Management and conservation of capercaillie's habitat (*Tetrao urogallus aquitanicus*) in Catalonia

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Introduction

Due to its high habitat demands, the capercaillie is considered an **umbrella species**, and its preservation ensures the survival of other animal species
Nowadays capercaillie is an **endangered** species due to his habitat alteration caused mainly by human actions and climate change. For this fact, his preservation and management is primordial to reverse his unstable situation.

Capercaillie's habitat

- Mature and heterogeneous conifer forests (*Pinus uncinata*)
- Canopy cover between 40-70%
- Shrub cover between 50-80%
  - *Vaccinum myrtillus*
  - *Rhododendron ferrugineum*
  - *Arctotaphylos uva-ursi*

Distribution

Terrestrial bird , of the family of Tetraonida, present in the northern hemisphere

- 12 subspecies, two of them are present in Spain.

In Catalonia

Tetrao urogallus aquitanicus

in 2012 was estimated a population of 800 - 940 individuals and 224 lek sites.

Specific habitat and food requirements to the period of year

Total number of censed males per county

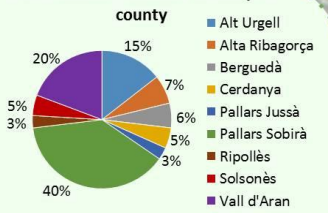


Figure 1: Total number of males registered per county. Source: Canut *et al.*, 2006

Conservation status

- **Vulnerable**→ National Catalogue of Endangered Species
- **In Danger**→ Red Book of Birds of Spain

Objectives→ review of actions to improve capercaillie's habitat in Catalonia and analysis of census data from the period 2008-2014 in Pallars Sobirà to relate changes in demographic parameters with other variables such climatology or actions performed.

Recompilation of capercaillie's threats

1) Climate ⇨ Greater reproductive success when Tº increases sharply in April ⇩ + food for hens

Effect of climate change on plant phenology ⇨ Forest management designed to **increase the resistance** of forests to climate change

2) Habitat
- Fragmentation→ commercial forestry and other human activities (ski, electrical wiring, forest tracks…etc)
- Abandonment forestry practices → forest densification

Loss of potential habitat for the species

⇨ **Gallipyr Project (2009-2010)** (Camprodon , 2013)
- Reduce tree density
- Strengthen blueberry's presence by reducing rhododendron coverage
- Environmental education

⇩ **Orri 2**

3) Predation ⇨ Increased populations of predators→ *Sus scrofa, Vulpes vulpes, Martes martes*

Decreased productivity and reproductive success of the species

⇨ **Predator control (2008-2010)** (Fernández-Olalla, 2011) ⇨ **Orri 1**

4) Ungulates ⇨ Increased population of ungulates → *Sus scrofa, Cervus elaphus, Capreolus capreolus*

Competition for food resources and habitat transformation

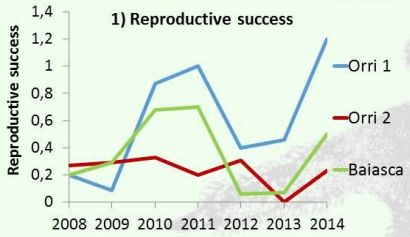
⇨ **Exclusion plots** (under study) (Fernández, 2013)

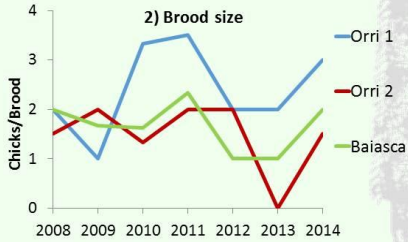
Performed actions in Catalonia

Censed populations of Pallars Sobirà

Map 1: Situation of the plots with presence of capercaillie analysed. Source: Cartography ICC.

Results and discussions





Figures 1 and 2: *Variation in the reproductive success of capercaillie (1) and brood size (2) in three areas of Pallars Sobira during the period 2008-2014. Source:DARP*

2008-2009	Commencement of interventions→ predator control and habitat improvement	
From 2010	↑ reproductive success in all zones [Fig. 1]	❑ Low increment in April/March Tº [Fig 3.] ❑ Orri 1→ predator control ❑ - predators in general ❑ Orri 2→ more capercaillie's presence in clearings
2011	Maximum brood size in all zones [Fig. 2]	❑ Maximum increase Tº April/March [Fig. 3]
2012	General ↓ of reproductive success and brood size (except Orri 2) [Fig. 1 and 2]	❑ No increase in April/March Tº (Fig 3.) ❑ Drought→ Poor conditions of blueberry Orri 2→ more resistant due to shrub treatment
2013	↓↓ reproductive success in Orri 2 [Fig 1]	❑ Opening clearings → more ungulates presence (boar) [Fig. 4]→ eggs depredation

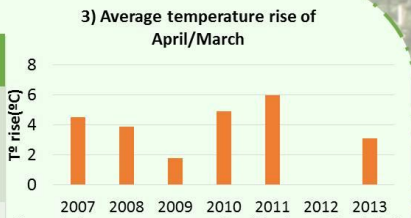


Figure 3 Average temperature rise of April over March during the period 2006-2013 in the meteorological station of Sort. Source: SMC

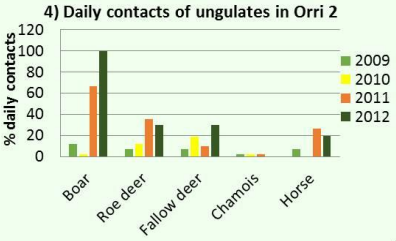
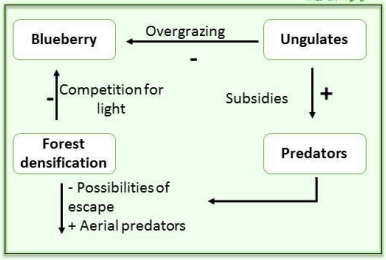


Figure 4: Variation in the % of daily contacts in different species of ungulates in Orri 2 during the period 2009-2012. Source: Camprodon, 2013.

Conclusions



Some of the **actions** could reverse or even temporarily stop the species decline, but the majority of them lose their long-term efficiency if not continued and can cause possible indirect repercussions on the capercaillie by potentiating another harmful factor.

Management objectives
- ✓ Combined with other biodiversity
- ✓ Act on the original causes of the decline
- ✓ Take into account all the direct and indirect relations that establishes with its environment

- ❑ Minimize the effects of climate change and humans alterations
- ❑ Promote mature and heterogeneous forests

Need of permanent or continued actions

Ecological costs? **Economical costs?**

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- Canut, J., Martínez, R., García, D. 2006. *Resultats dels censos de gall fer a Catalunya –any 2005*. Departament de Medi Ambient i Habitatge. Generalitat de Catalunya.
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