Winter tourism and fauna in Mont Avic Natural Park

Massimo Bocca

WILDLIFE AND WINTER SPORT ACTIVITIES:
YOUR SPACE OF FREEDOM - MY LIVING SPACE
Lescheraines - Parc Naturel Régional du Massif des Bauges,
march 3 and 4 2016

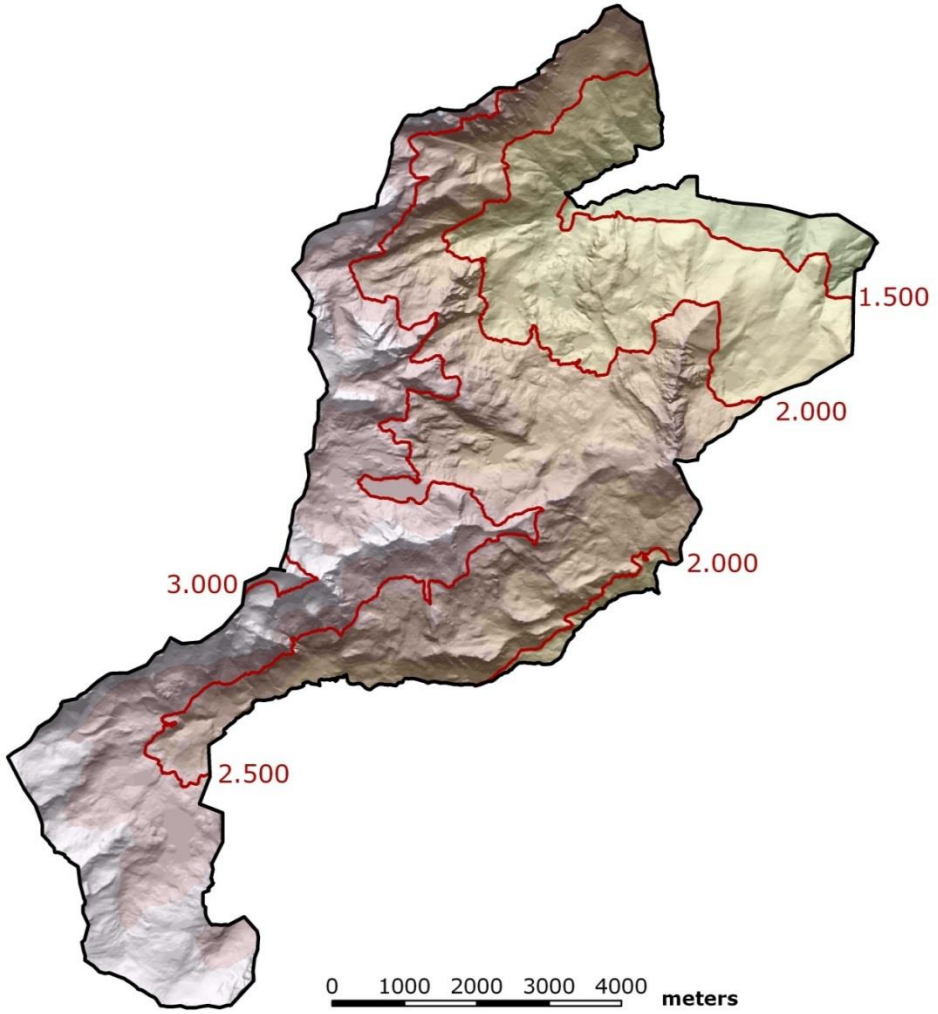
MONT AVIC
Valle d'Aosta, Italia
PARCO NATURALE
PARC NATUREL

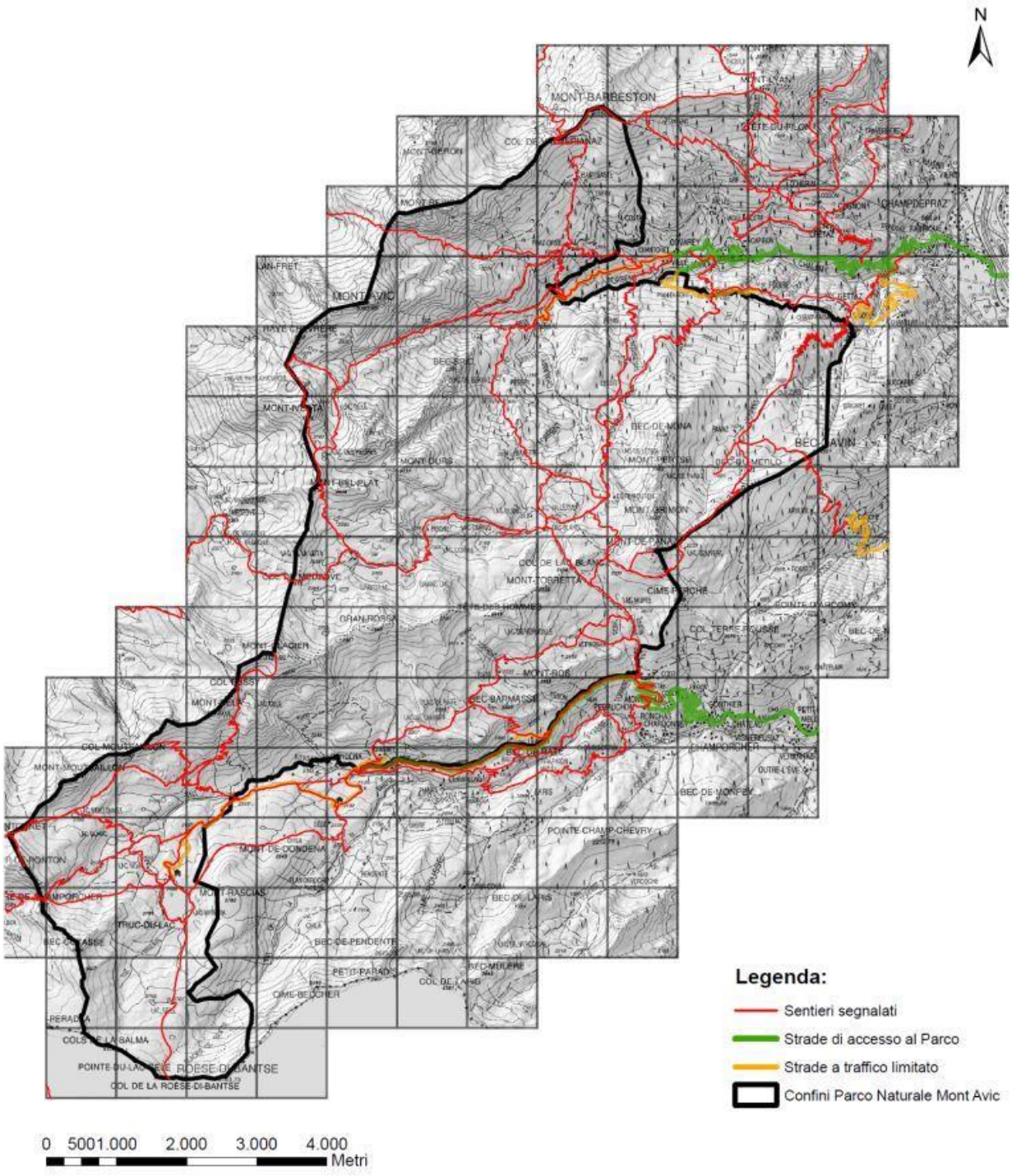
Parc naturel régional du Massif des Bauges

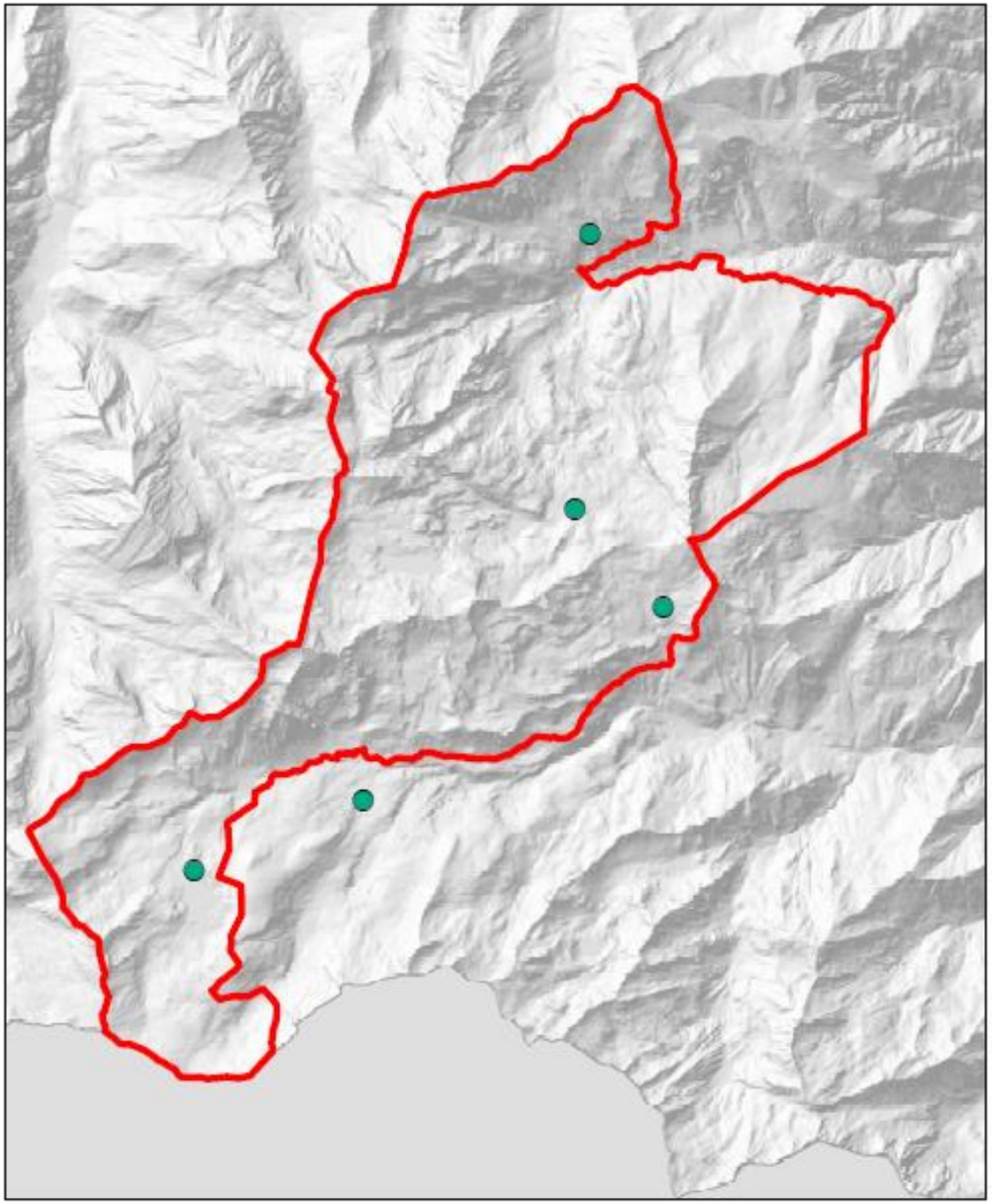
alparc

Asters
Conservatoire d'espaces naturels Haute-Savoie

MONT AVIC
PARCO NATURALE
PARC NATUREL




N
MONT-BARBESTON
MONT-AVIC
MONT-DELPLAT
MONT-DORS
BEC-DE-MONA
BEC-DE-RAVIN
MONT-TORRETTA
CIME-FRACHE
COL-TERRE-ROUSSE
GRAN-ROSSA
MONT-ROS
BEC-BARMASSE
BEC-DE-RAZ
BEC-DE-MONPEY
POINTE-CHAMP-CHEVRY
MONT-DE-DONDENA
MONT-RASCIAS
TRUC-DU-LAC
BEC-DE-PENDENTE
PETIT-PARAD
CIME-BESCHER
COL-DE-LA-ROESE-DI-BANTSE
Legenda:
Sentieri segnalati
Strade di accesso al Parco
Strade a traffico limitato
Confini Parco Naturale Mont Avic
0 500 1.000 2.000 3.000 4.000
Metri



- Location of mountain huts or holiday farms in the nature park

Park management

The Environmental Management System (EMS)

EMAS
INFORMAZIONE CONVALIDATA
N. Registro I-000150

First European protected area with EMAS registration

Organization actvities

- **Environmental monitoring**
- **Scientific research and environmental education**
- Management, use and maintenance
- Territory control
- Administration
- **Tourist fruition**
- **Refuge management**
- Pastoral and forestry activities
- Fishing
- Dam management
- Telecommunication and electrical equipment management
- Shipyard management
- Seed forest management

EMAS
INFORMAZIONE CONVALIDATA
N. Registro I-000150

Environmental features

Chalamy Valley:

- vast forests (Mountain Pine, Larch, Beech)
- lakes and peat bogs
- high altitude ophiolyte habitat (almost rocky slopes and debris)
- rugged orography

Environmental features

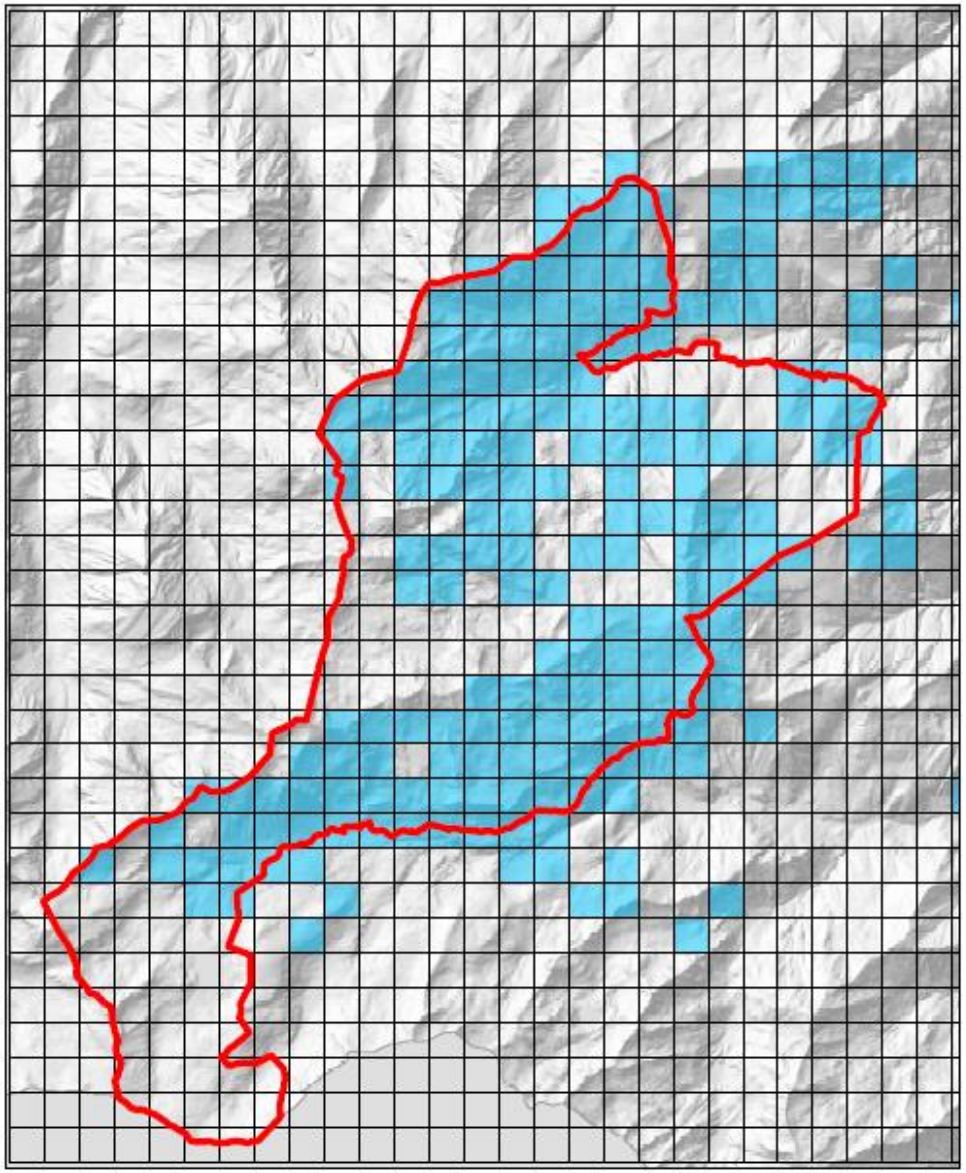
Champorcher Valley:

- scattered small woods
- vast alpine grasslands
- rocky slopes and debris

Wintering fauna - sensitive species

Rupicapra rupicapra

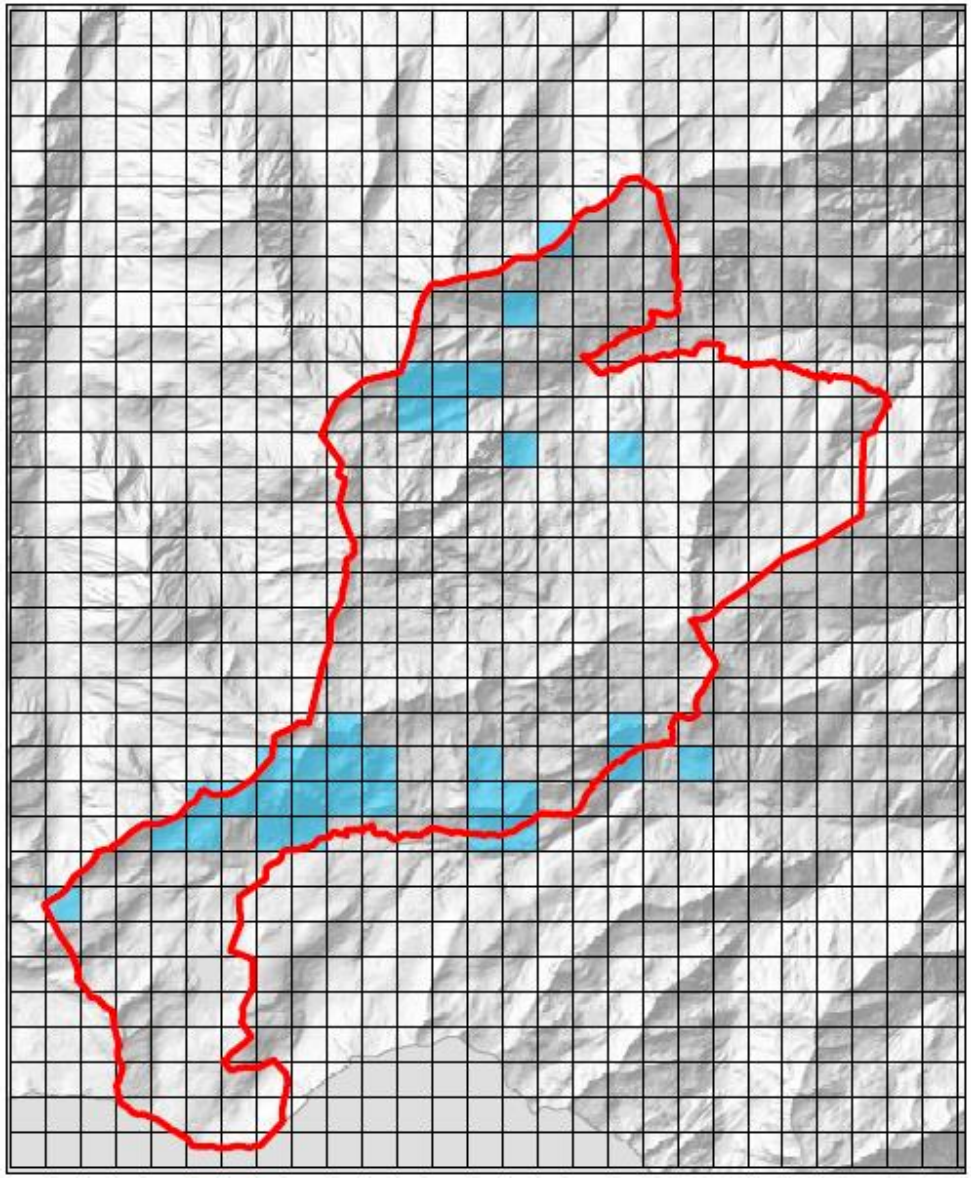
Chamois



Wintering fauna - sensitive species

Capra ibex

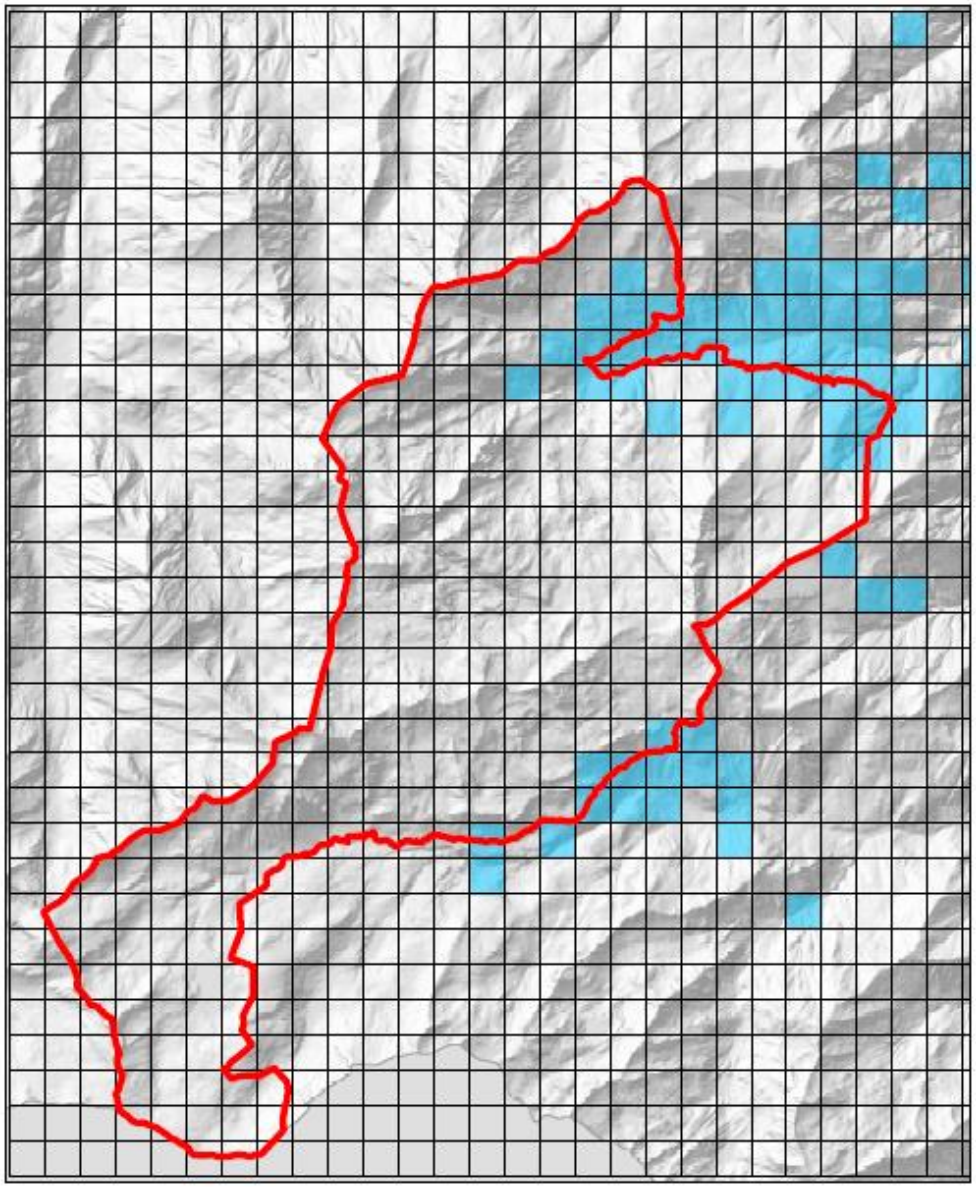
Alpine Ibex



Wintering fauna - sensitive species

Capreolus capreolus

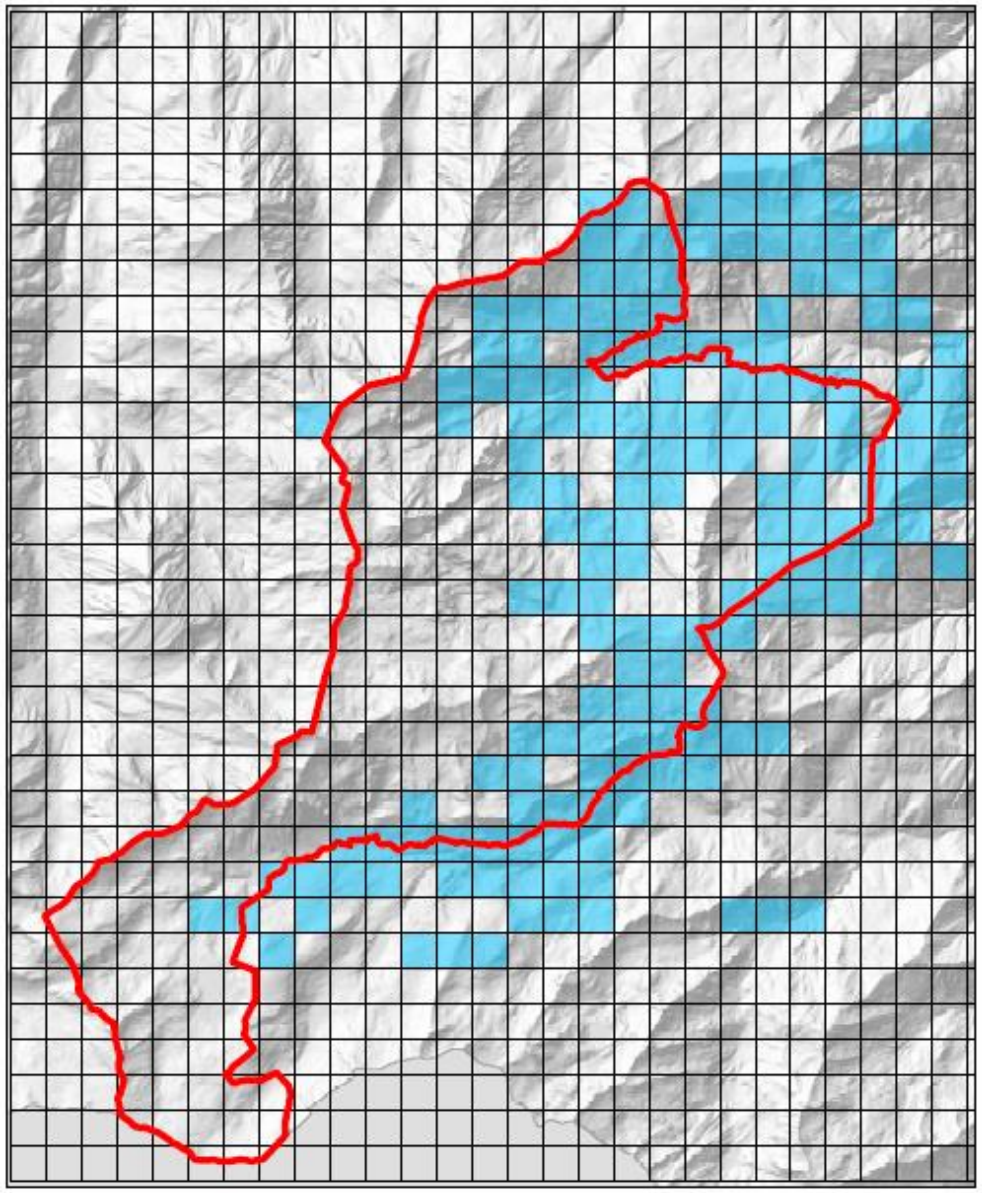
Roe Deer



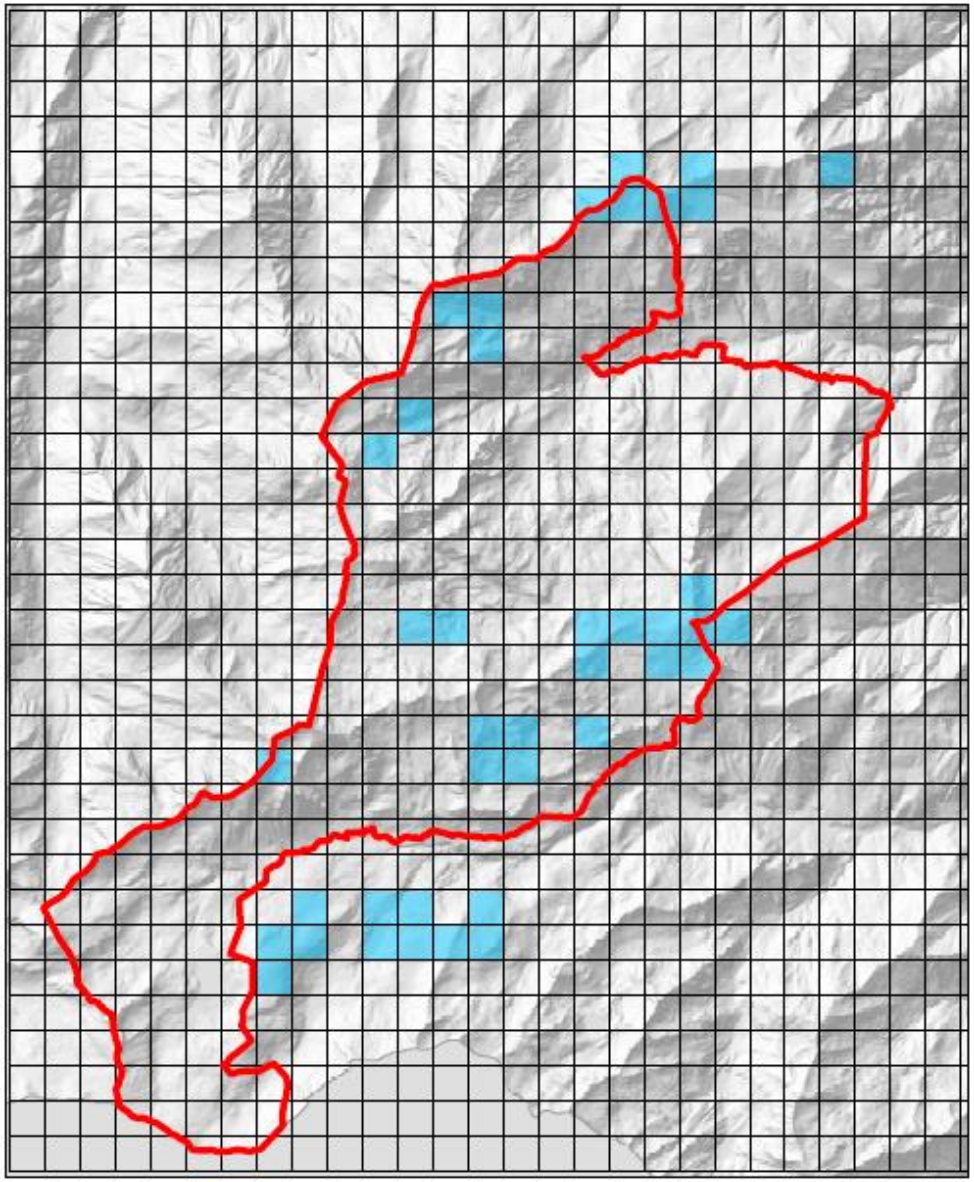
Wintering fauna - sensitive species

Lepus timidus

Mountain Hare



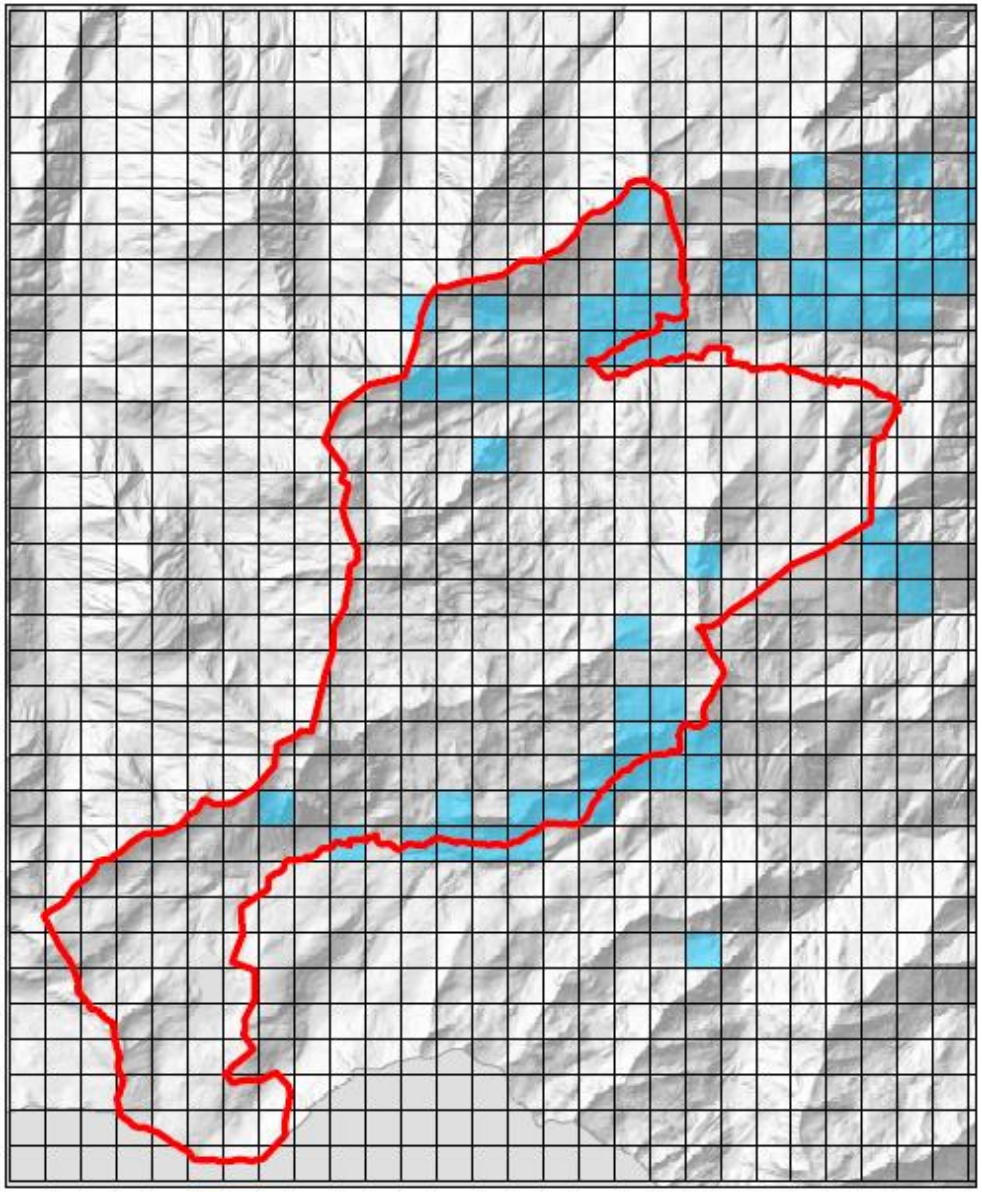
Wintering fauna - sensitive species



Lagopus muta

Rock Ptarmigan

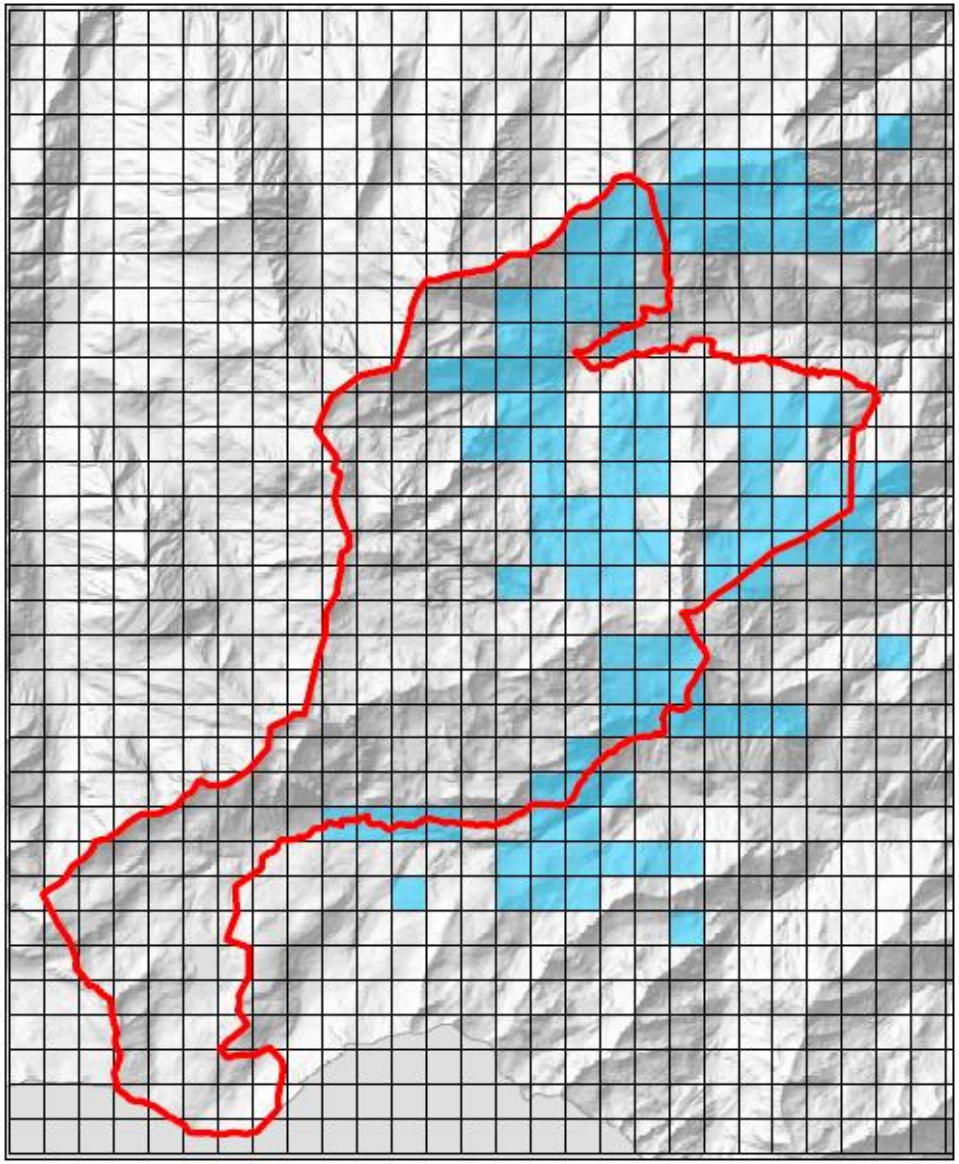
Wintering fauna - sensitive species



Alectoris graeca

Rock Partridge

Wintering fauna - sensitive species



Tetrao tetrix

Black Grouse

The winter roosting and diet of Black Grouse *Tetrao tetrix* in the north-western Italian Alps

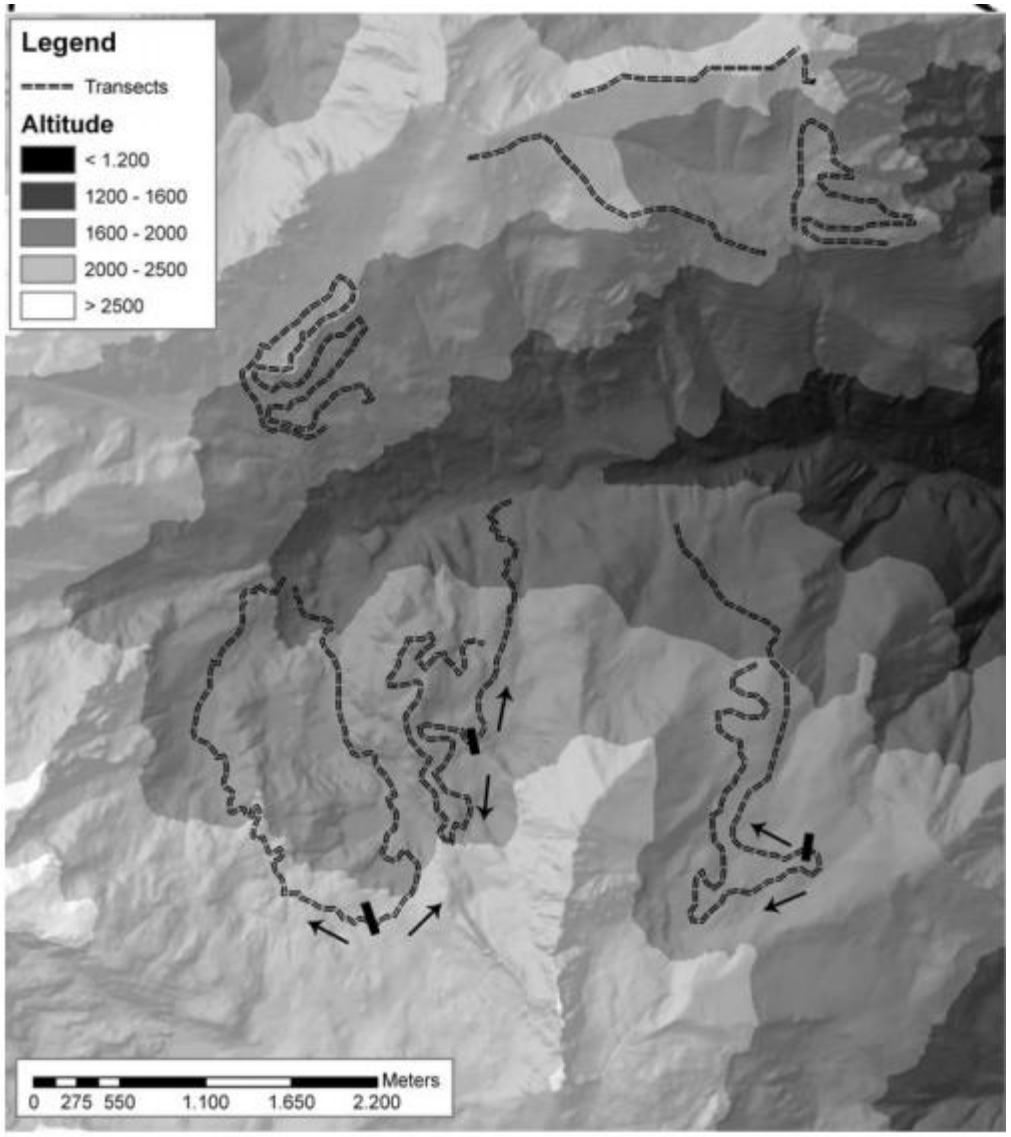
Massimo Bocca, Enrico Caprio, Dan Chamberlain & Antonio Rolando

Journal of Ornithology 155.1 (2014): 183-194.

AIMS

Analysis of Black Grouse winter ecology by roost investigation (igloos and open-air roosts)

1. Snow condition
2. Landscape (microtopography 30x30 m)
3. Vegetation type and closure on roost sites

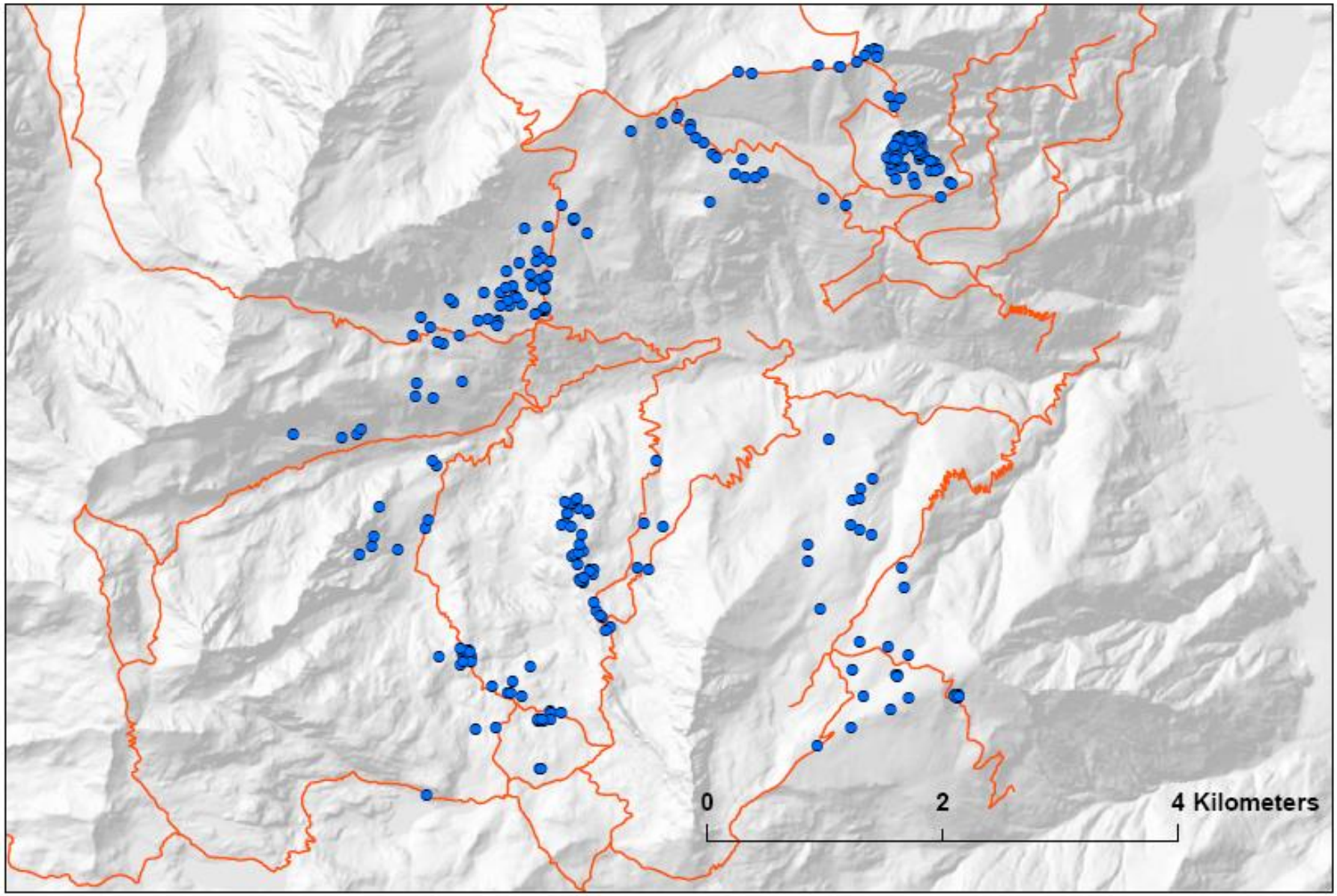


METHODS

Observations (igloos, tracks, crops and other signs) along transect lines including all species suitable habitats, december-march 1992-1995, 2002-2004, 2009-2011

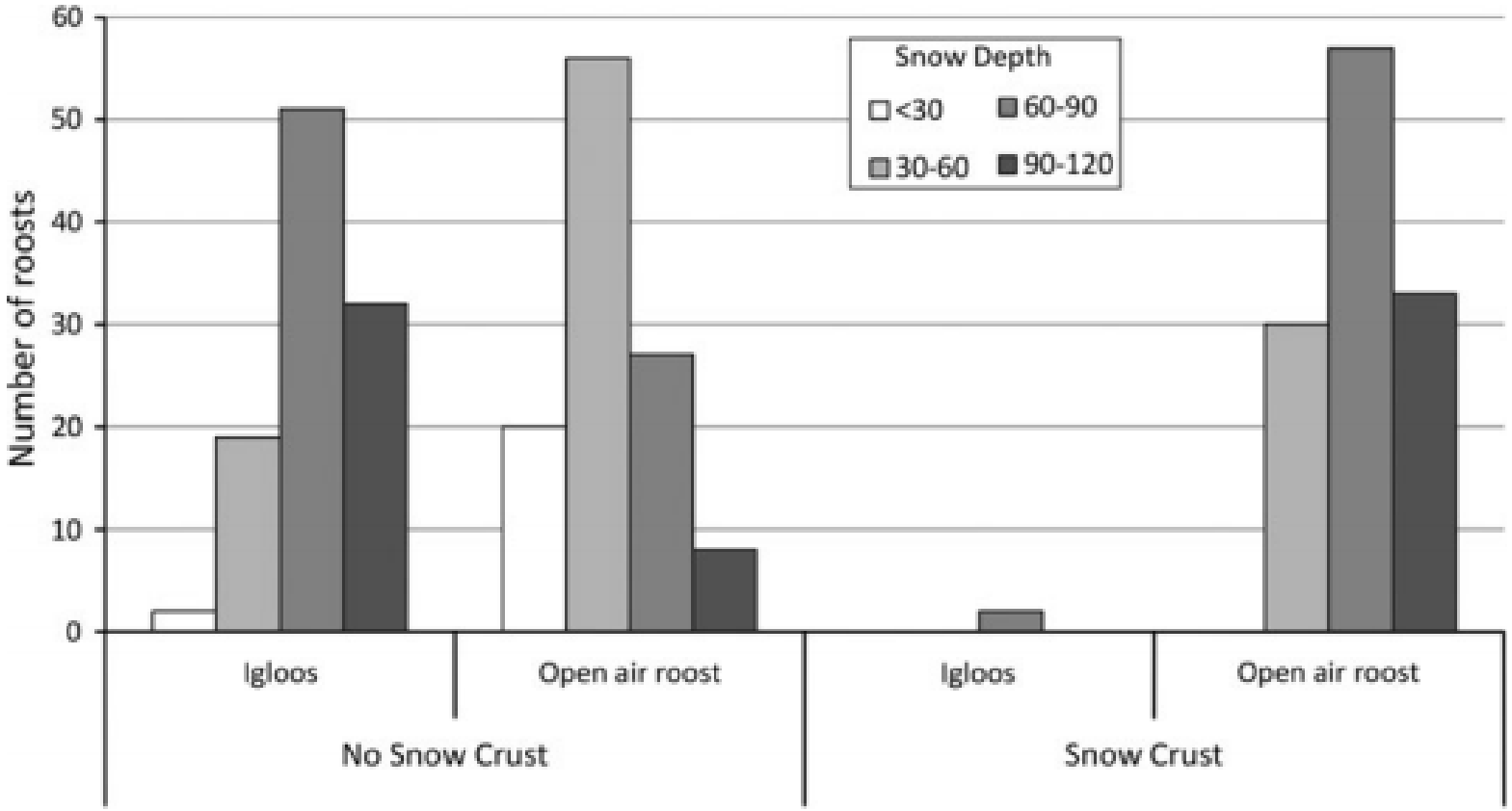
ANALYSIS

- snow cover, depht and presence/absence of iced crust
- landscape (microtopography 30x30m)
- vegetation type and closure on roost sites



Igloos and open-air roosts

RESULTS


Number of roosts
60
50
40
30
20
10
0
Snow Depth
<30
30-60
60-90
90-120
Igloos
Open air roost
Igloos
Open air roost
No Snow Crust
Snow Crust

RESULTS

Table 3 The probability that a roost was an igloo (1) rather than an open-air roost (0), in relation to temperature and snow condition variables recorded 2 days before the day of sampling

Variables	Beta	SE
Intercept	−4.603	0.780
Snow crust presence	−2.829	0.426
Minimum temperature	−0.185	0.038
Daily temperature range	0.160	0.062
Snow thickness	0.026	0.007
R-sq.(adj) = 0.588 deviance explained = 58.9 %		

There was only a single top model which explained >95 % of total model weight, so parameter estimates (beta) and standard errors (*SE*) are not derived from model averaging

$n = 337$

RESULTS

Table 1 Model-averaged parameter estimates predicting the probability of occurrence of roosts of Black Grouse *Tetrao tetrix* on transect sections in the study area in relation to GIS-derived data (topography and habitat cover) at a 30 × 30 m scale

Variable	Parameter estimate	Standard error	LCL	UCL	Model weight
(Intercept)	−9.8521	1.2516	−12.3060	−7.3983	1.0000
MEAN_CURV	0.2108	0.0245	0.1629	0.2588	1.0000
MEAN_DEM	0.0030	0.0006	0.0018	0.0043	1.0000
MEAN_SLOPE	0.0284	0.0068	0.0151	0.0416	1.0000
MPA	0.0010	0.0002	0.0007	0.0013	1.0000
ASPECT_S	0.9565	0.1025	0.7556	1.1574	1.0000
H_CURV	0.0000	0.0000	0.0000	0.0000	0.2270
ASPECT_E	0.0304	0.0867	−0.1395	0.2003	0.2168

Roost presence was modelled with binomial logistic regression. The average model for 95 % of summed model weights is reported. Parameter estimates, standard errors, confidence limits and model variable weights are shown. Altitude was expressed in m, slope in angular degrees and habitat cover (forest, scrub, sparse vegetation and rock) as arcsine-square root-transformed proportions

ASPECT_E, ASPECT_S aspect as an index from 1 (directly facing east or south) to −1 (directly opposite to the aspect in question), *H_CURV* heterogeneity of ground surface, *MEAN_DEM* average altitude in meters, *MEAN_SLOPE* average slope, *MPA* percentage of mountain pine forest area

$n = 4{,}240$

Main DEM habitat analysis

RESULTS

Table 2 Model-averaged parameter estimates predicting the probability of occurrence of roosts in the study area in relation to habitat data collected in the field, and topography at a 10 × 10 m scale

Variable	Parameter estimate	Standard error	LCL	UCL	Model weight
(Intercept)	−0.243	0.647	0.651	1.034	
AV	3.001	1.108	1.117	5.191	1.000
GR	−1.386	0.501	−1.506	−0.395	0.969
JC	0.972	0.486	0.491	1.933	0.738
BE_TREES	−0.080	0.026	−0.126	0.029	1.000
S11	−1.324	0.501	−2.314	−0.580	0.930
S12	−1.863	0.575	−3.021	−0.504	1.000
ASPECT_S	−1.175	0.405	−1.908	−0.675	1.000

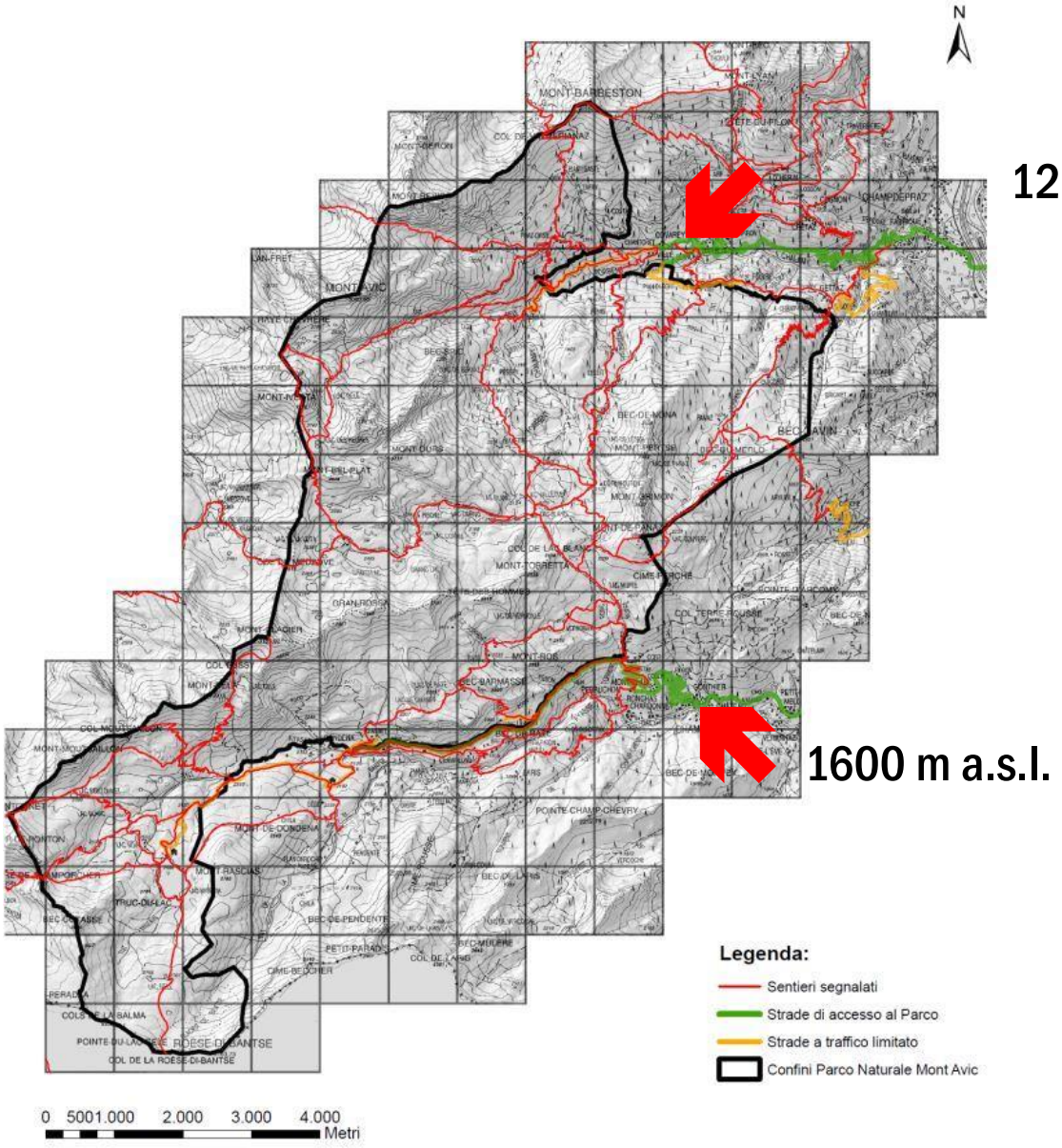
Actual roost site locations were tested against randomly generated pseudo-absences. The average model for 95 % of summed model weights is reported. Parameter estimates, standard errors, confidence limits and model variable weights are shown. Predictors were measured considering the position of the centre of the sampling site (i.e. the true or hypothetical roosting point). See "Methods" for further details

AV Alnus viridis percentage cover, *GR* bare ground and rock percentage cover, *JC Juniperus communis percentage cover*, *BE_TREE* number of trees below the roost, *S11*, *S12* hindrance of vegetation for sector 11, 12 (expressed as presence or absence of hindrance)

$n = 150$

Main vegetation and structural habitat analysis

Winter accessibility



Winter accessibility

SNOWSHOES

Champdepraz and Champorcher - many trails

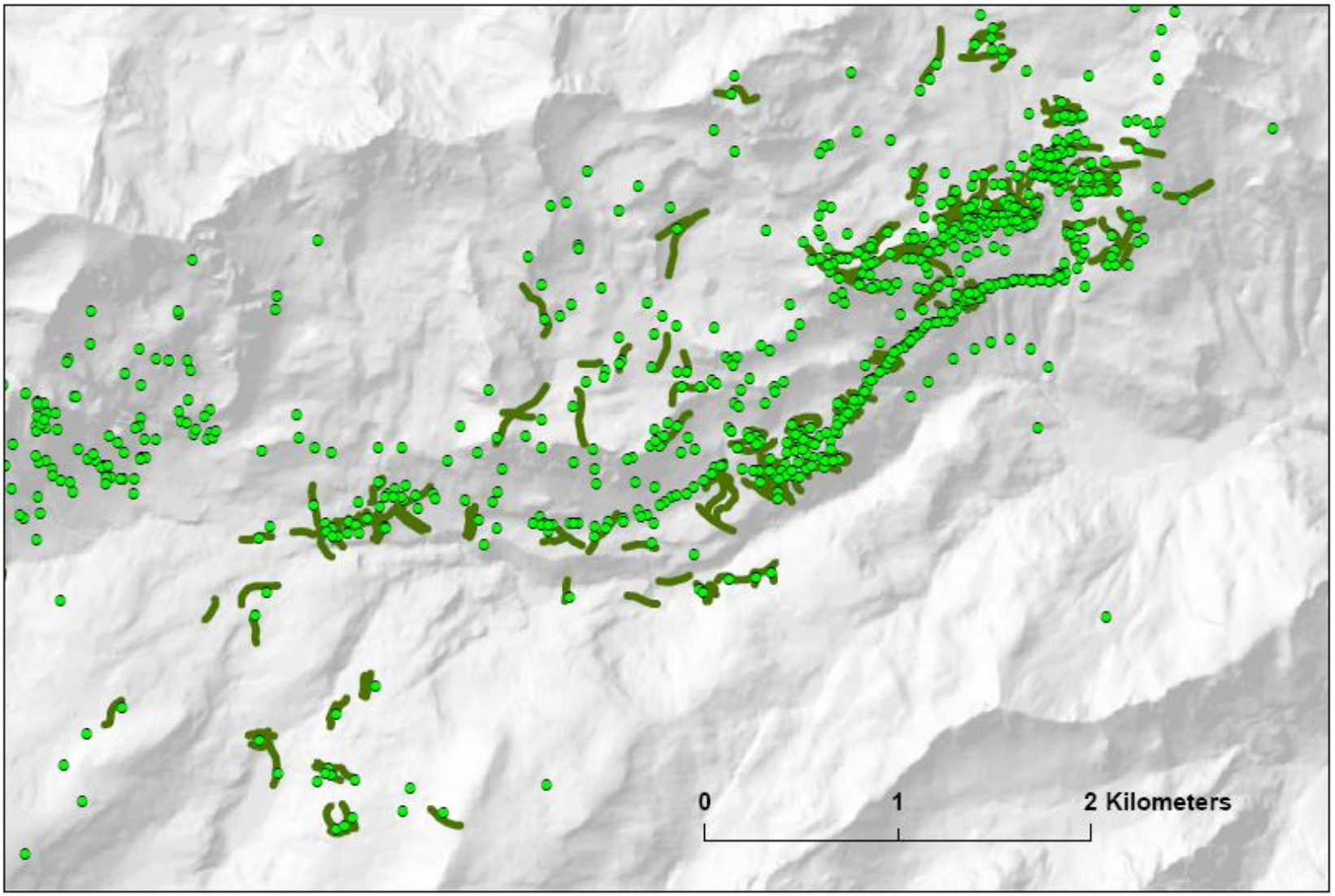
Winter accessibility

SKI TOURING

Champdepraz - no classic trails

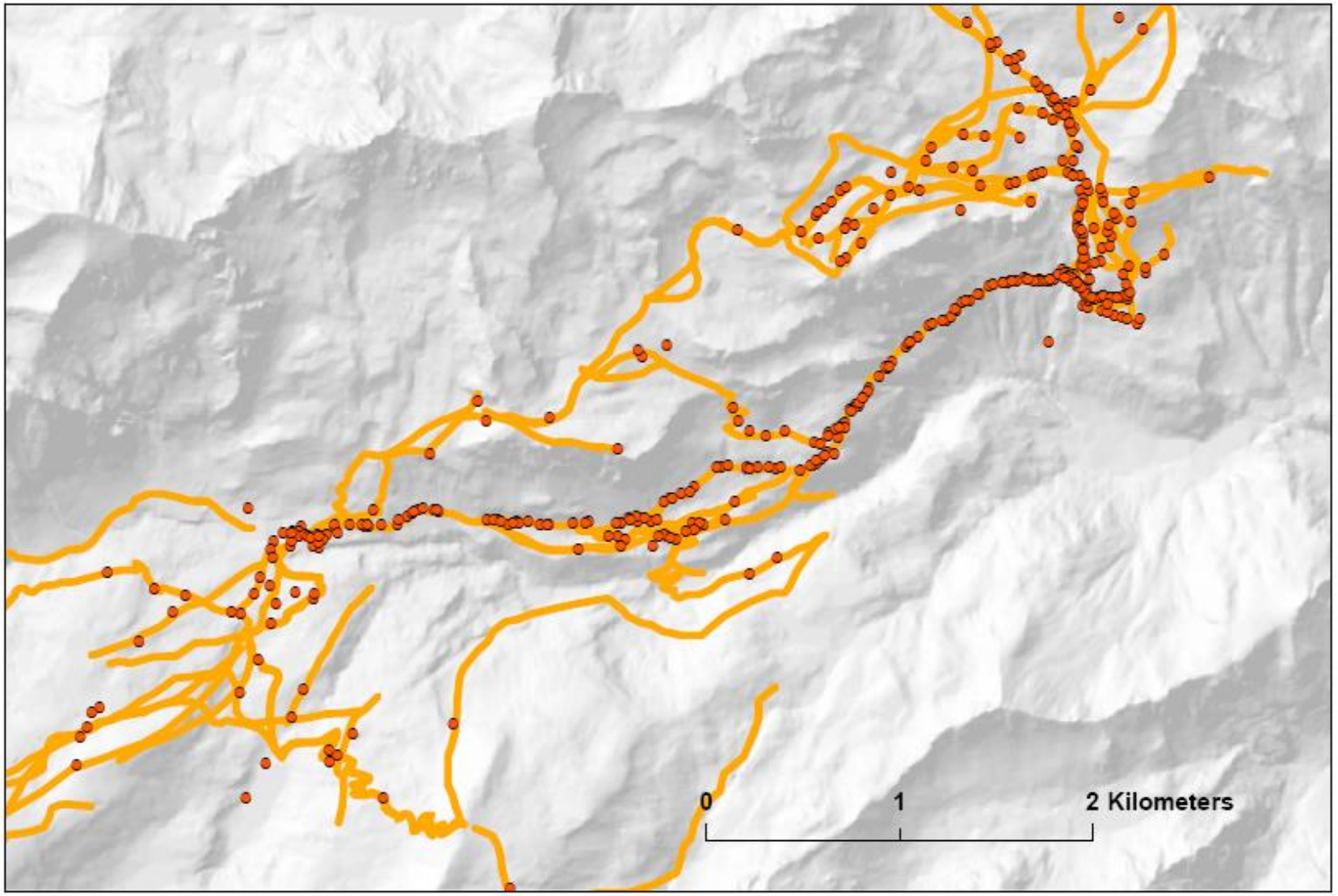
Champorcher - many trails

Spatial data - Champorcher 2004-2007



Sensitive species - sightings, tracks and signs

Spatial data - Champorcher 2004-2007



Hikers and skiers

Critical aspects

Actually no serious problem, but...

... be careful of new mass activities!!!

Actions

Geo-referenced data collection (human fruition, presence of sensitive species)

Actions

Tourists information

Panel shows and flyers

(Interreg COGEVA-VAHSA project)

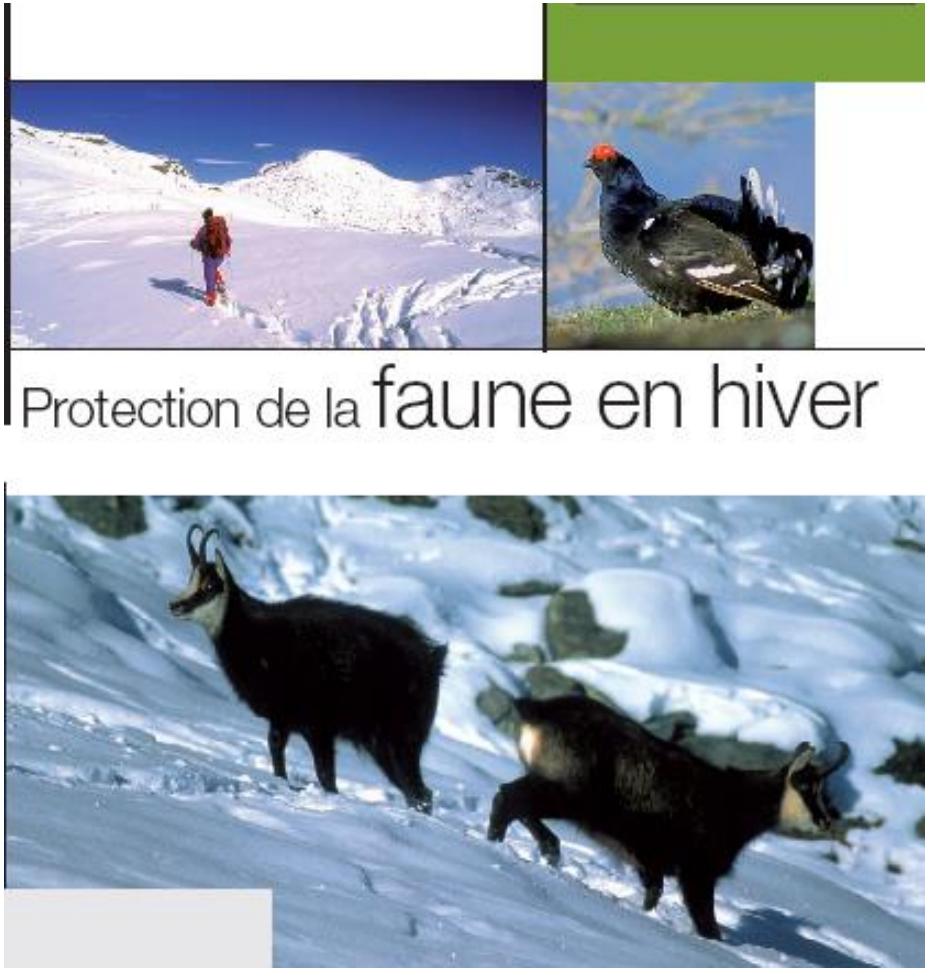
Actions

Tourists information

Panel shows and flyers

(Interreg COGEVA-VAHSA project)

Actions



Tourists information

Panel shows and flyers

(Interreg COGEVA-VAHSA project)

Actions

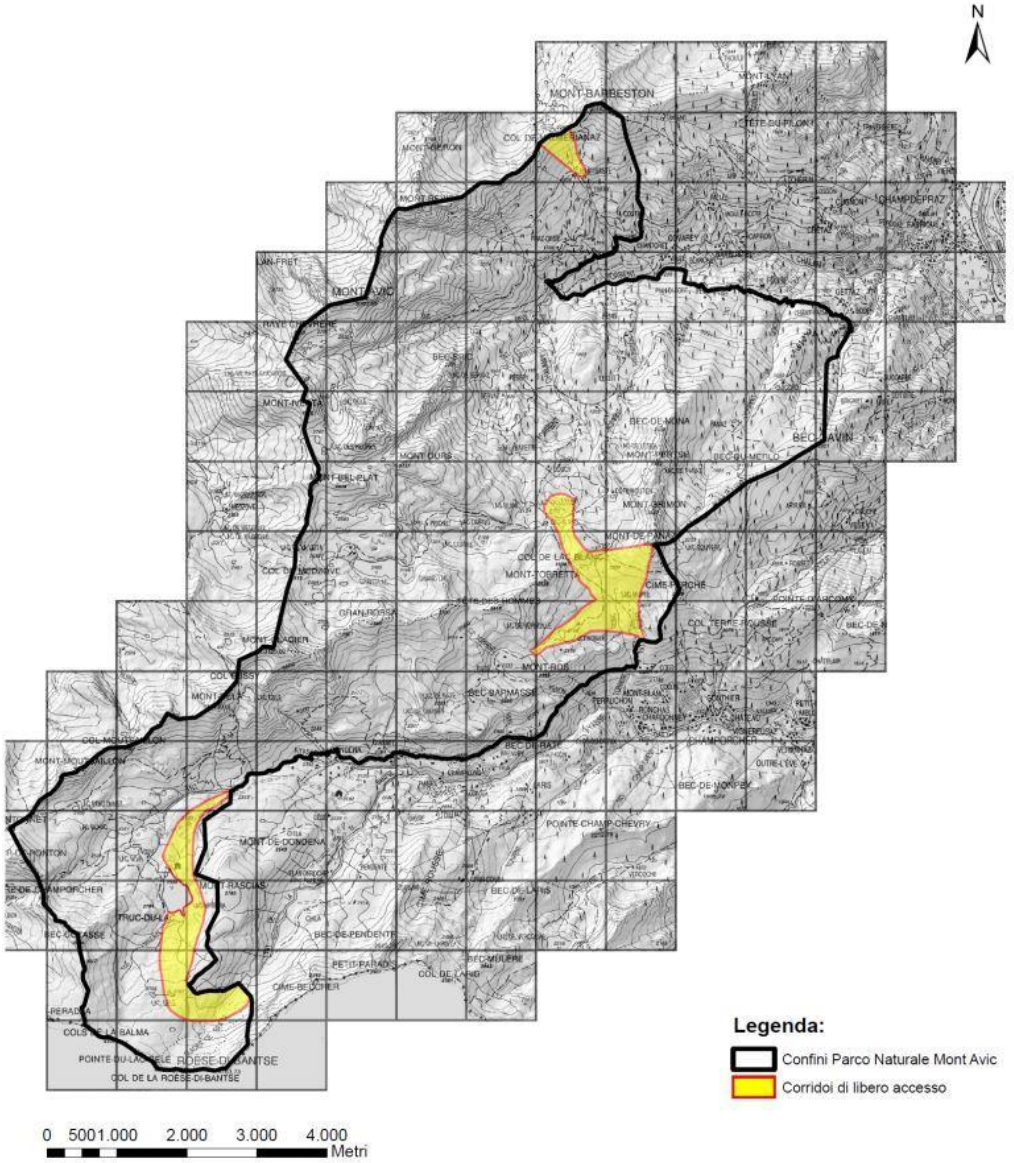
Tourists information

Guided tours

Actions

New Management Plan

Channelling the flow of tourists



Actions

New Management Plan

Alpine inns activities in winter

THANK YOU FOR YOUR ATTENTION!

Photos: R. Andrighetto, R. Artaz, M. Bocca,
M. Borbey, M. Broglio, M. Dellanoce, R. Facchini

MONT AVIC PARCO NATURALE
PARC NATUREL