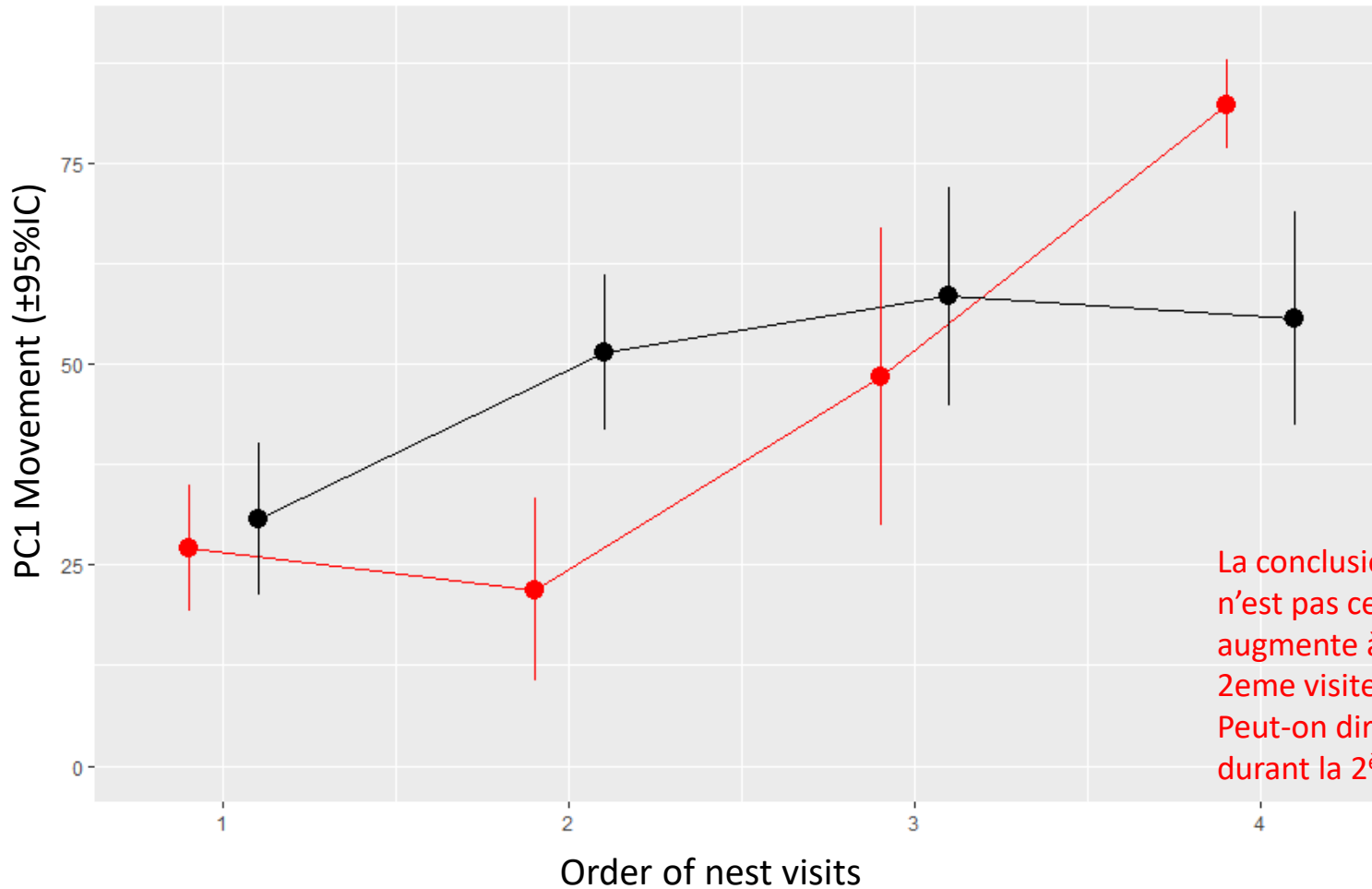


PC1 Movement behaviours

Groupe A



Groupe B

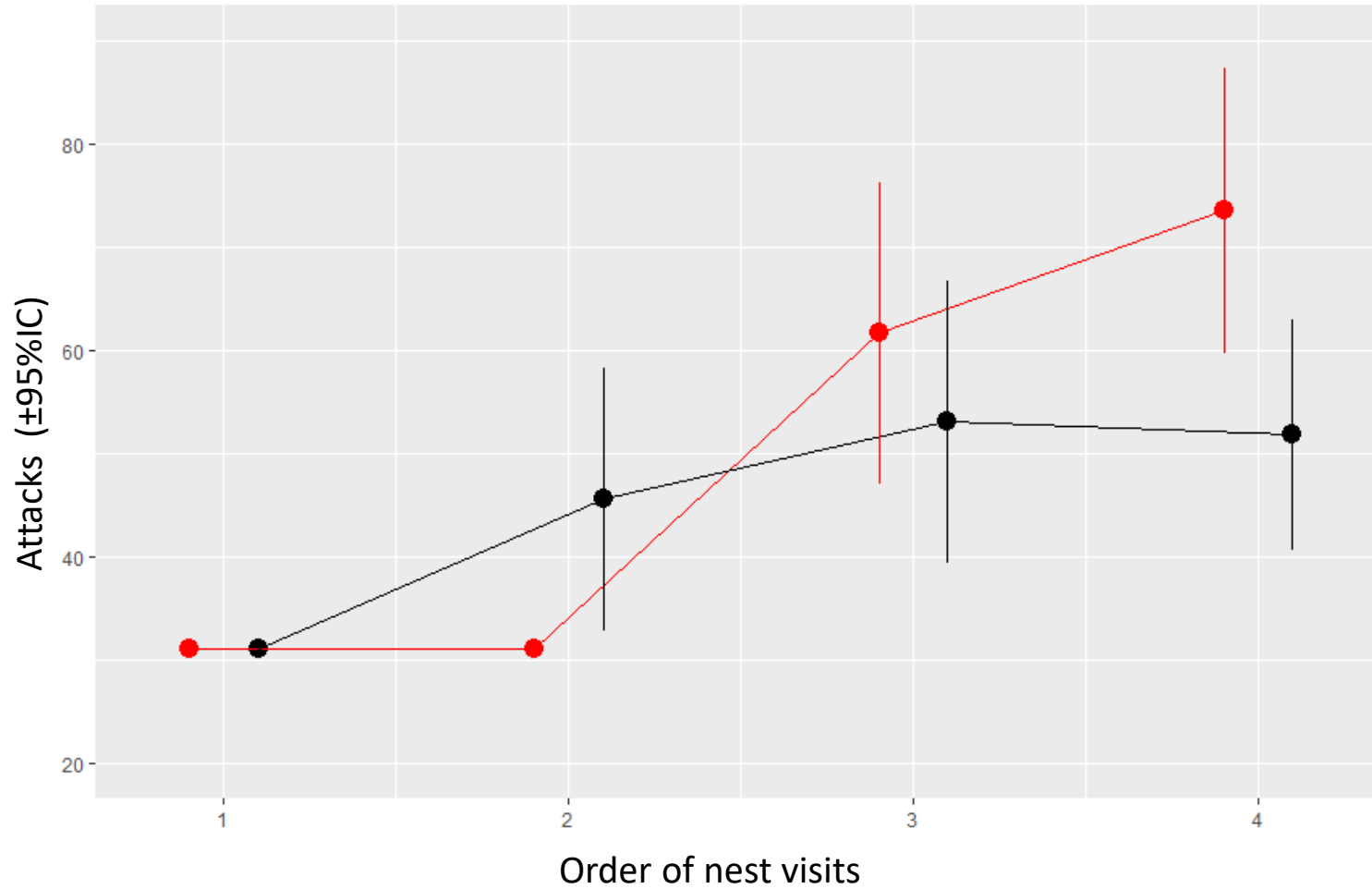


La conclusion en orange n'est pas ce qu'on voit: ça augmente à partir de la 2eme visite et non après. Peut-on dire augmente durant la 2^{ème} visite?

Increase of movements after 2nd nest visit in Group A



PC1 Attack behaviours



Groupe A



Groupe B



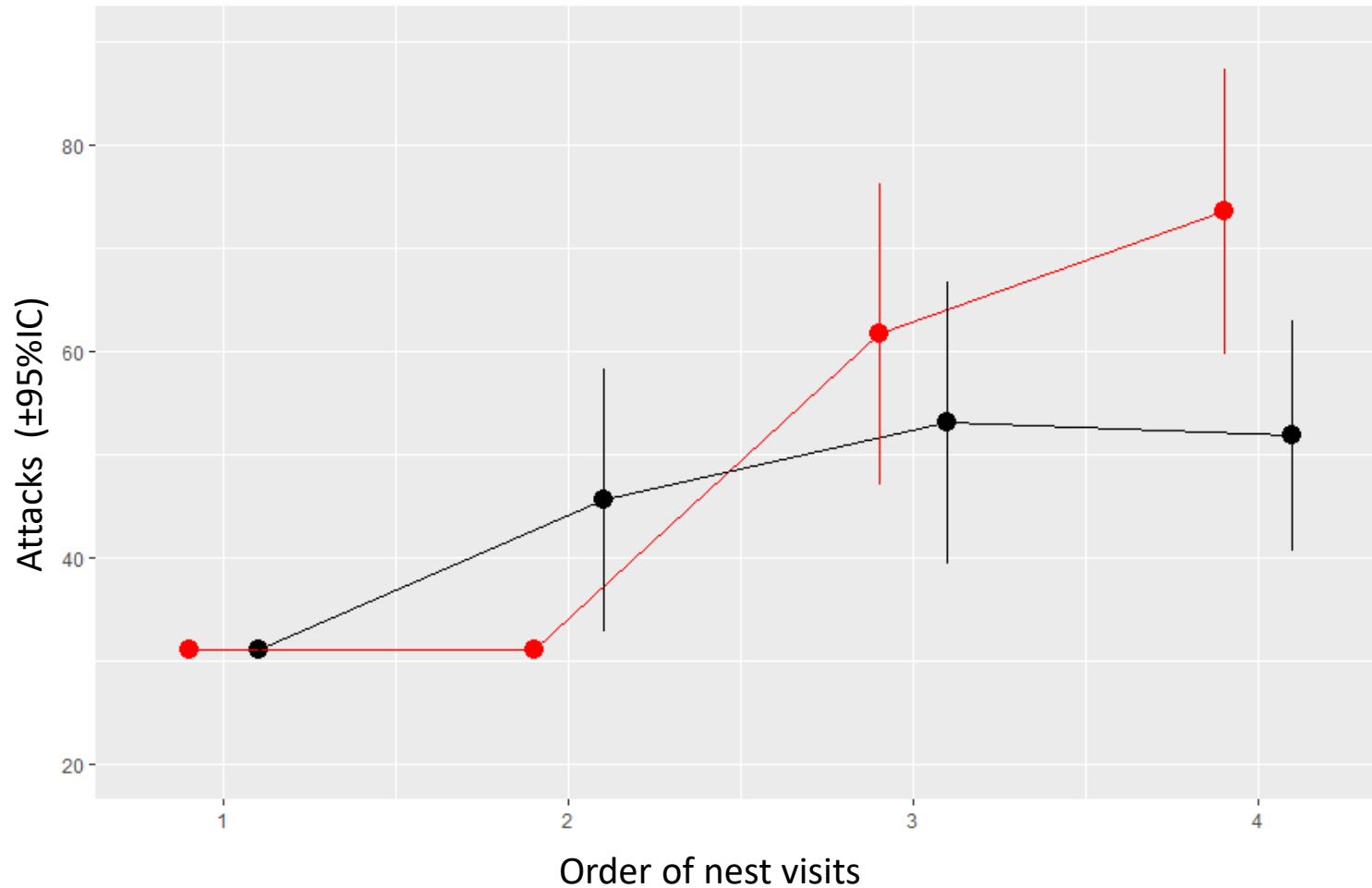


PC1 Attack behaviours

Groupe A



Groupe B



More attacks after 2nd nest visit in Group A

Results

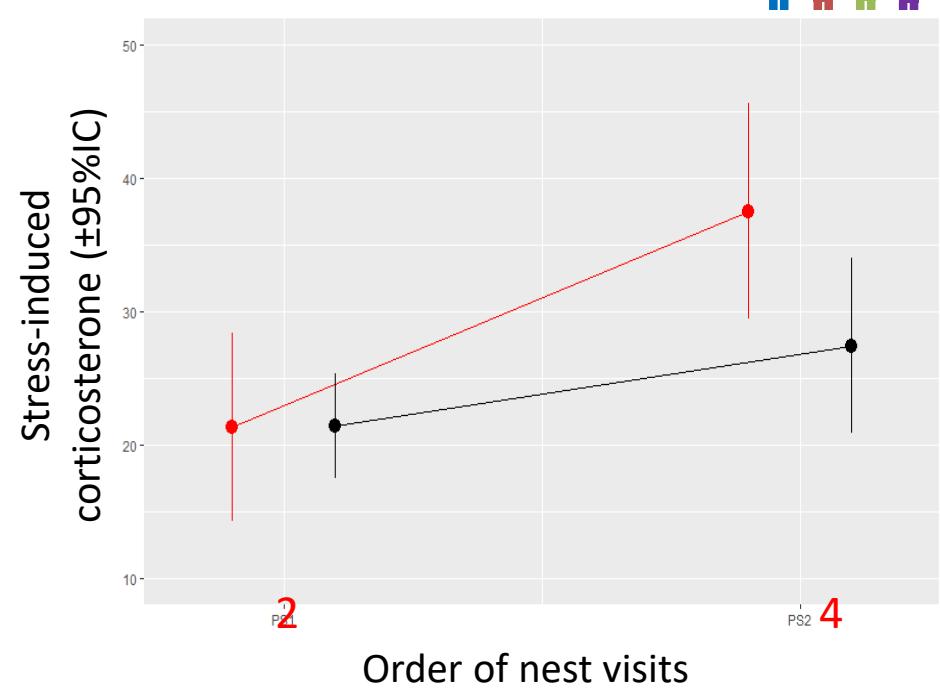
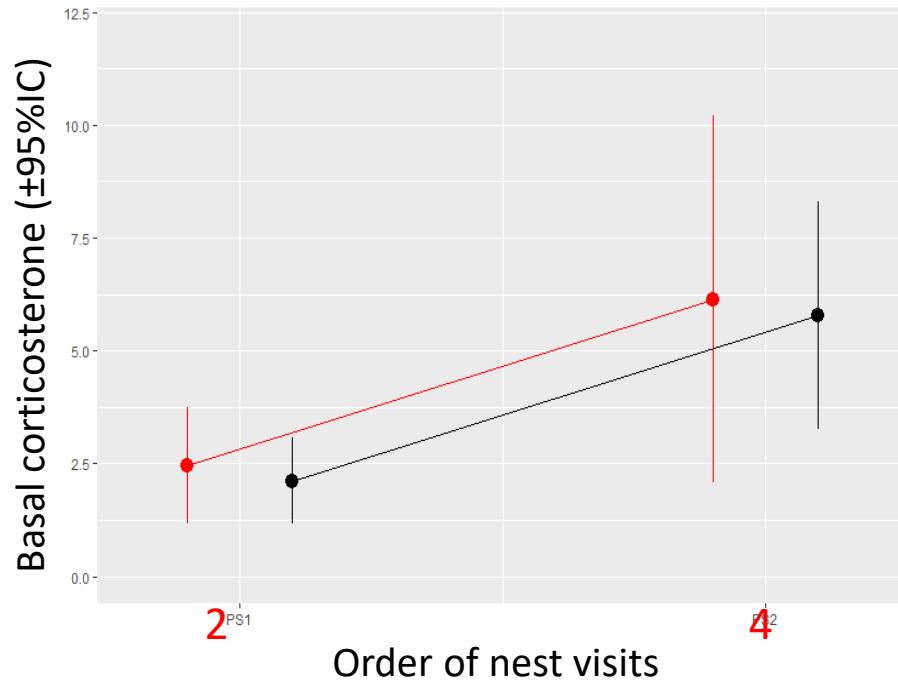


Basal and stress-induced corticosterone

Groupe A



Groupe B



Mettre 2 et 4 permet de se référer aux numéros de visites de ta dia 16

Results

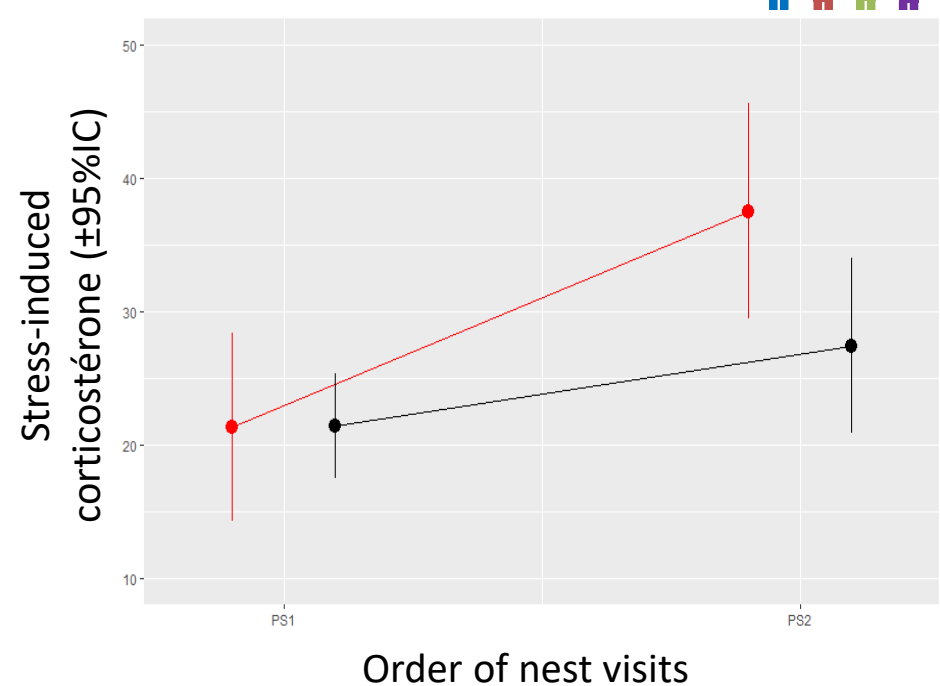
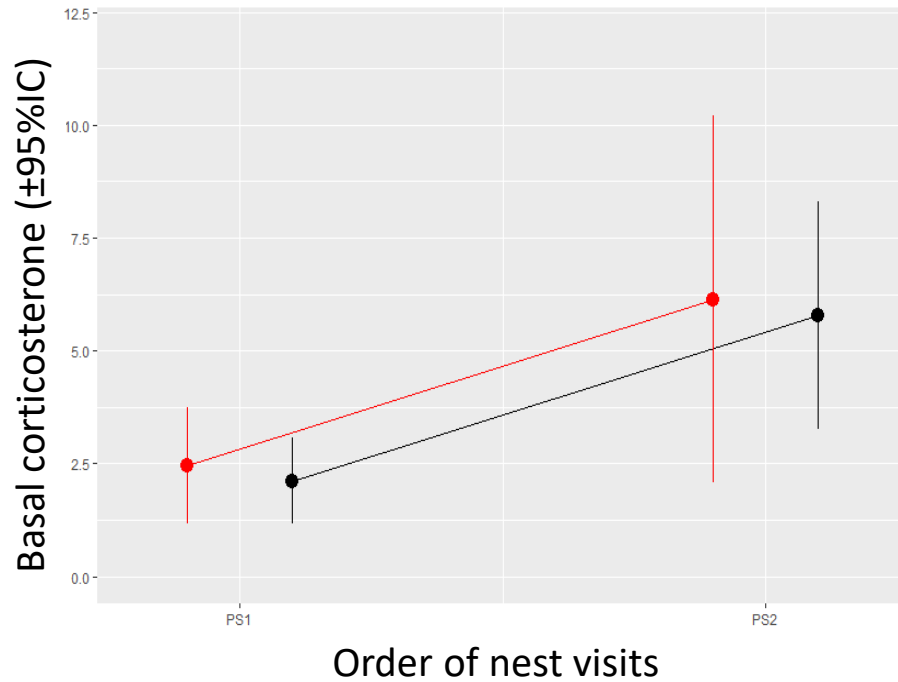


Basal and stress-induced corticosterone

Groupe A



Groupe B



Higher increase of stress-induced in Group A



Different responses depending on the identity of experimenters

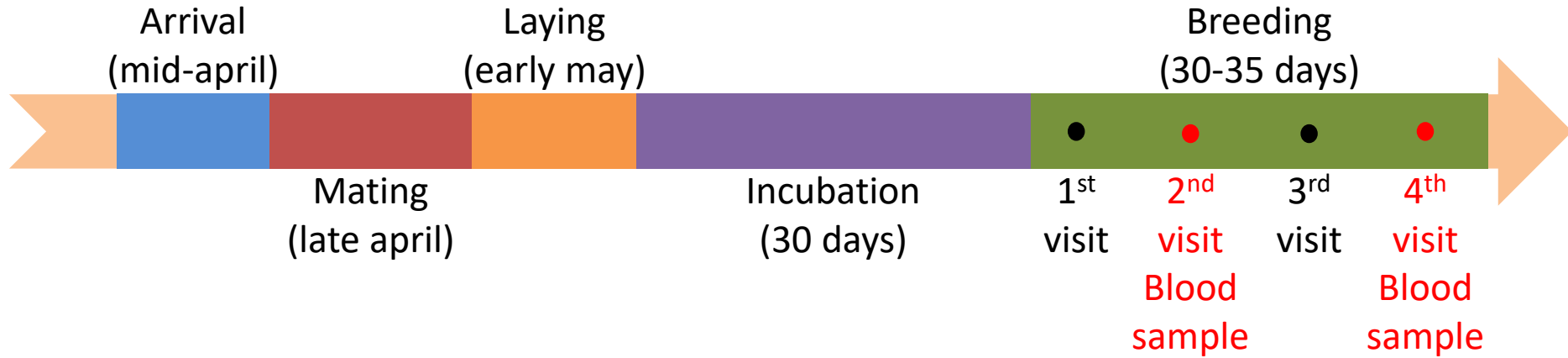
Group A 

- Higher responses to human, more aggressive
- More movements when approaching the nest and handling
- More attacks with beak and claws

Discussion



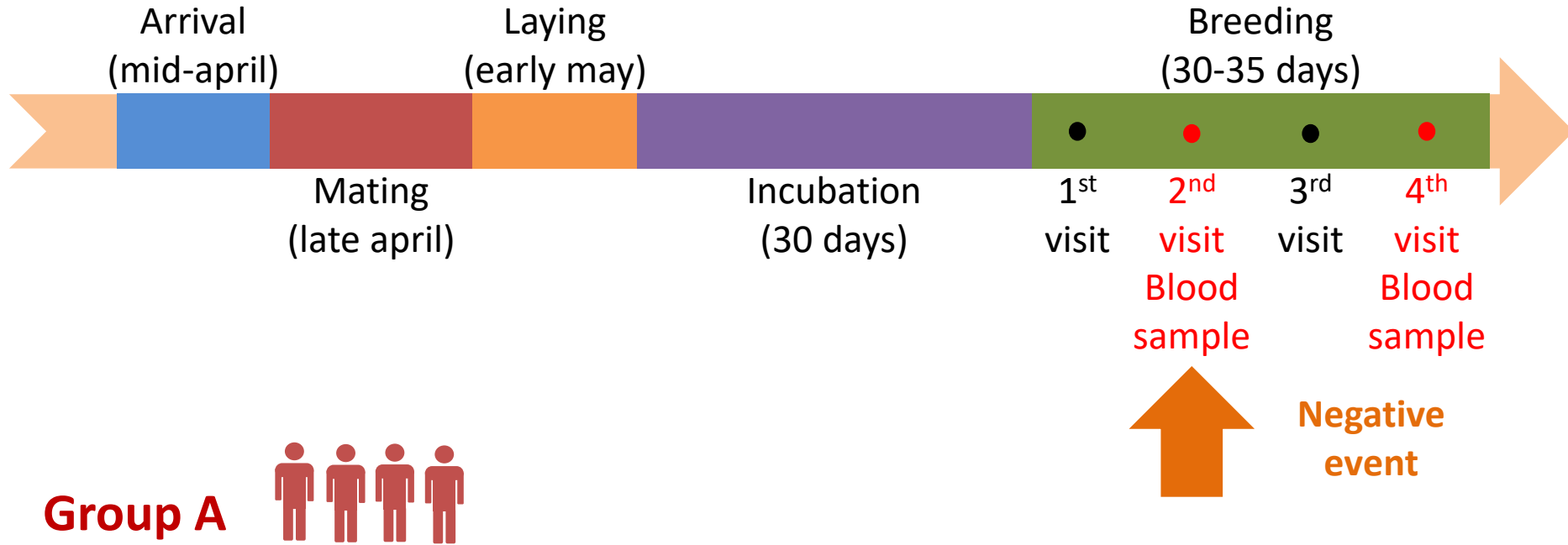
Phenology:



Discussion



Phenology:

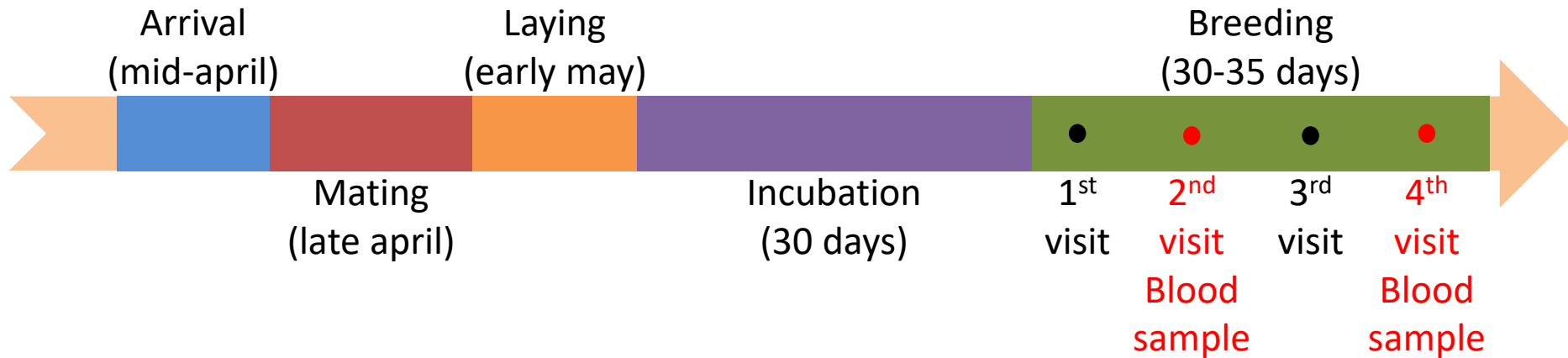


- Higher stress-induced corticosterone

➔ More stressed



Phenology:



Hypothesis:

- Recognition of experimenters?
- Association with negative stimulus (reinforcement?)

➔ Pre-exposure to stimulus

➔ High cognitive capacities

Conclusion



Repeated interactions and same experimenters

- Impacts on behaviour and stress
- Individuals more aggressive and stressed



Conclusion



Repeated interactions and same experimenters

- Impacts on behaviour and stress
- Individuals more aggressive and stressed



Implications for future studies and monitoring

- Effects to be taken into account
 - Studies on personality
 - Human tolerance and survival



Thanks for your attention

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