In cooperative breeders, reproduction is highly skewed toward dominant individuals. Thus, dominant male’s reproductive success depends on:

- number of young sired
- dominance tenure length

Subordinates can increase their direct reproductive success by:

- performing extra-pair paternity (EPP)
- becoming dominant

→ Conflict between dominants and subordinates

Hypothesis: The presence of sexually mature male subordinates decreases dominant’s reproductive success.

### Methods

#### Study site

Natural population in the French Alps, studied since 1990

#### Statistical methods

Survival analyses, using Cox model with time dependent data

#### Hazard ratio

- Dominants: reproductive couple
- Subordinates: sexually mature adults
- Pups of the year

### Results

#### Number of sexually mature helpers

- Increasing risk to lose paternities
- Increasing risk to lose dominance
- Decreasing body mass

#### Extra-pair paternities

- Probability of monopolization of reproduction
- Time at dominance (years)

Hazard ratio = 2.16 [CI95%: 1.23-3.79] 
$\beta = 0.77 \pm 0.29, z = 2.68, P = 0.007$

N = 183

#### Dominance tenure

- Probability of monopolization of reproduction
- Time at dominance (years)

Hazard ratio = 1.36 [CI95%: 1.04-1.77] 
$\beta = 0.31 \pm 0.13, z = 2.31, P = 0.021$

N = 152

#### Body mass

- Residual body mass (g)
- Time at dominance (years)

Males losing dominance have lower body mass than males staying dominant

### Conclusion

→ The presence of more than one sexually mature helpers have strong consequences on dominant's reproductive success.

Dominant males with a high number of helpers are more likely to lose the control over both paternity and dominance, one possible mechanism being that the presence of more than one competitor decrease the dominant’s body mass and thus, its competitive abilities.