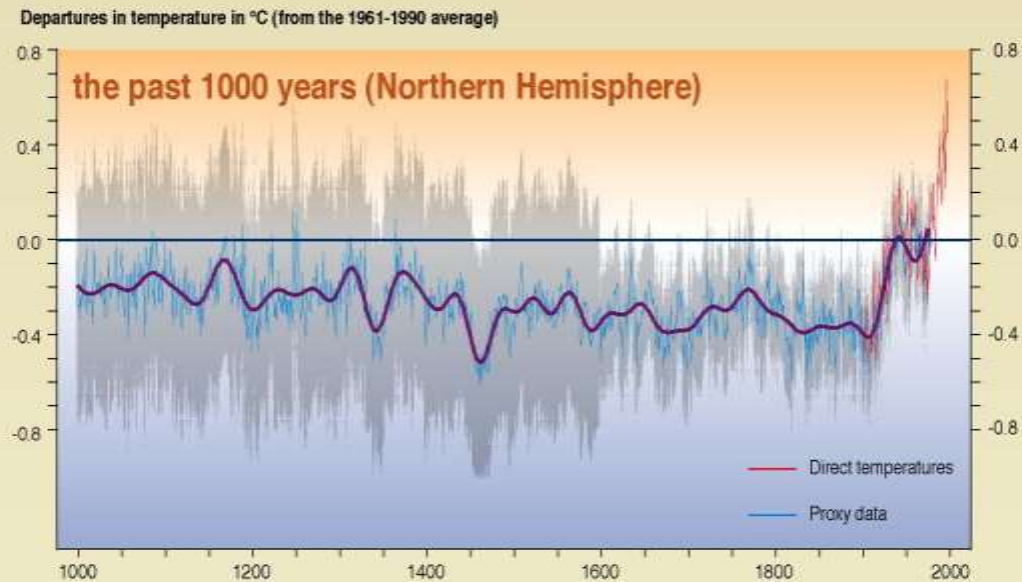
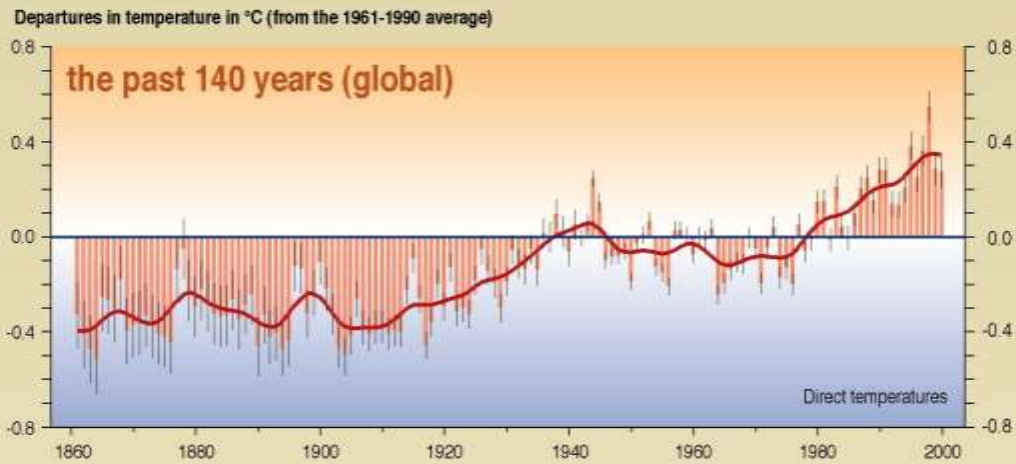


# Uccelli alpini: l'uso dei modelli previsionali per la ricerca e la conservazione

Dan Chamberlain  
Università di Torino



## Variations of the Earth's surface temperature for...



SYR - FIGURE 2-3





# BIODIVERSITY





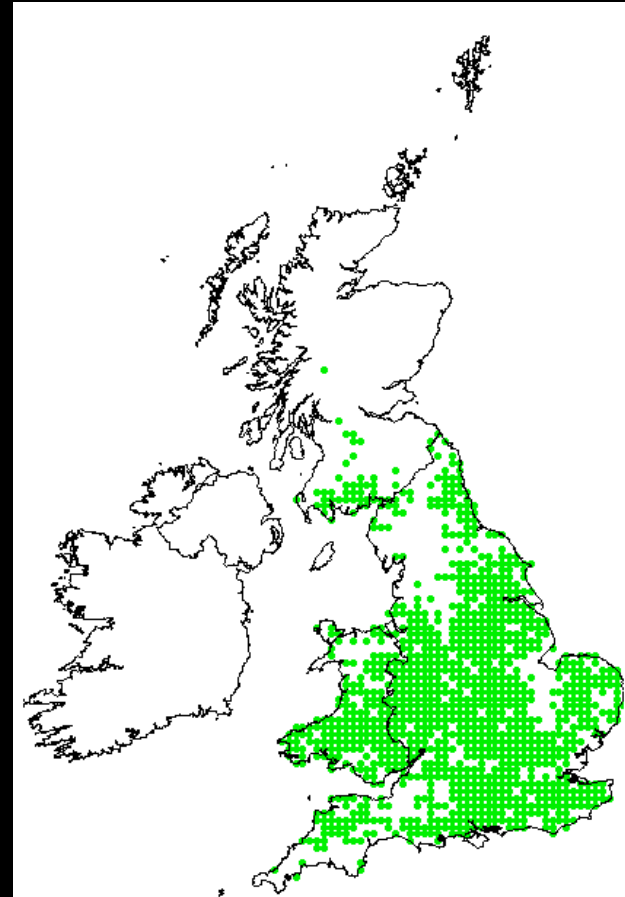


<http://ocean.nationalgeographic.com/ocean/critical-issues-sea-level-rise/>

# L'Approccio Modellistico

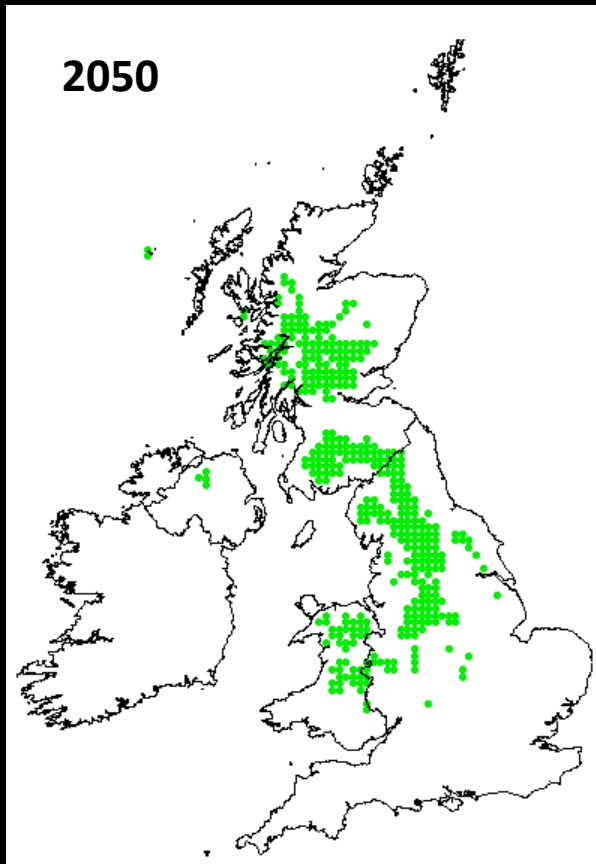
- **Capire la relazione statistica tra un organismo ed il suo ambiente**
- **Usare quella relazione per ottenere previsioni sul destino di quell'organismo quando l'ambiente cambierà**

# L'Approccio Modellistico



**Cincia bigia alpestre**  
***Parus montanus***

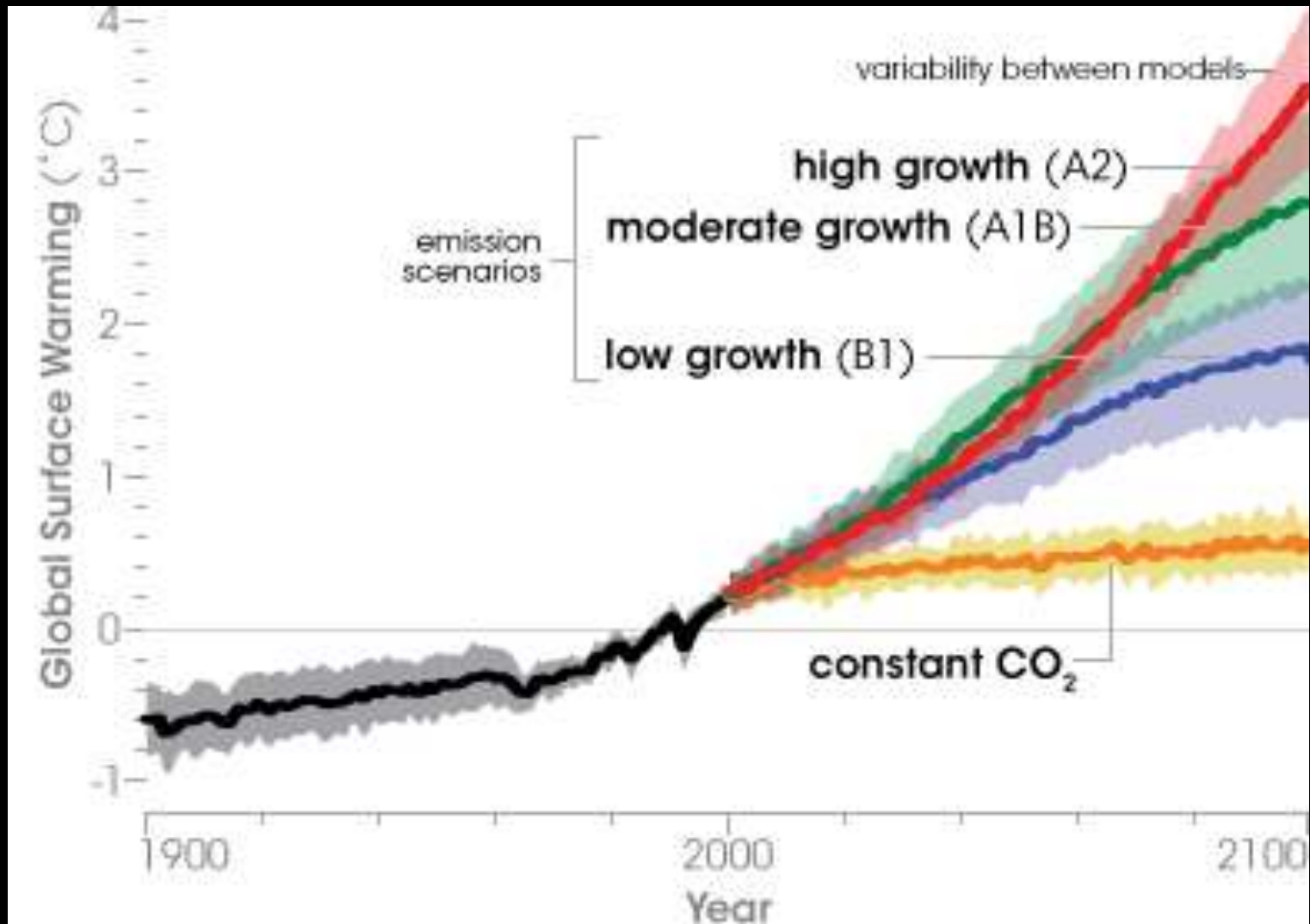
# L'Approccio Modellistico



- C'è una relazione tra il clima (temperatura e precipitazioni) e la distribuzione della Cincia Bigia alpestre
- Possiamo usare le previsioni sui cambiamenti climatici futuri per stimare la futura distribuzione della Cincia Bigia alpestre sulla base della relazione attuale



# Scenari del clima futuro



# A Climatic Atlas of European Breeding Birds

Brian Huntley  
Rhys E. Green  
Yvonne C. Collingham  
Stephen G. Willis







Futuro – nuove specie nidificanti!!

e.g. Nibbio bianco

Poiana codabianca

Monachella nera

Canapino pallido

Canapino levantino

Picchiotto rupestre

Averla maggiore

Ortolano grigio



Futuro – perdite!!

Pernice bianca

Gufo comune

Civetta capogrosso

Spioncello

Sordone

Bigiarella

Passera scopaiola

Venturone



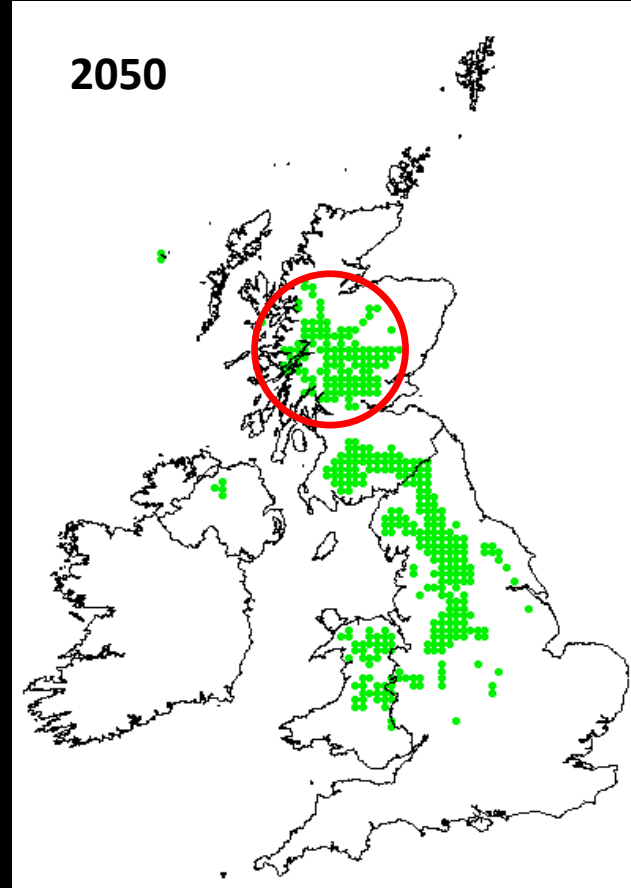




# L'Approccio Modellistico

Problemi:

- 1. Habitat**
2. Trasferibilità
3. Incertezza
4. Meccanismi



**Cincia bigia alpestre**  
***Parus montanus***

# L'Approccio Modellistico

Problemi:

1. Habitat
- 2. Trasferibilità**
3. Incertezza
4. Meccanismi

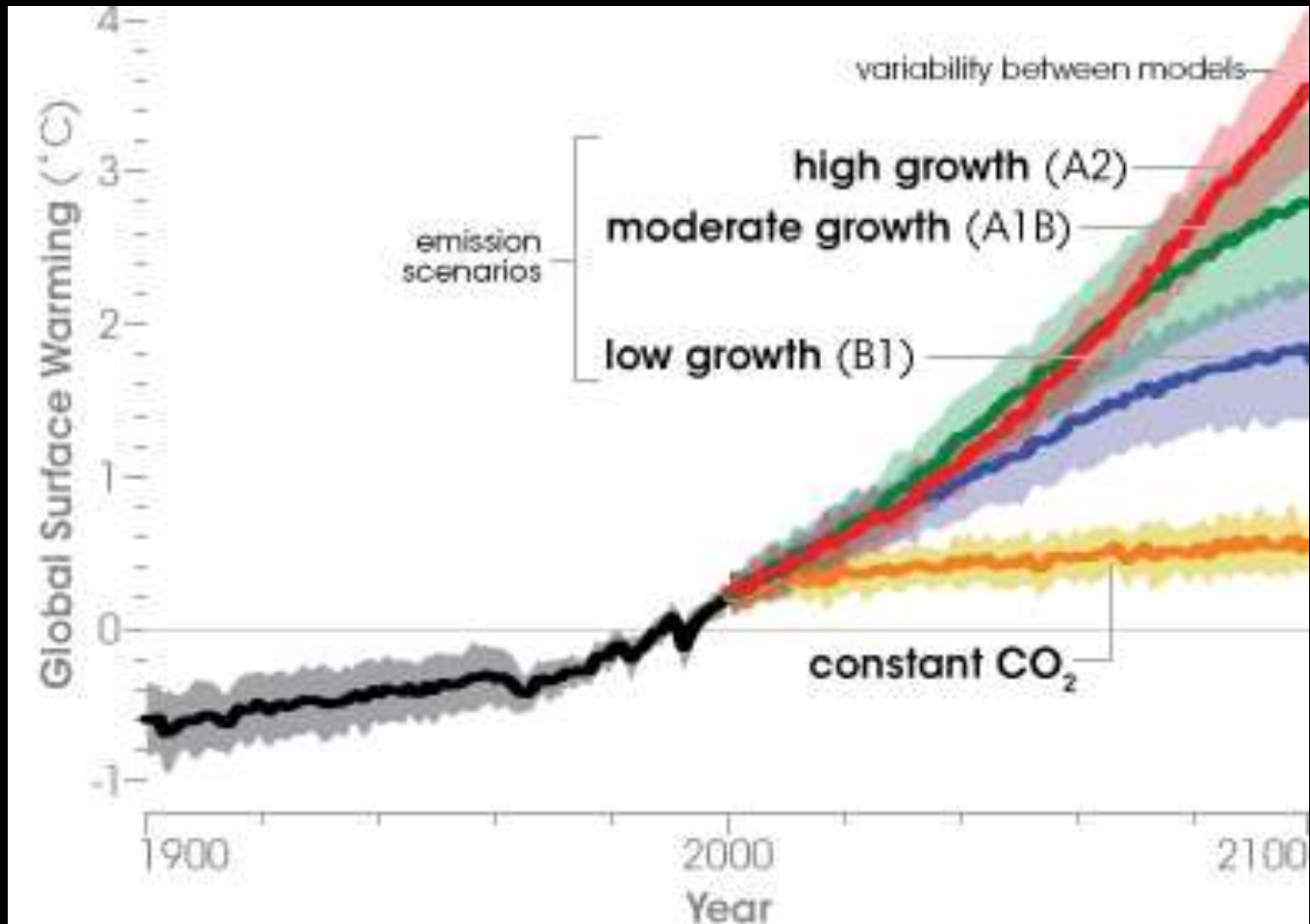


# L'Approccio Modellistico

Problemi:

1. Habitat
2. Trasferibilità
- 3. Incertezza**
4. Meccanismi

# Scenari del clima futuro



# L'Approccio Modellistico

Problemi:

1. Habitat
2. Trasferibilità
3. Incertezza
- 4. Meccanismi**



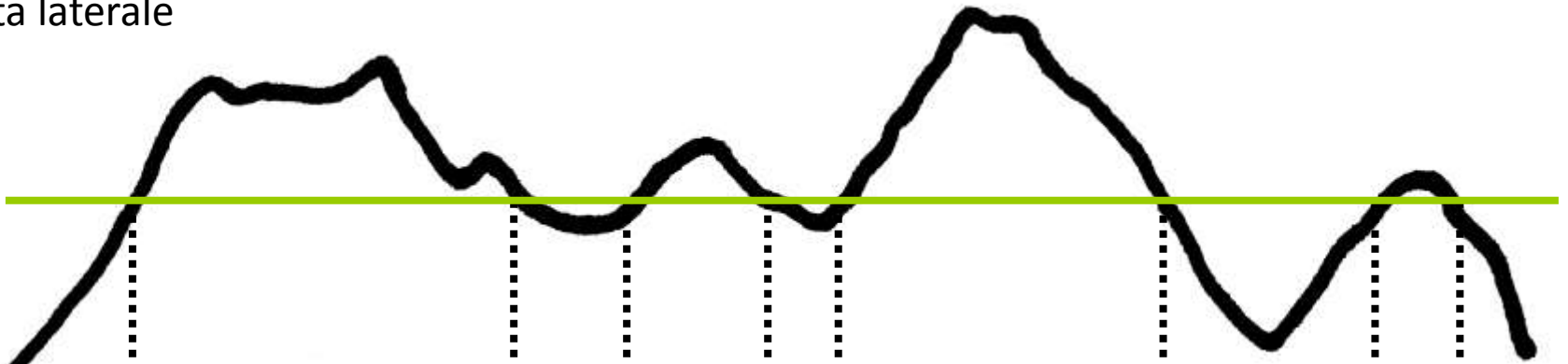




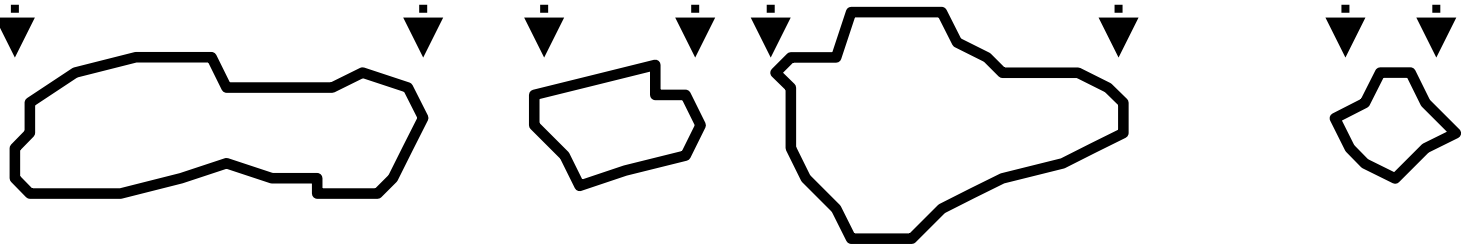


# Cresta alpina con limite della foresta

Vista laterale

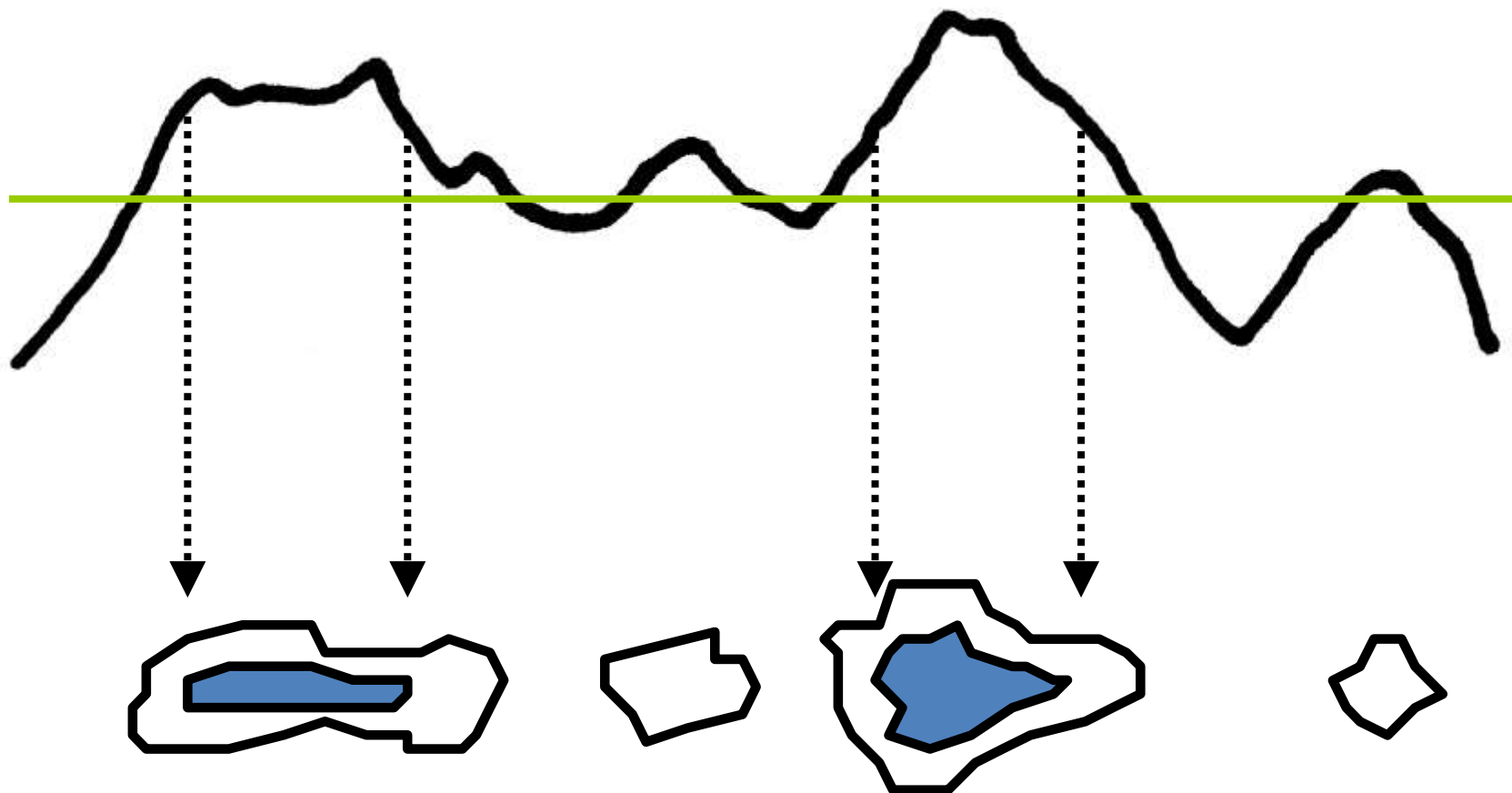


Vista dall'alto



**Aree aperte sopra il limite della foresta = 'isole'**

**Il clima piu' caldo causa un avanzamento del limite della foresta**



**Di conseguenza, le isole si rimpiccioliscono – e alcune scompaiono direttamente**

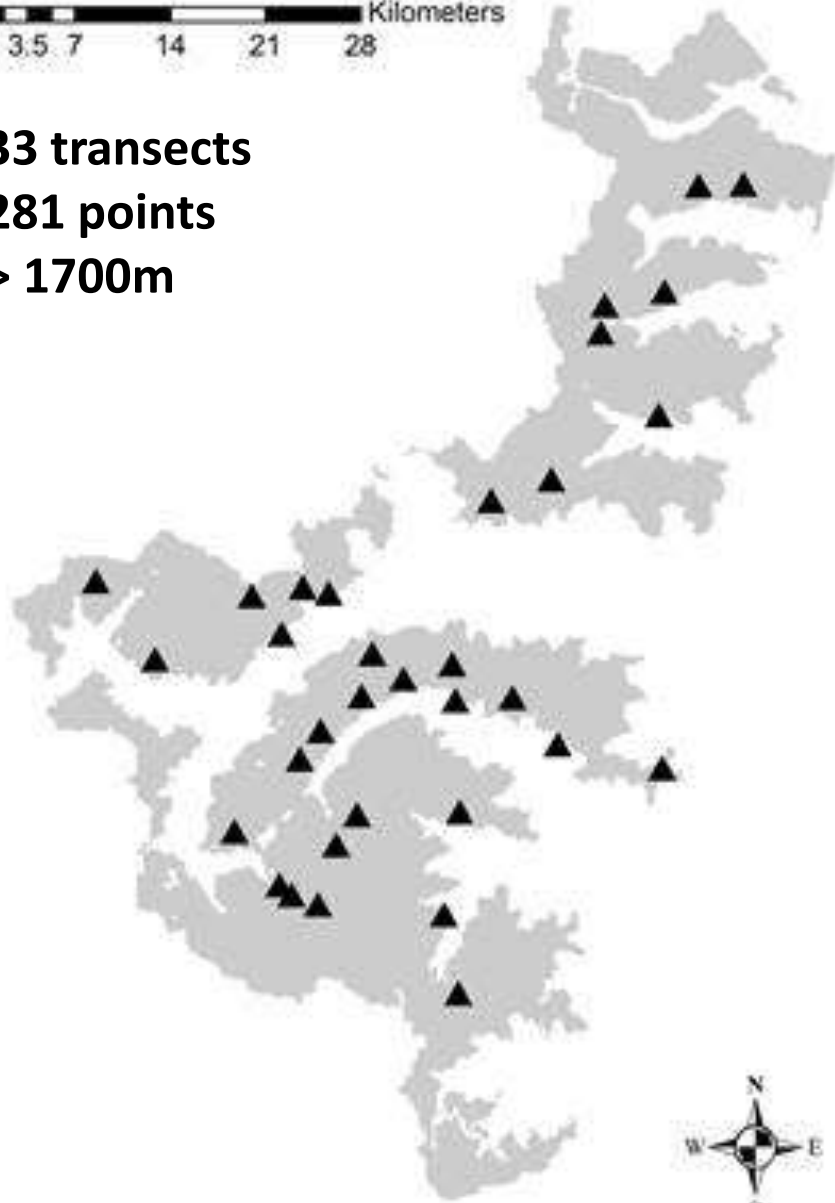


# 1. HABITAT

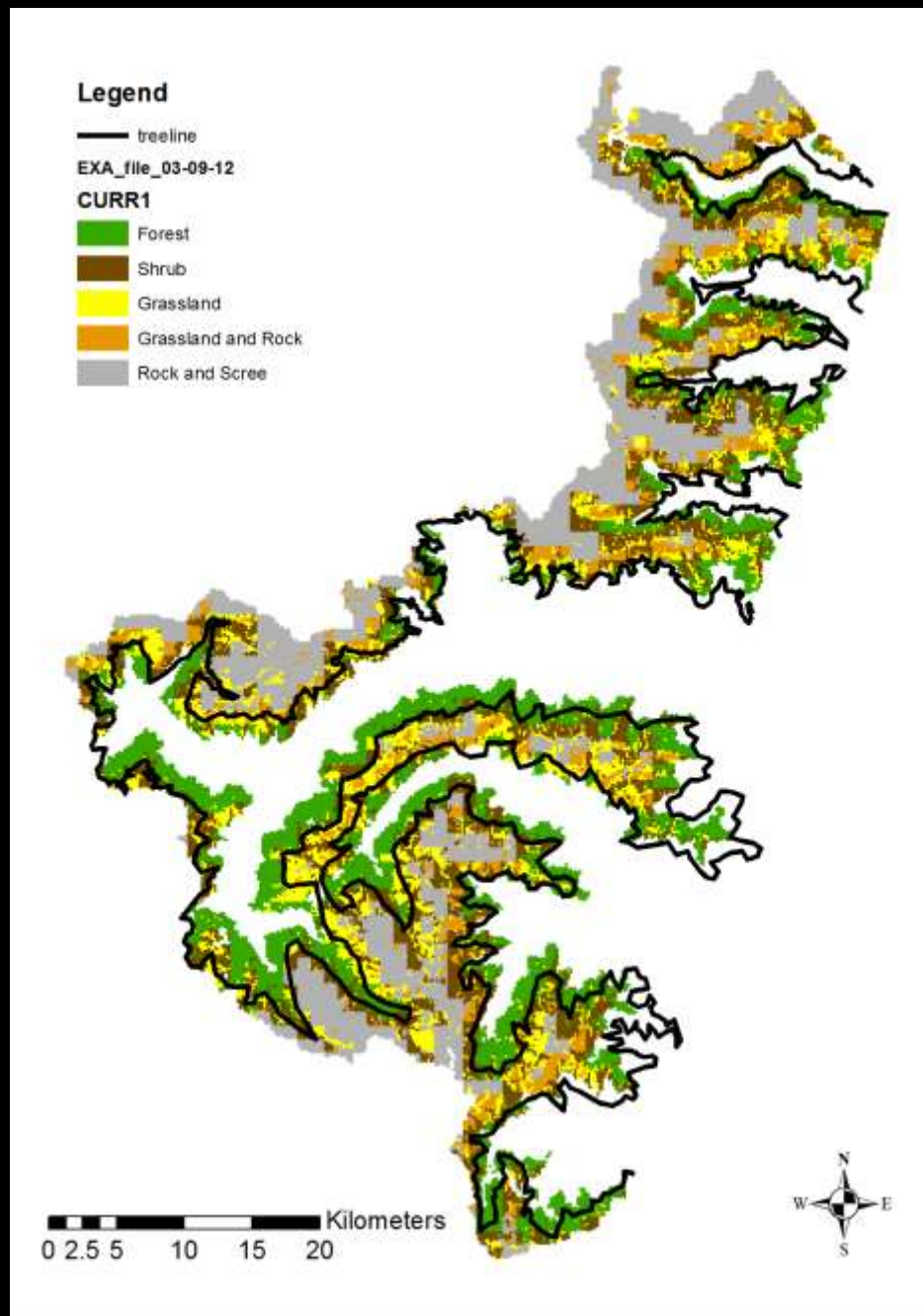


0 3.5 7 14 21 28 Kilometers

**33 transects**  
**281 points**  
**> 1700m**



# (a) Habitat attuale





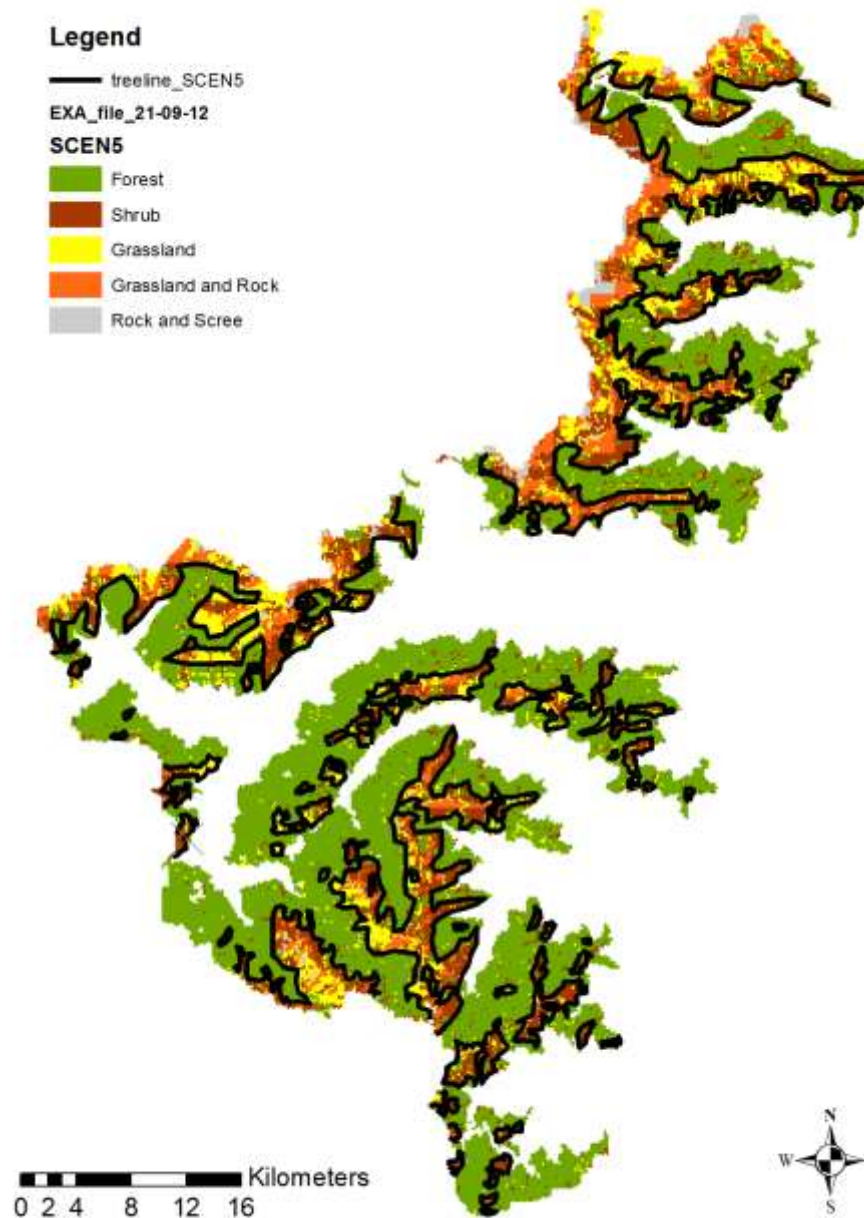
**Legend**

— treeline\_SCEN5

EXA\_file\_21-09-12

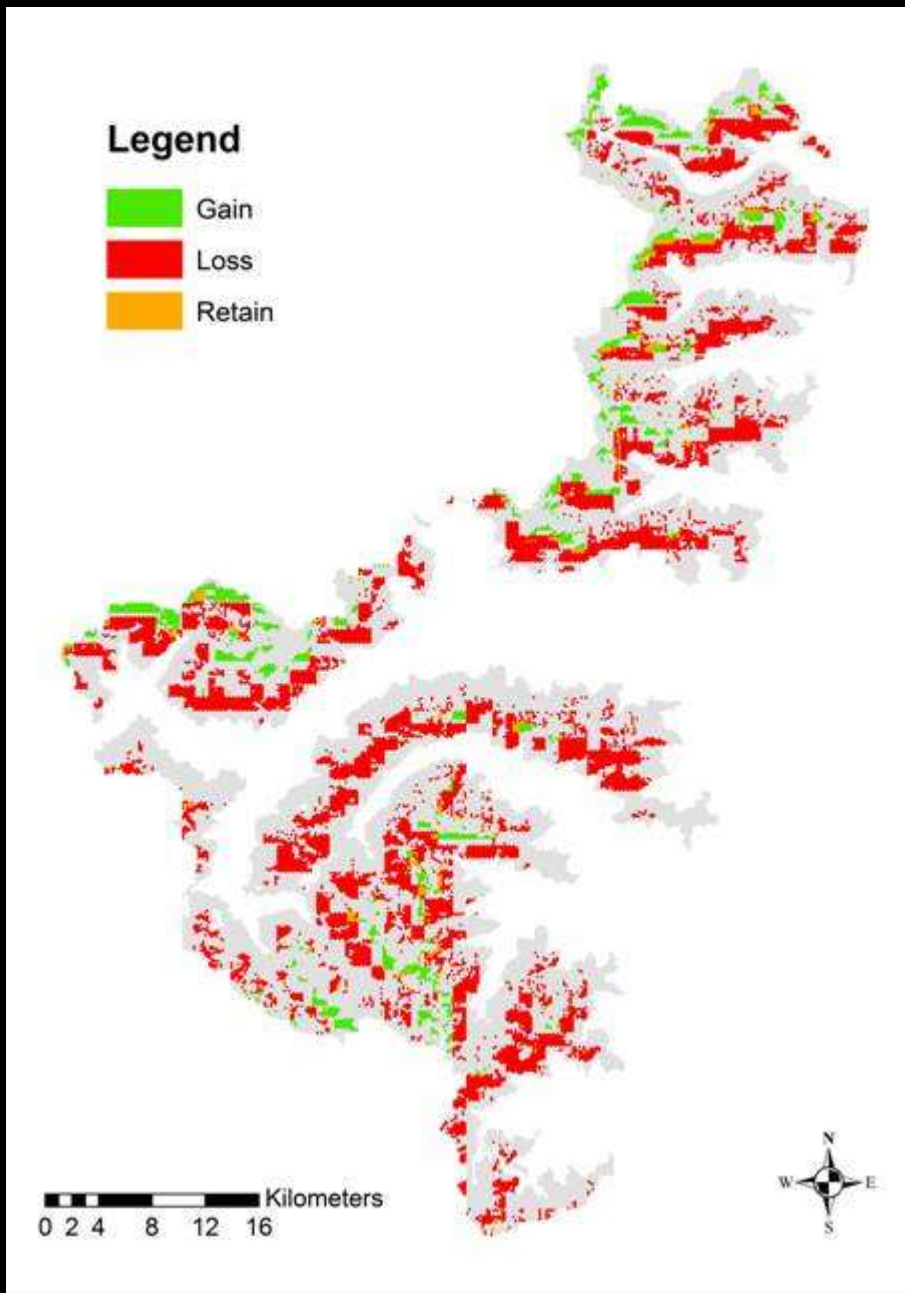
**SCEN5**

-  Forest
-  Shrub
-  Grassland
-  Grassland and Rock
-  Rock and Scree



**(b) Copertura del  
suolo prevista entro il  
2080**

# Cambiamento nella distribuzione dello spioncello entro il 2080



Chamberlain *et al.* 2013 *Biological Conservation*



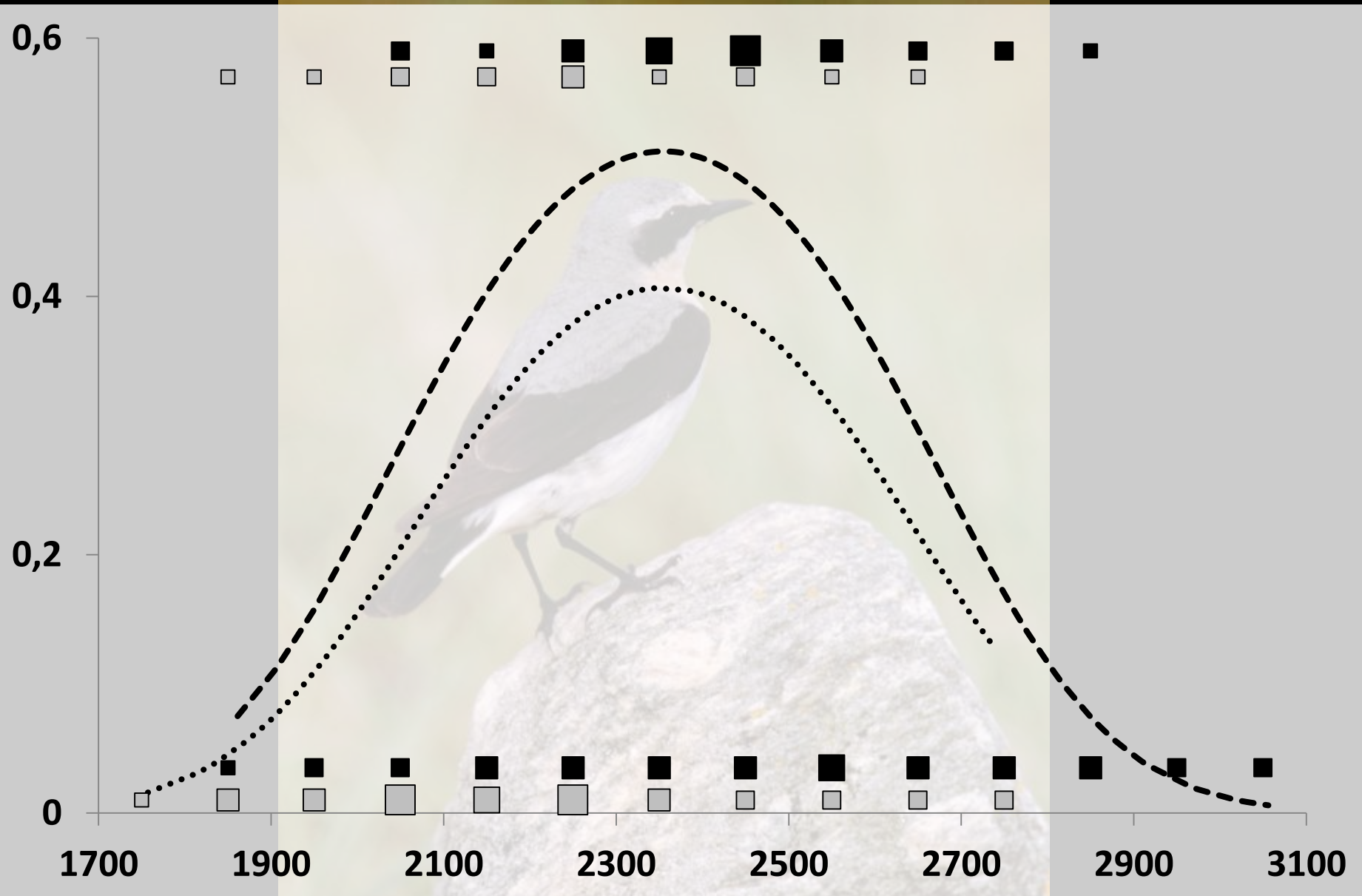
# 2. TRANSFERABILITÀ

A scenic view of a mountain range. The foreground shows a steep, rocky slope covered in green grass and small shrubs. In the middle ground, there are more rocky slopes and a valley with dense green forest. The background features high, rugged mountain peaks under a clear blue sky.

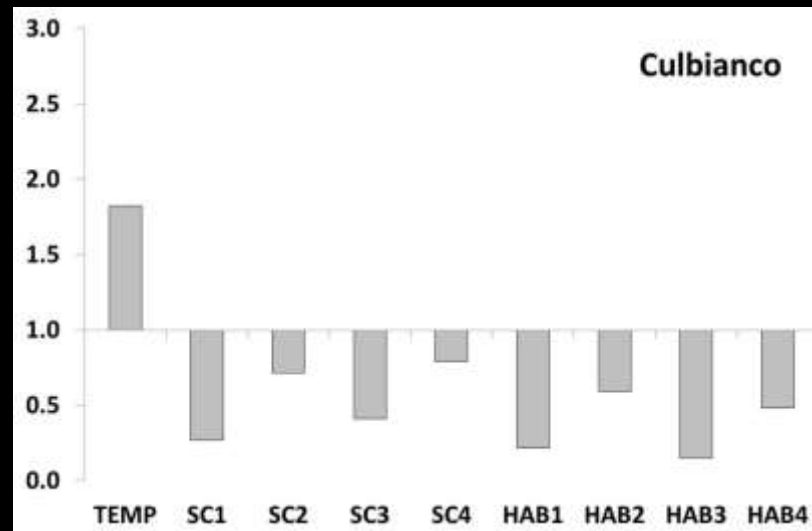
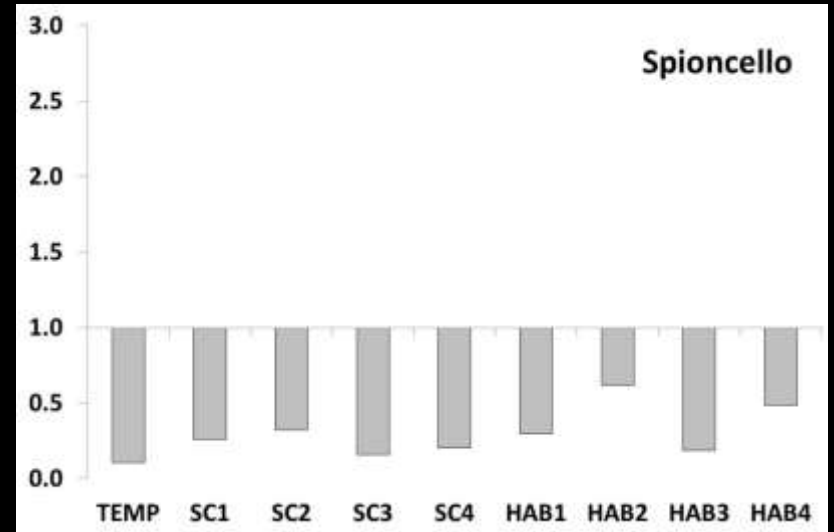
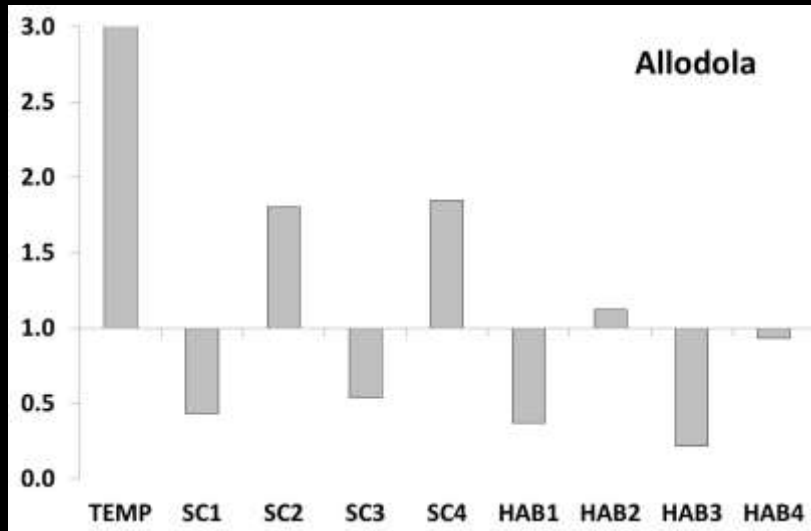
Chamberlain *et al.* 2016 *Oecologia* 181: 1139-1150.







# 3. INCERTEZZA





# Vincitori





# Perdenti



Chi lo sa?



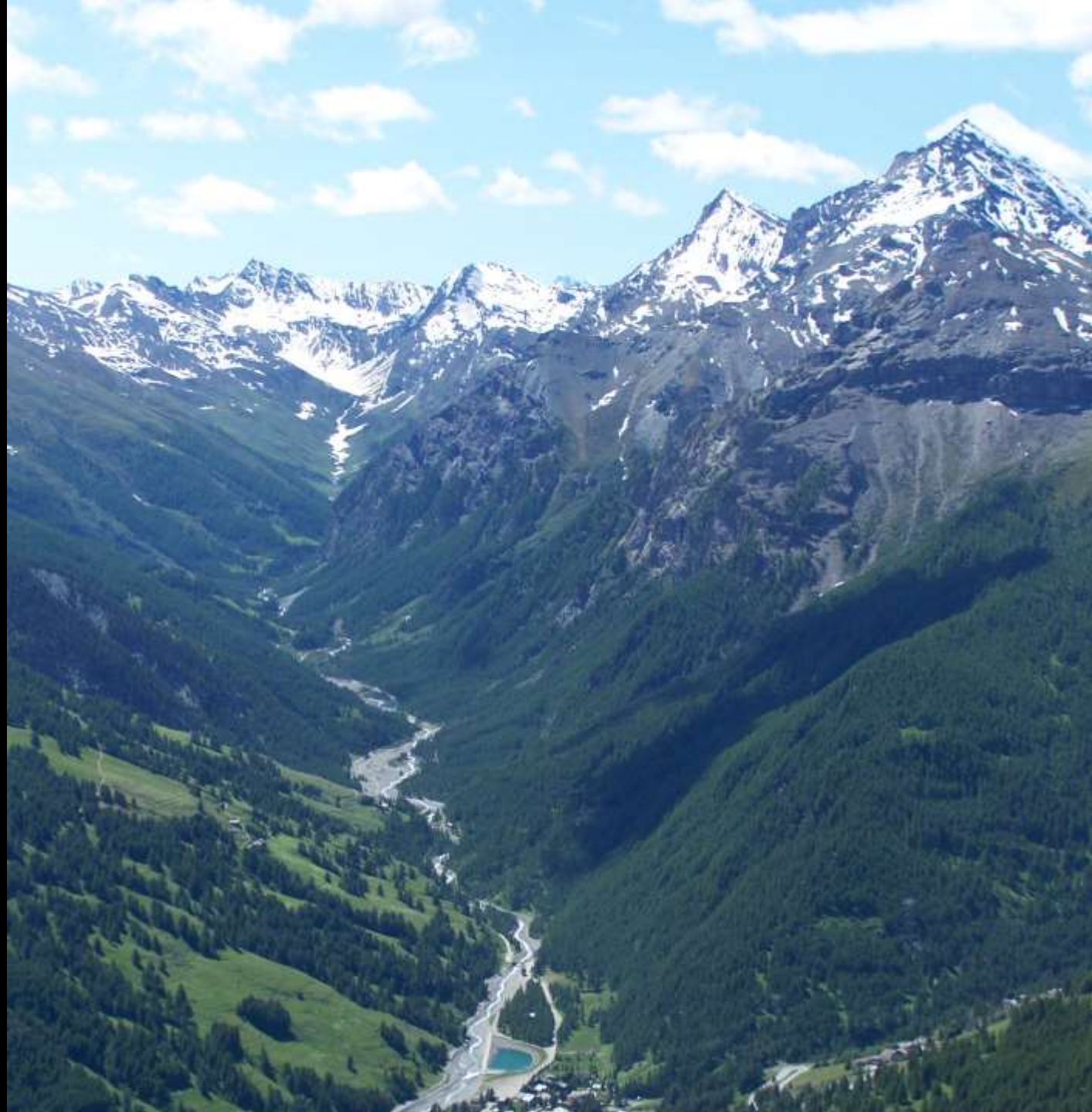
©RSPB



# 4. MECCANISMI



















©Susanne Jähmig



**1. Capire i meccanismi demografici alla base della distribuzione delle popolazioni di uccelli**

**2. Migliorare i modelli sulla distribuzione delle specie**

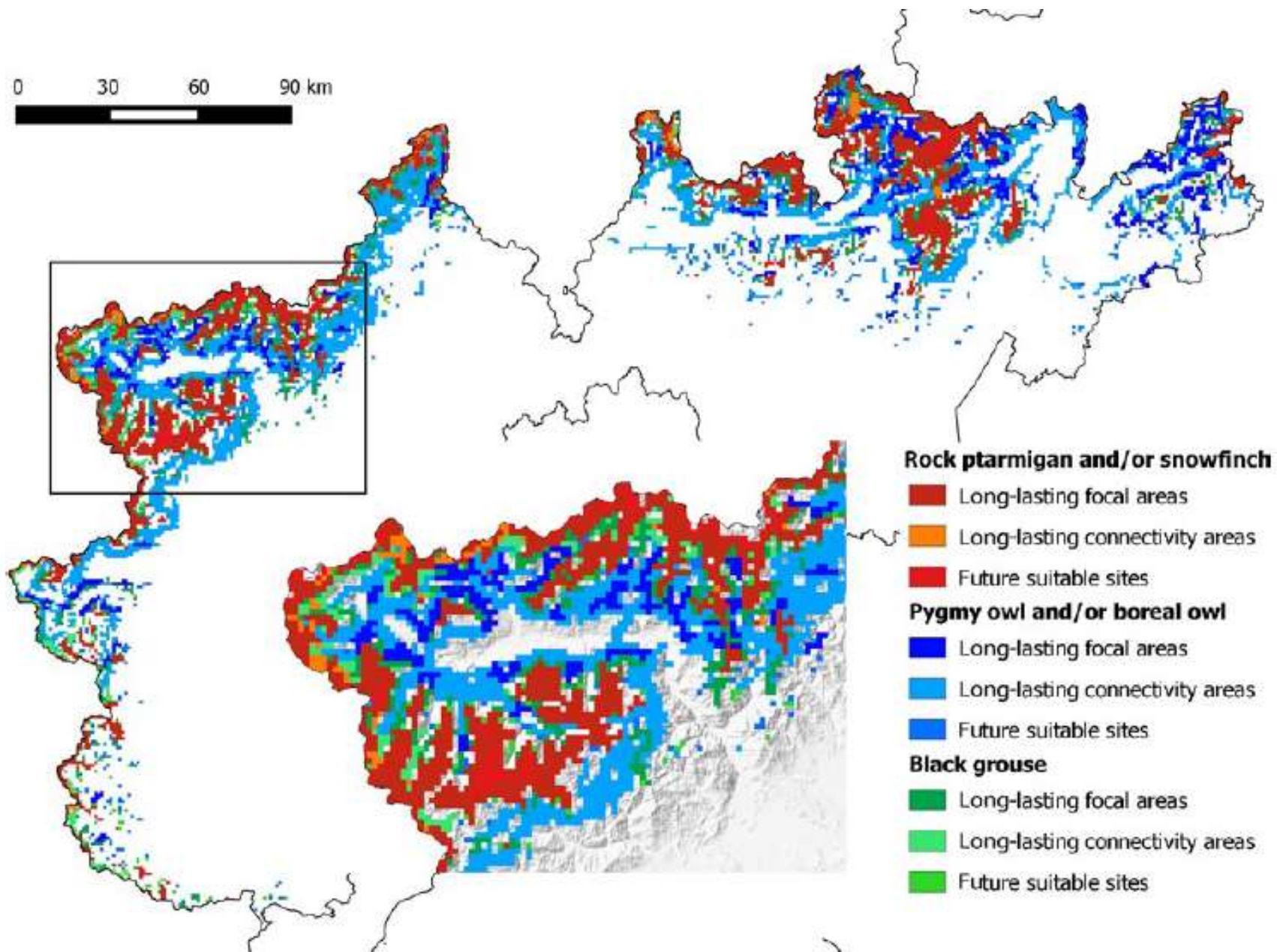
**3. Sviluppare strategie per gli interventi di gestione**





# I modelli di distribuzione delle specie: a cosa servono?

- **Identificare possibili minacce**
- **Orientare attività di ricerca e monitoraggio**
- **Identificare future aree di conflitto tra attività antropiche e fauna/flora selvatica**
- **Sviluppare strategie**





# Riepilogo

- I modelli di distribuzione delle specie sono uno strumento comunemente usato per tentare di prevedere gli effetti futuri del cambiamento climatico

- Un incremento di temperatura potrebbe causare una significativa perdita di distribuzione per gli uccelli alpini

- Dobbiamo essere consapevoli dei limiti alla base di questi modelli

- ...che possono però essere utili se applicati in modo appropriato!

- Ricerca e monitoraggio continui

# Grazie per la vostra attenzione

## **Università di Torino**

Antonio Rolando  
Enrico Caprio  
Susanne Jähnig  
Cristina Vallino

## **Museo di Trento**

Paolo Pedrini

## **Fondazione Lombardia per l'Ambiente**

Mattia Brambilla

## **Università di Pavia**

Giuseppe Bogliani  
Davide Scridel

## **Parco Val Troncea**

Domenico Roselli  
Luca Maurino



# Identifying key conservation threats to Alpine birds through expert knowledge

Dan E. Chamberlain<sup>1</sup>, Paolo Pedrini<sup>2</sup>, Mattia Brambilla<sup>3,4</sup>, Antonio Rolando<sup>1</sup> and Marco Girardello<sup>5</sup>

<sup>1</sup> Department of Life Sciences and Systems Biology, University of Turin, Turin, Italy

<sup>2</sup> Museo delle Scienze di Trento, Trento, Italy

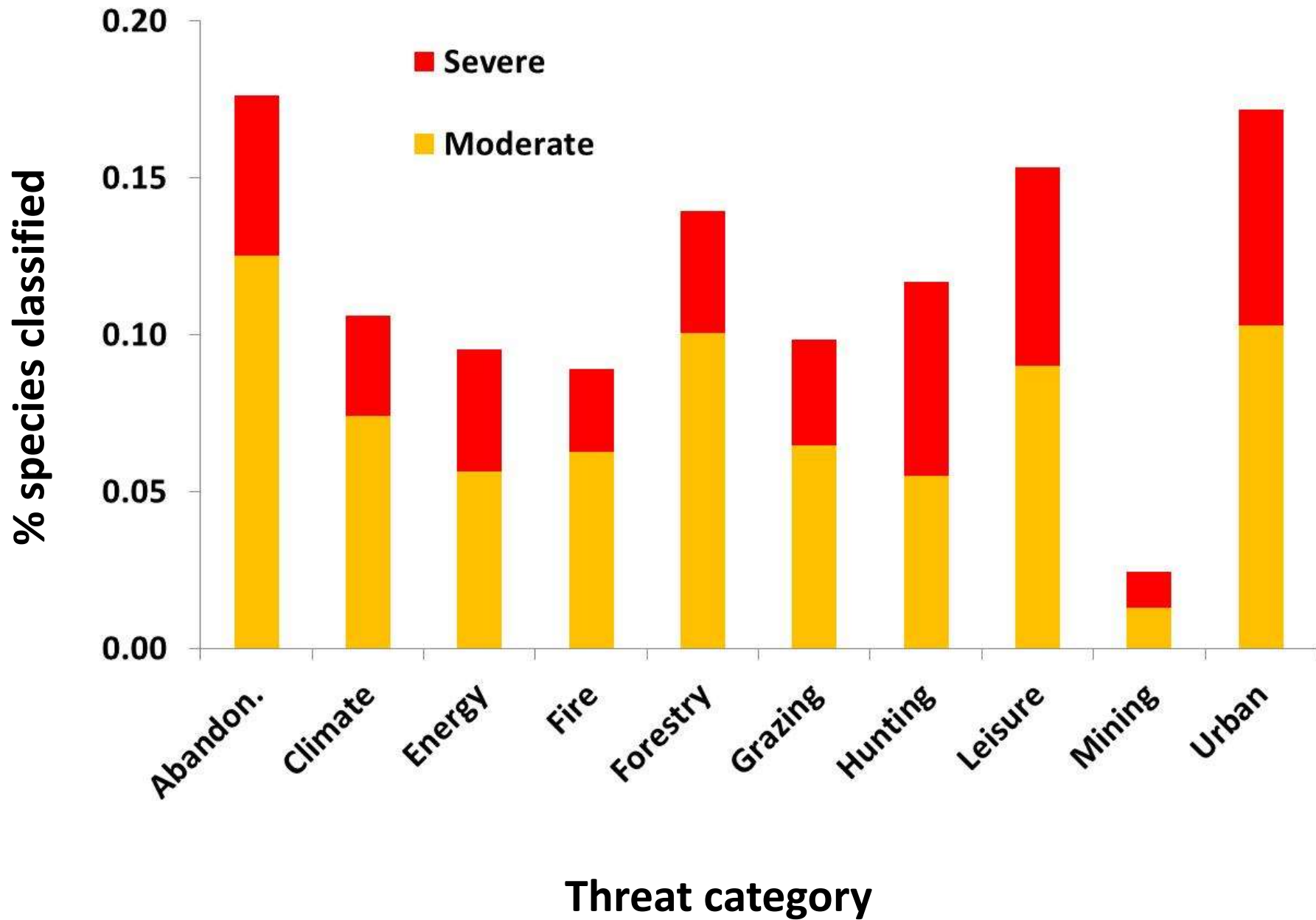
<sup>3</sup> Sezione Zoologia dei Vertebrati, Museo delle Scienze di Trento, Trento, Italy

<sup>4</sup> Settore biodiversità e aree protette, Fondazione Lombardia per l'Ambiente, Seveso (MB), Italy

<sup>5</sup> Department of Bioscience, Aarhus University, Aarhus, Denmark

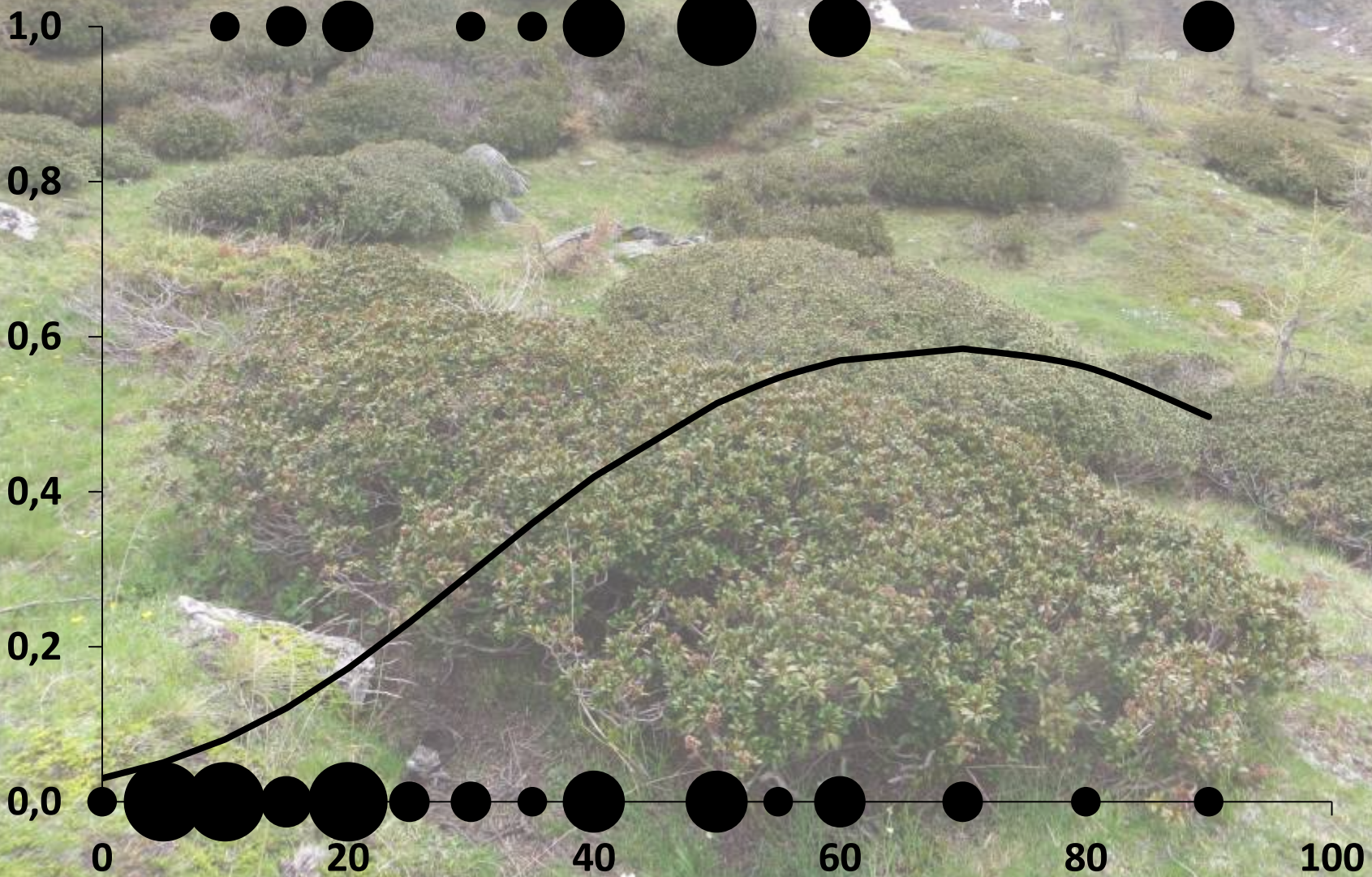
## ABSTRACT

Alpine biodiversity is subject to a range of increasing threats, but the scarcity of data for many taxa means that it is difficult to assess the level and likely future impact of a given threat. Expert opinion can be a useful tool to address knowledge gaps in the absence of adequate data. Experts with experience in Alpine ecology were approached to rank threat levels for 69 Alpine bird species over the next 50 years for the whole European Alps in relation to ten categories: land abandonment, climate change, renewable energy, fire, forestry practices, grazing practices, hunting, leisure, mining and urbanization. There was a high degree of concordance in ranking of perceived threats among experts for most threat categories. The major overall perceived threats to Alpine birds identified through expert knowledge were land abandonment, urbanization, leisure and forestry, although other perceived threats were ranked highly for particular species groups (renewable energy and hunting for raptors, hunting for gamebirds). For groups of species defined according to their breeding habitat, open habitat species and treeline species were perceived as the most threatened. A spatial risk assessment tool based on summed scores for the whole community showed threat levels were highest for bird communities of the northern and western Alps. Development of the approaches given in this paper,

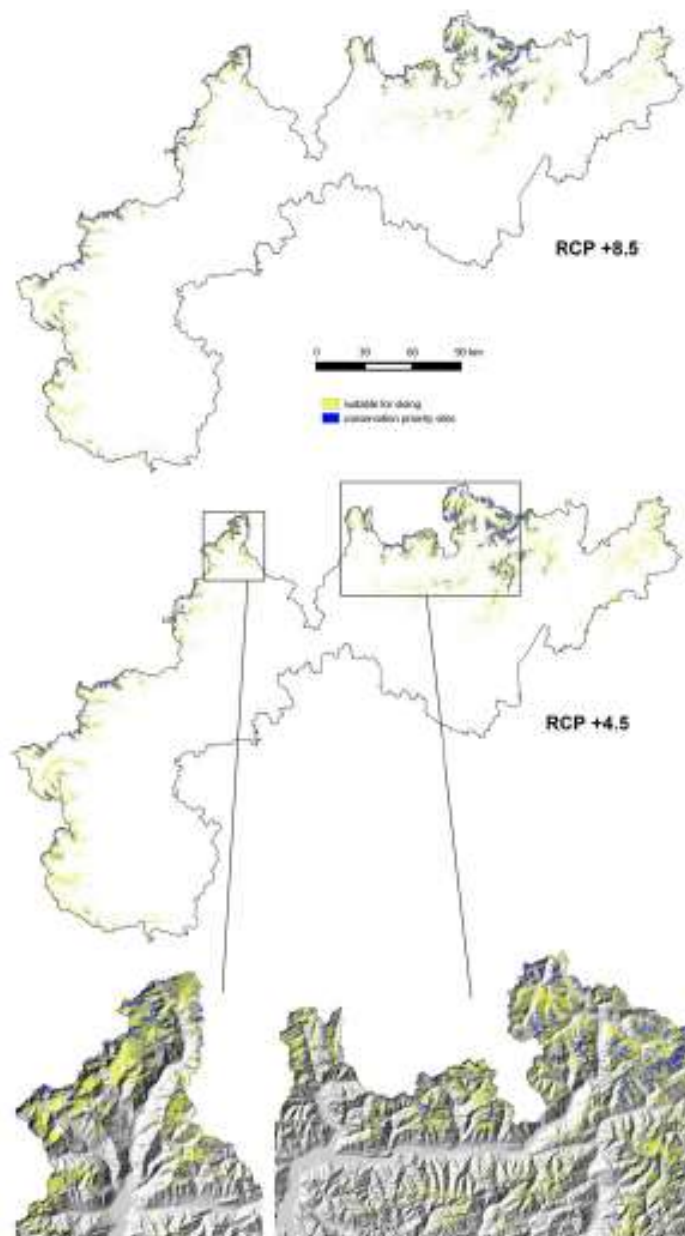




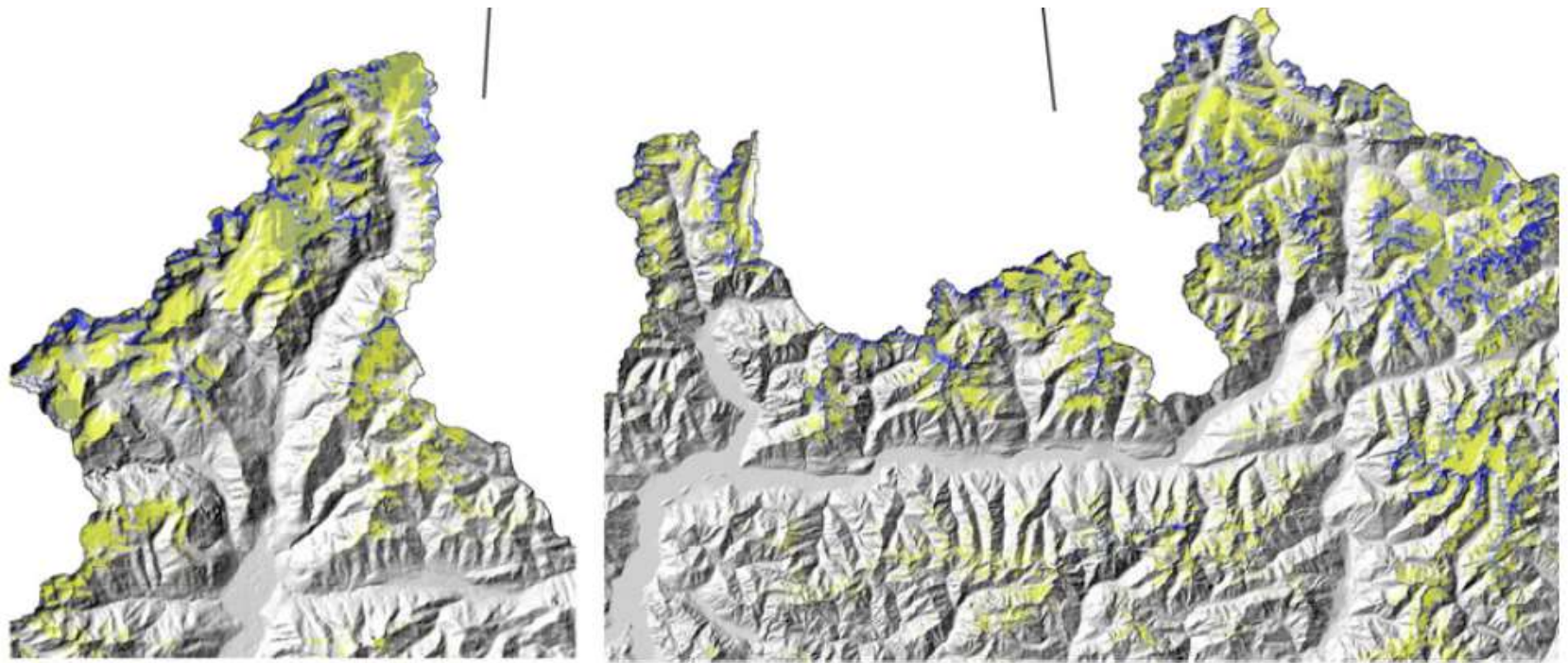
# Shrub cover preferences









**Figure 2** Spatial relationship between conservation priority sites (sites suitable for snowfinch and/or all the other high-elevation species in 2050) and sites suitable for all-pistes in 2050 (upper: RCP +4.5; lower: RCP: +8.5), in the southern Alps, and in two sample areas (for RCP +4.5, Val d'Ossola (left) and Valtellina (right)).



-  suitable for skiing
-  conservation priority sites