Supporting information, Appendix S1: Study areas and sampling units (vegetation plots) geographical position. Details of study area land cover (forests, grasslands, bare rock and glaciers) and species numbers per broad taxonomic groups and land cover class.

Table S1.1. Detail of the number of species belonging to each of five broad taxonomic groups (bryophytes, lycopods, pteridophytes, gymnosperms and angiosperms) for each study area. Values in brackets indicate the number of species that could be modeled successfully (i.e. obtained sufficiently high evaluation scores to be considered reliable) and that were kept for carrying-out the analyses.

Study Area name	Bryophytes	Lycopods	Pteridophytes	Gymnosperms	Angiosperms	Total
Eastern Austrian Alps	-	3 (2)	5 (2)	3	258 (193)	269
South-East Carpathians	-	1 (1)	-	2 (1)	113 (95)	116 (97)
French Alps 1	9 (9)	1 (1)	14 (14)	13 (13)	560 (560)	597 (597)
French Alps 2	-	-	1 (0)	-	113 (63)	114 (63)
Central Apennines	-	-	-	1 (1)	9 (2)	10 (3)
Norwegian Scandes	-	3 (2)	2 (2)	1 (1)	84 (83)	90 (88)
Spanish Pyrenees 1	-	-	22 (15)	10 (9)	1086 (870)	1118 (894)
Spanish Pyrenees 2	-	-	-	2 (2)	3 (3)	5 (5)
Scottish Highlands	26 (15)	2 (2)	2 (1)	-	94 (76)	124 (94)
Swiss inner Alps 1	-	-	3 (2)	2 (2)	260 (227)	265 (231)
Swiss inner Alps 2	-	1 (0)	-	-	99 (79)	100 (79)
Swiss Western Alps	-	-	3 (3)	2 (2)	282 (276)	287 (281)
Total	35 (24)	11 (8)	52 (39)	36 (34)	2961 (2527)	3095 (2632)

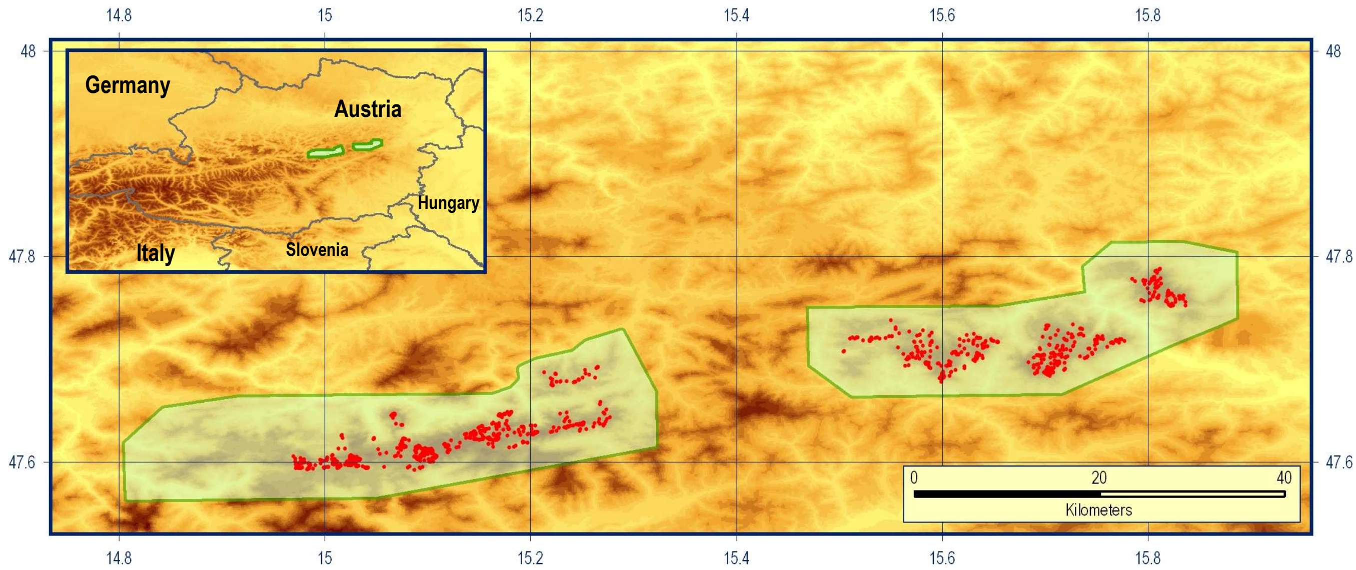
Table S1.2. Land cover (as a percentage) of the different study areas and number of species (as a percentage) that were observed at least once in each of the three broad land cover classes (forests, grasslands, bare rock and glaciers). Projected distributions of a given species were restricted to those land cover classes in which it was observed at least once (see "Methods"). Note that a given species can be observed on more than one type of land cover class.

	Land cover as a percentage of total study area surface				Percent of species observed at least once in each land cover class.		
Study Area	Forest	Grasslands	Bare rock and glaciers	Anthropized areas and water bodies	Forest	Grasslands	Bare rock and glaciers
Eastern Austrian Alps	66.9	23.4	9.6	0.1	98.1	100.0	90.0
South-East Carpathians	60.7	24.3	0.1	14.9	94.0	100.0	69.0
French Alps 1	33.1	32.2	7.2	27.5	99.7	99.8	67.8
French Alps 2	1.0	64.9	34.1	0.0	0.0	100.0	100.0
Central Apennines	26.5	28.1	41.0	4.4	50.0	60.0	100.0
Norwegian Scandes	24.7	37.5	27.7	10.1	95.5	87.6	80.9
Spanish Pyrenees 1	43.1	42.3	4.1	10.5	98.7	100.0	45.2
Spanish Pyrenees 2	52.3	39.5	0.9	7.3	100.0	100.0	20.0
Scottish Highlands	1.6	97.3	0.2	0.9	16.1	100.0	32.3
Swiss inner Alps 1	3.5	32.3	63.2	1.0	19.4	100.0	95.1
Swiss inner Alps 2	0.7	79.6	19.4	0.3	0.0	100.0	85.0
Swiss Western Alps	32.7	54.7	5.6	7.0	65.2	100.0	77.7

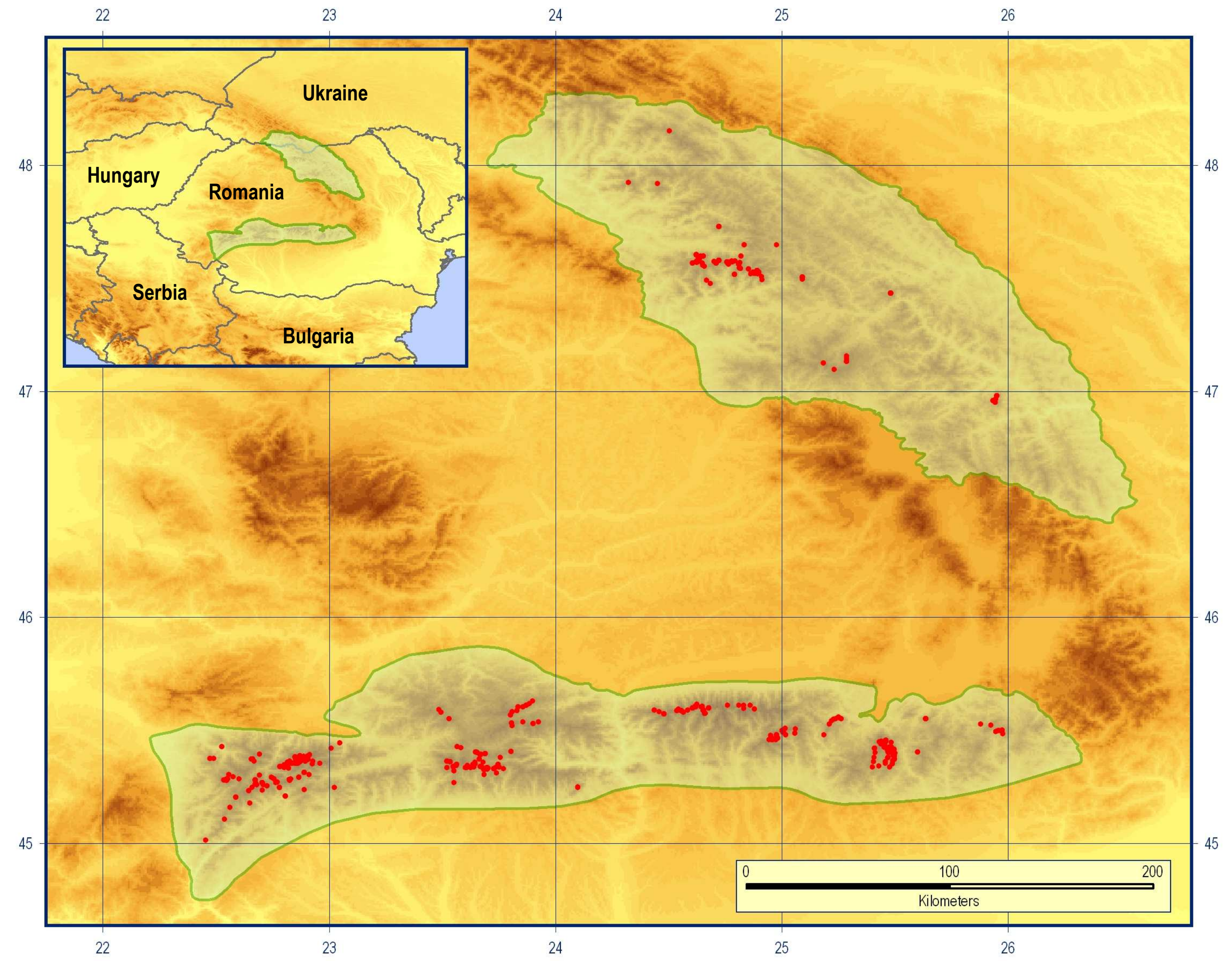
As can be seen from Table S1.2 (three rightmost columns), a given species was generally associated fairly easily to a land cover class. This is because, even with 100 m spatial resolution, the land cover class remains coarse compared to the actual habitat of a plant individual. For instance, a grassland species could be observed on a small patch of meadow in a pixel that belongs to the “bare rock and glacier” land cover category, and thus become associated to this latter category. Therefore our filtering based on the land cover classes (see “Methods” section) is not very strict and its purpose was mainly to avoid making very coarse mistakes.

Figure S1a-h (next pages): Study areas and sampling units (vegetation plots) geographical position. Study area limits are shown as green polygons and sampling units as red dots. When more than one study area is displayed in a same map, the second study area and its sampling units are displayed in purple. Coordinates are all given in decimal degrees (WGS 1984).

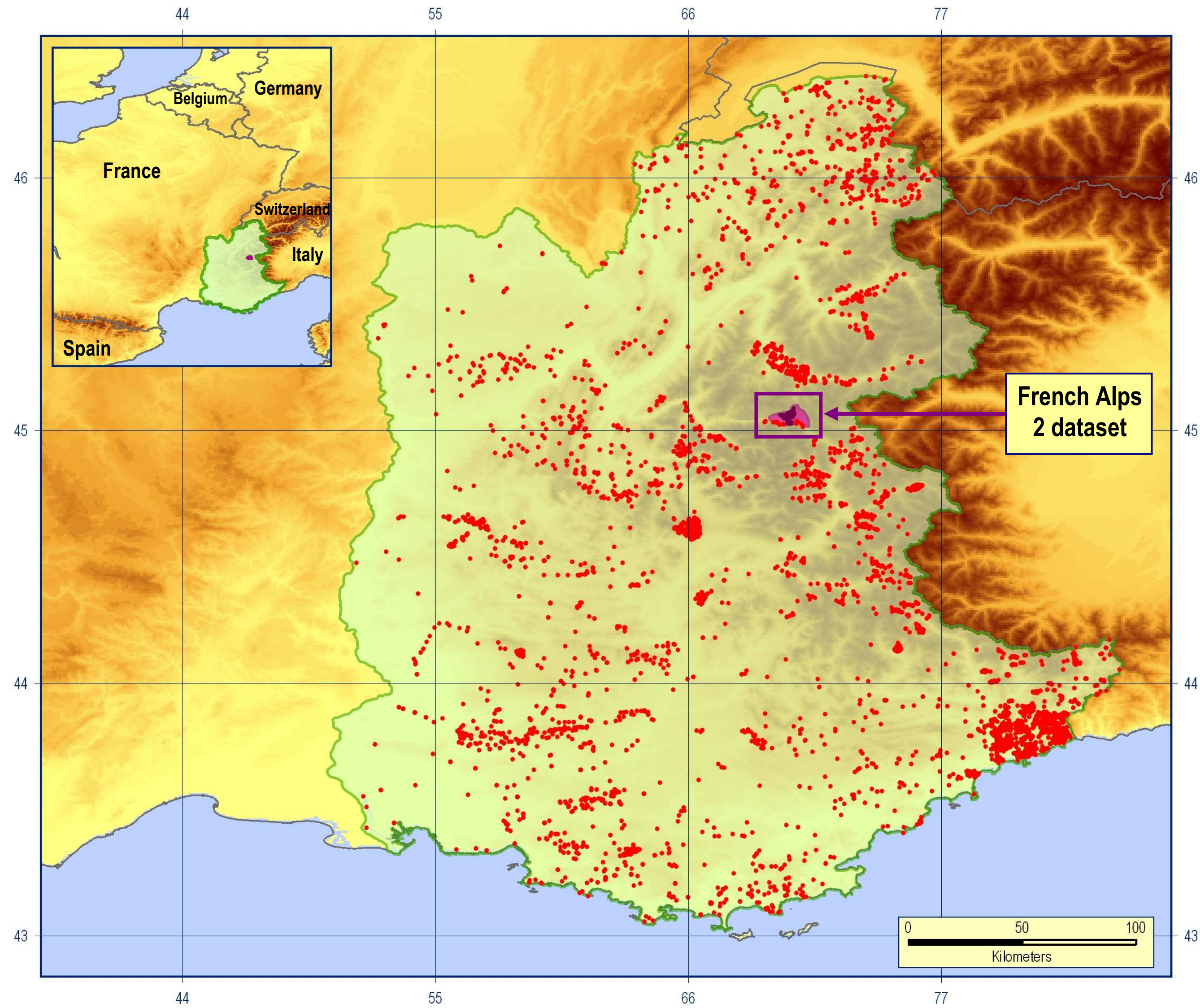
A) Eastern Austrian Alps dataset.



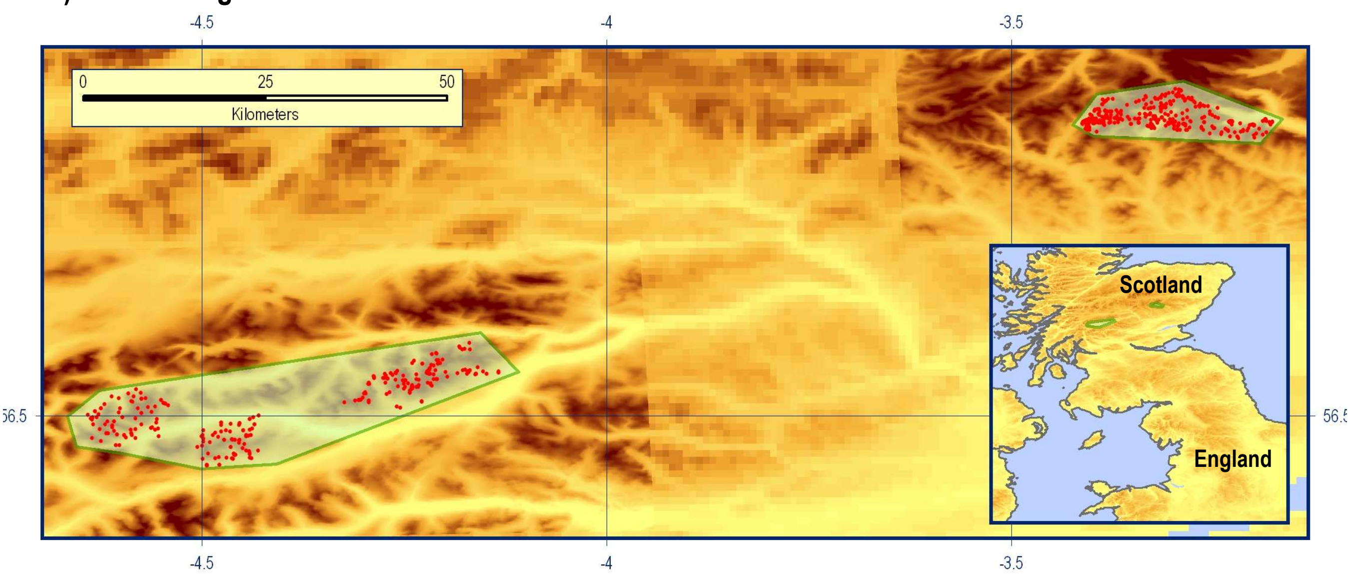
B) South-East Carpathians dataset.



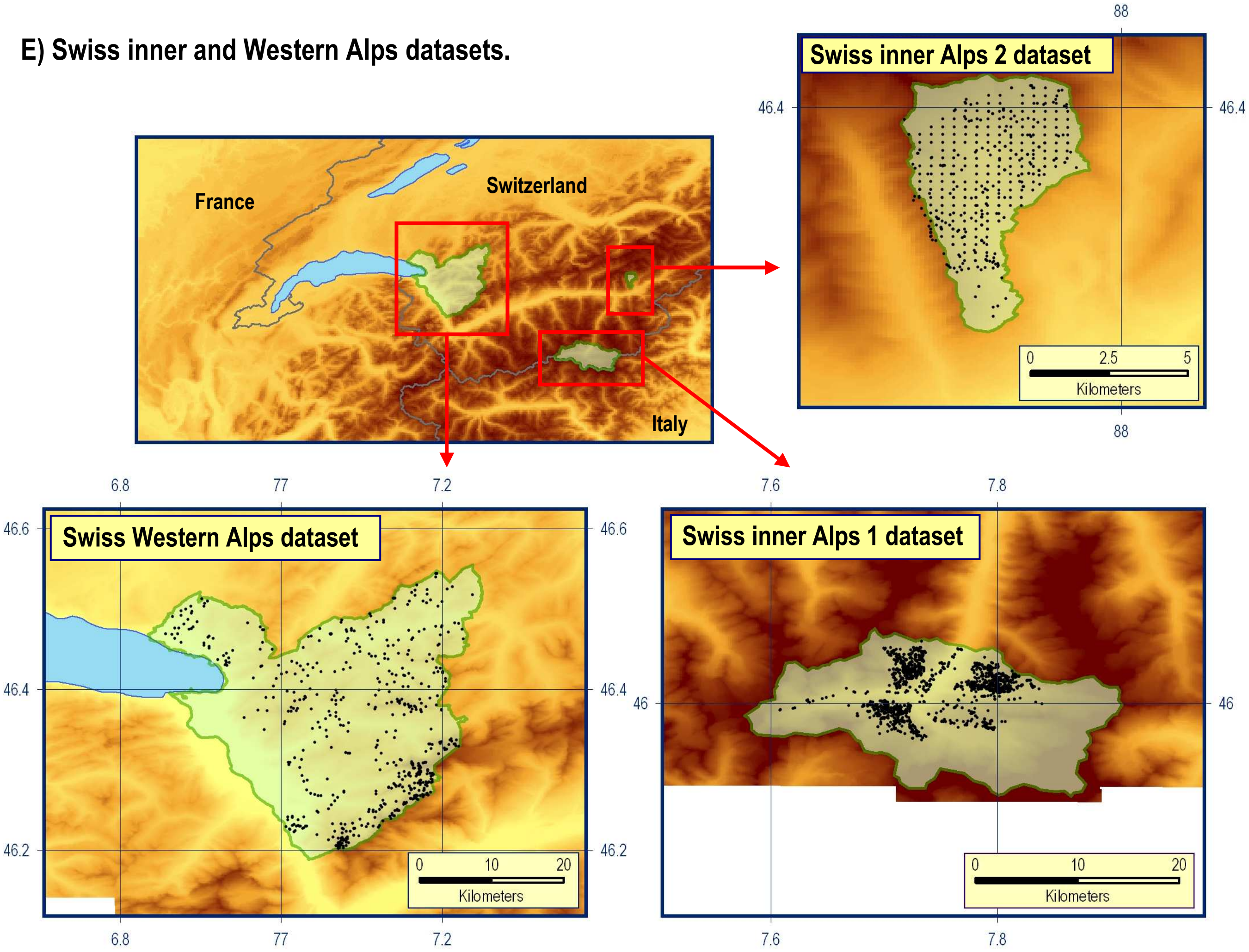
C) French Alps 1 and 2 datasets.



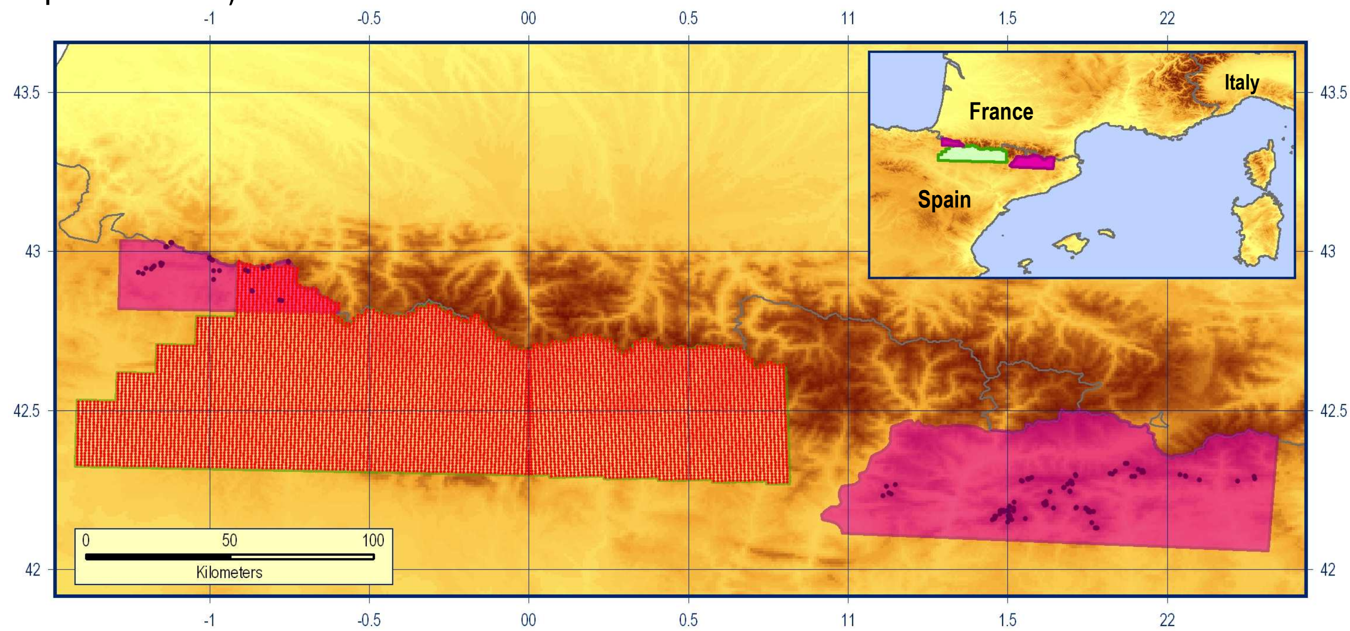
D) Scottish Highlands datasets.



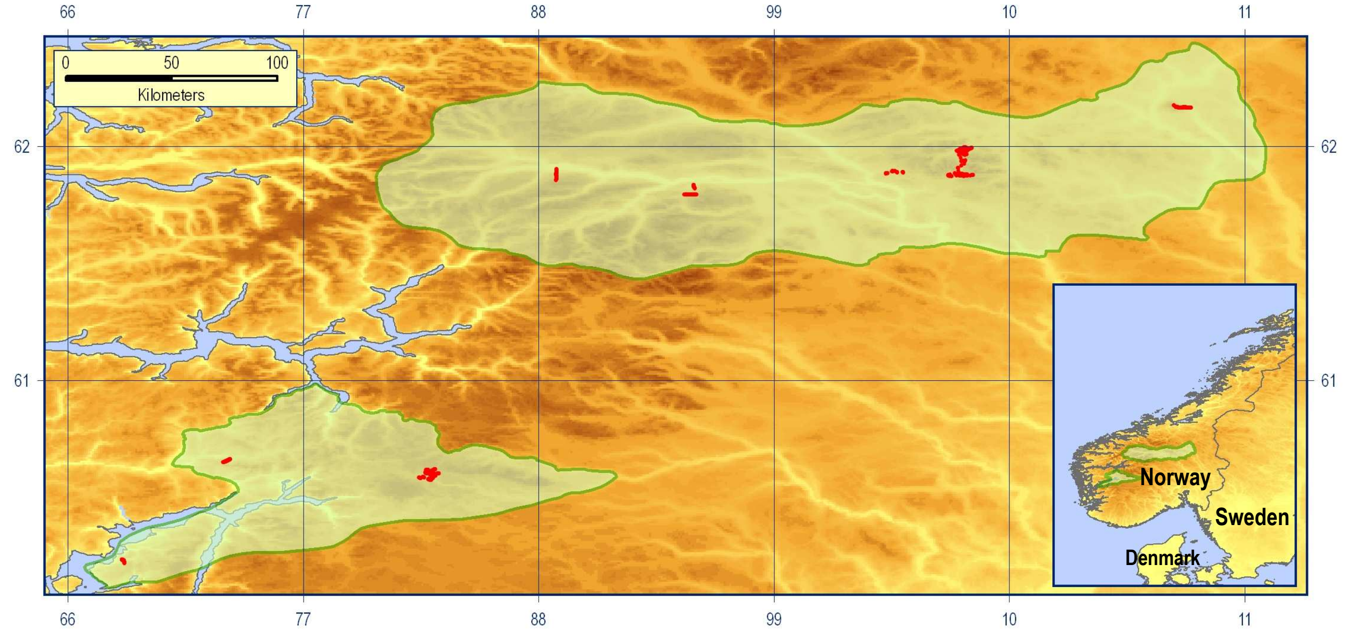
E) Swiss inner and Western Alps datasets.



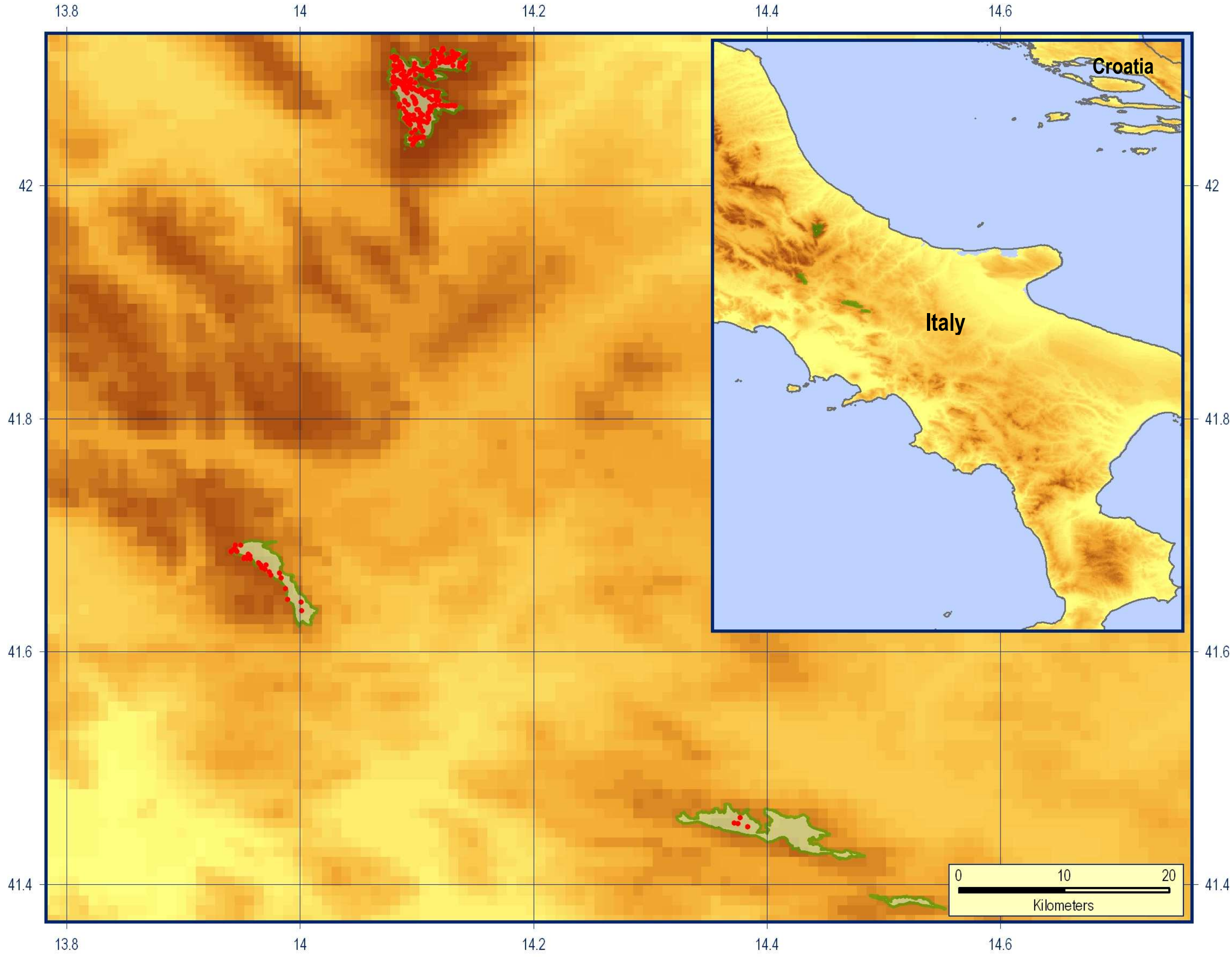
F) Spanish Pyrenees 1 (green) and 2 (purple) datasets. Note that the Pyrenees 1 dataset appears as red in the larger view image because it is filled with red dots indicating vegetation plots. For this dataset the vegetation plots correspond to data extracted from a vegetation atlas (each dot represents a 1 x 1 km square where a species is either present or absent).



G) Norwegian Scandes dataset.



H) Central Apennines dataset.



Supporting information, Appendix S2: Environmental variables preparation methodology.

For each of the 12 study areas, eight topo-climatic variables were prepared at a spatial resolution (pixel size) matching the positional accuracy of the dataset's vegetation plot records (i.e. 1 km for the South-East Carpathians and the Spanish Pyrenees 1 datasets and 100 m for all other datasets). Each variable was prepared under current climatic conditions (average of the reference period 1960-1990) and four different climate change scenarios for the average of the 2070-2100 future time period.

Preparation of variables under current climatic conditions

All topo-climatic variables were derived from monthly means of average temperatures [°C], sum of precipitations [mm], average cloud cover [percent cover] and digital elevation models [m a.s.l.]. Temperature, precipitation and cloud-cover monthly mean data all derived from long-term averages for the period 1960-1990 or 1961-1990.

Digital Elevation Models (DEM) data were generally available from national topographic offices at a native resolution of 100 m or less, in which case the data was aggregated to a 100 m resolution. For study areas were no native fine resolution DEM was available, data were extracted from the 3-arc-second (~90 m at the equator) Shuttle Radar Topography Mission DEM (SRTM; USGS 2003) and resampled to a 100 m pixel size.

Monthly temperature and precipitation data were generally also available at fine scale (i.e. 100 meters or less) from different national meteorological or topographic offices. When no native fine resolution data was available for average temperature and/or sum of precipitations, 1 km resolution WorldClim data (Hijmans *et al.* 2005) was used and downscaled to 100 meters. Average temperatures were downscaled using the *tave* ArcGIS program (see Zimmermann & Kienast 1999), which computes a local temperature lapse rate from the temperature data and a DEM in order to interpolate the data while accounting for a pixel's elevation. Sum of precipitations data were downscaled using bilinear interpolation.

Data for monthly average cloud cover with a 10 minute (~15 km in Europe) resolution were obtained from the UK Met Office Hadley Centre for Climate Prediction and Research (Mitchell *et al.* 2003). These maps were downscaled to either 100 m or 1 km resolution (whatever was matching the dataset's resolution) using bilinear interpolation.

Using the above described data as basis for computation, the following eight topo-climatic variables were derived (Table S2.1):

Table S2.1 Topo-climatic variables derived from the basic variables and used for modeling of species distributions.

Variable	Unit	Description
Mean annual temperature	[°C]	Average daily temperature over the entire year.
Mean temperature of coldest month	[°C]	mean temperature of coldest month.
Annual sum of precipitations	[mm·year^{-1}]	Sum of precipitations over the entire year.
Summer sum of precipitations	[mm·3month^{-1}]	Sum of precipitations from July to September.
Winter sum of precipitations	[mm·3month^{-1}]	Sum of precipitations from January to March.
Annual moisture index	[mm·year^{-1}]	Sum of potentially available water over the entire year.
Summer moisture index	[mm·3month^{-1}]	Sum of potentially available water from July to September.
Winter moisture index	[mm·3month^{-1}]	Sum of potentially available water from January to March.

The details of each variable's computation are given here-below:

Mean annual temperature

Let $MTave_i$ be the average temperature for month i and $NDays_i$ the number of days in that same month. The mean annual temperature was calculated as follows (Eq. S2.1):

$$Mean\ Annual\ Temperature = \frac{1}{365} \times \sum_{i=1}^{12} MTave_i \times NDays_i \qquad \text{Eq. S2.1}$$

Mean temperature of the coldest month

The mean temperature of the coldest month was calculated by selecting, for each pixel, the temperature of the month during which the mean annual temperature (*MTave*) was minimal.

$$Mean\ Temperature\ of\ Coldest\ Month = Min(i \in 1-12)\ MTave_i \qquad \text{Eq. S2.2}$$

Annual, summer and winter sum of precipitations

Let $MPrec_i$ be the sum of precipitations for month i. Annual, summer and winter sums of precipitations were computed as follows (Eq. S2.3 – Eq. S2.5):

$$Annual\ sum\ of\ preciptiations = \sum_{i=1}^{12} MPrec_i \qquad \text{Eq. S2.3}$$

$$Summer\ sum\ of\ preciptiations = \sum_{i=7}^{9} MPrec_i \qquad \text{Eq. S2.4}$$

$$Winter\ sum\ of\ preciptiations = \sum_{i=1}^{3} MPrec_i \qquad \text{Eq. S2.5}$$

Annual, summer and winter moisture index

The moisture index expresses the amount of water that is potentially available at a given site (pixel). It is calculated as the difference between precipitation and potential evapotranspiration, the later variable being a function of solar radiation and average temperature. Since solar radiation was not a readily available variable, we first had to calculate it by accounting for local topography, geographical position and cloud cover.
For each study area, monthly average of daily sum of solar radiation was computed based on a digital elevation model and the monthly average cloud cover data. Calculation was carried-out using the Helios ArcInfo script (Piedallu & Gegout 2007), which accounts for elevation, slope, aspect, shadowing, cloud cover, latitude and longitude.

Solar radiations were then combined with average temperature to derive potential evapotranspiration (*PET*) using the Jensen-Haise empirical formula (Jensen & Haise 1963; Eq. S2.6):

$$PET\ [\text{mm/day}] = \left(4 \times \left(0.0239001 \times Rs + 50\right)\right) \times \left({(Ta \times 30)}/{(Ta + 15)} \right) \qquad \text{Eq. S2.6}$$

Where *Rs* is the daily global radiation (monthly average) in [kJ/m^2/day] and *Ta* the monthly average temperature [°C]. Eq. S2.6 allowed deriving a daily potential evapotranspiration value which was used to compute a monthly sum ($MPET_i$).

With $MPrec_i$, the sum of precipitation for month *i*, and $MPET_i$, the sum of potential evapotranspiration for month *i*, annual, summer and winter moisture indexes could then be computed as follows (Eq. S2.7 – Eq. – S2.9):

$$Annual\ Moisture\ Index = \sum_{i=1}^{12} MPrec_i - MPET_i \qquad \text{Eq. S2.7}$$

$$Summer\ Moisture\ Index = \sum_{i=7}^{9} MPrec_i - MPET_i \qquad \text{Eq. S2.8}$$

$$Winter\ Moisture\ Index = \sum_{i=1}^{3} MPrec_i - MPET_i \qquad \text{Eq. S2.9}$$

Note that, in Eq. S2.7 – Eq. S2.9, whenever monthly potential evapotranspiration was greater than the monthly sum of precipitations, zero was added to the summation (i.e. values of $MPrec_i - MPET_i < 0$ were set to zero before being added to the sum). This makes sense as no more water can evaporate than what is available.

Preparation of variables under projected future climatic conditions

We used four different climate projections developed by the UK Hadley Center for Climate Prediction and Research (Mitchell *et al.* 2003; Mitchell & Jones 2005) that we averaged over the 2070-2100 time period. These were derived from a global circulation model (HadCM3; Carson 1999), and are based on four different socio-economic scenarios A1FI, A2, B1, and B2 developed by the IPCC (Intergovernmental Panel on Climate Change; Houghton *et al.* 2001). These climate change projections were available in the form of 10' (~15 km in Europe) grids of monthly average temperatures, monthly sums of precipitations and monthly average cloud cover.
For each month and each climate projection scenario, we averaged each of these three variables over the 2070-2100 time period. This, in turn, allowed computing monthly anomalies (i.e., differences) for each variable between the average of 1960-1990 and the projected average for 2070-2100 under each climate change scenario.
We then downscaled these anomalies to 100 m or 1 km resolution (whatever was matching the dataset's resolution) using bilinear interpolation before adding them to their corresponding variable under current climatic conditions. Thereafter, we calculated the derived topo-climatic predictors under each of the four climatic projections (A1FI, A2, B1 and B2) using the same methodology as when deriving those variables under current climatic conditions (see above).

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Supporting information, Appendix S3: Ensemble modeling (ensemble forecasting) methodology.

Ensemble modeling (or ensemble forecasting) consists in combining the projections of different models in order to overcome the variability arising from individual modeling techniques and provide more robust projections (Araújo & New 2007).

To obtain a "weighted average" or "consensus" projection, the individual projection yielded by each of the five modeling techniques (GLM: generalized linear models, GAM: generalized additive models, GBM: boosted regression trees, RF: random forest, MARS: multivariate adaptive regression splines) were weighted by either their AUC (area under the receiver operating characteristic curve) or TSS (true skill statistic) evaluation score and averaged. The idea behind this weighting method, which was shown to be particularly robust (Marmion *et al.* 2009), is that models achieving higher evaluation scores should contribute more to the ensemble forecast than those obtaining poorer evaluations.

Let $Model_i$ be the probabilistic projection obtained for a pixel through modeling technique *i*, AUC_i the AUC value obtained by the model evaluation procedure for modeling technique *i* and TSS_i the TSS value obtained by model evaluation for modeling technique *i*. The values of *i* belong to the interval [1:5], representing each of the five individual modeling techniques (i.e., GLM, GAM, GBM, RF and MARS). For each species, two weighted average (WA) projections, based on respectively the AUC (WA_{AUC}) or the TSS (WA_{TSS}) model evaluation values, were computed as follows (Eq. S3.1 and Eq. S3.2):

$$WA_{AUC} = \frac{\sum_{i=1}^{5} Model_i \times (AUC_i - 0.5) \times 2}{\sum_{i=1}^{5} (AUC_i - 0.5) \times 2} \qquad \text{Eq. S3.1}$$

$$WA_{TSS} = \frac{\sum_{i=1}^{5} Model_i \times TSS_i}{\sum_{i=1}^{5} TSS_i} \qquad \text{Eq. S3.2}$$

Note that, to avoid basing projection on poorly calibrated models, individual models with an AUC score ≤ 0.7 or a TSS score ≤ 0.4 were disregarded in the summation of Eq. S3.1 and Eq. S3.2.

The WA_{AUC} and WA_{TSS} probabilistic projections in the range [0:1] were then reclassified into binary projection: 1 or 0 for respectively suitable and unsuitable habitat. This was done by computing a "weighted average" or "consensus" threshold (Eq. S3.3 and Eq. S3.4) and reclassifying the weighted average projections (WA_{AUC} and WA_{TSS}) greater or equal to the threshold as 1 (suitable habitat) and those below the threshold as 0 (unsuitable habitat).

$$Threshold_{WA\,AUC} = \frac{\sum_{i=1}^{5} Threshold_i \times (AUC_i - 0.5) \times 2}{\sum_{i=1}^{5} (AUC_i - 0.5) \times 2} \qquad \text{Eq. S3.3}$$

$$Threshold_{WA\,TSS} = \frac{\sum_{i=1}^{5} Threshold_i \times TSS_i}{\sum_{i=1}^{5} TSS_i} \quad \text{Eq. S3.4}$$

References:

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Supporting information, Appendix S4: Vegetation belt definition and species classification.

Definition of vegetation belt limits

To divide each study area into different altitudinal vegetation life zones, the four following vegetation belts were considered (Theurillat 1991; Körner 2003):

- Alpine: Life zone encompassing exclusively vegetation above the upper limit of the natural tree-line (alpine and nival vegetation zones). Only grasslands or small shrubs such as dwarf *Salix sp.* are found in this vegetation belt. The vegetation period lasts for ~50 – 100 days per year.
- Subalpine: Life zone between the closed montane forest and the uppermost limit of small tree species individuals. This zone represents the transition zone between fully grown forest and Alpine grasslands. Deciduous trees are mostly absent from this vegetation belt dominated by conifers. The vegetation period lasts for ~100 – 200 days per year.
- Montane: Life zone where the native vegetation is mainly composed of fully grown coniferous forest, or mixed forests with deciduous trees such as *Fagus sylvatica*. The vegetation period lasts for ~200 – 250 days per year.
- Colline: Lowest and hence warmest life zone where the native vegetation is mainly deciduous forests composed of species such as *Quercus sp. pl.*, *Fraxinus sp. pl.* or *Acer sp. pl.* The vegetation period lasts for more than 250 days per year.

Although the upper and lower limits of vegetation belts are often defined in terms of elevation, essentially, a vegetation belt corresponds to a certain temperature range (Theurillat 1991). Since the different study areas considered in our analysis are scattered over a fairly large latitudinal and longitudinal gradient, a single set of vegetation belt limits based on elevation or even temperature cannot provide satisfactory classification.

We therefore defined individually the vegetation belt limits for each study area by looking at the literature specific to a given mountain range (Table S4.1). When the limits found in the literature were given in terms of elevation, which was mostly the case, we converted these elevation values into mean annual temperatures. This was done by looking at the distribution of mean annual temperature of pixels having the vegetation belt limit's elevation within the study area. Using these mean annual temperature thresholds we could then classify each pixel of a study area as belonging either to the Alpine, Subalpine, Montane or Colline vegetation belt. Using temperature rather than elevation for delimiting vegetation belts also offers the advantage of accounting for variable topographic position within a study area: typically, in the northern hemisphere, the limit of a given vegetation belt will be at lower elevation on north-facing than on south-facing slopes.

Note that the term "colline" is used across all mountains for the lowest level only for the sake of having a uniform terminology. Otherwise, we should have use "mesomediterranean belt" for the study areas located in the Apennines, southern France and the Pyrenees when considering that these ranges belong to the Mediterranean region and not to the Eurosiberian one.

Table S4.1 Range of vegetation belts for each study area given in terms of elevation above sea level and mean annual temperature. A = Alpine, SA = Subalpine, M = Montane, C = Colline.

Study Area name	Vegetation belt limits by elevation [m a.s.l.]	Vegetation belt limits by mean annual temperature [°C]	Reference
Eastern Austrian Alps	**A:** > 1800 m **SA:** 1200 – 1800 m **M:** 500 – 1200 m **C:** < 500 m	**A:** < 1 °C **SA:** 1 – 4 °C **M:** 4 – 7.5 °C **C:** > 7.5 °C	Dullinger *et al.* (2003)
South-East Carpathians	**A:** > 2200 m **SA:** 1700 – 2200 m **M:** 700 – 1700 m **C:** < 700 m	**A:** < 0 °C **SA:** 0 – 2 °C **M:** 2 – 7 °C **C:** > 7 °C	Coldea (1991)
French Alps 1 and 2	**A:** > 2400 m **SA:** 1600 – 2400 m **M:** 800 – 1600 m **C:** < 800 m	**A:** < 3 °C **SA:** 3 – 6 °C **M:** 6 – 10 °C **C:** > 10 °C	Rameau *et al.* (1993)
Central Apennines	**A:** > 2300 m **SA:** 1600 – 2300 m **M:** 900 – 1600 m **C:** < 900 m	**A:** < 2.5 °C **SA:** 2.5 – 7.5 °C **M:** 7.5 – 11.5 °C **C:** > 11.5 °C	Stanisci (2008) Theurillat *et al.* (2009)
Norwegian Scandes	**A:** > 1000 m **SA:** 500 – 1000 m **M:** < 500 m **C:** NA	**A:** < 1 °C **SA:** 1 – 4 °C **M:** > 4 °C **C:** NA	Moen (1999)
Spanish Pyrenees 1 and 2	**A:** > 2300 m **SA:** 1800 – 2300 m **M:** 500 – 1800 m **C:** < 500 m	**A:** < 3 °C **SA:** 3 – 6 °C **M:** 6 – 12 °C **C:** > 12 °C	Rivas-Martínez (1987)
Scottish Highlands	**A:** > 600 m **SA:** < 600 m **M:** NA **C:** NA	**A:** < 5 °C **SA:** > 5 °C **M:** NA **C:** NA	Horsfield & Thompson (1996)
Swiss inner Alps 1 and 2	**A:** > 2400 m **SA:** 1600 – 2400 m **M:** 800 – 1600 m **C:** < 800 m	**A:** < 0 °C **SA:** 0 – 4 °C **M:** 4 – 8 °C **C:** > 8 °C	Aeschimann & Burdet (1994)
Swiss Western Alps	**A:** > 1800 m **SA:** 1300 – 1800 m **M:** 700 – 1300 m **C:** < 700 m	**A:** < 3 °C **SA:** 3 – 5.5 °C **M:** 5.5 – 8.5 °C **C:** > 8.5 °C	Aeschimann & Burdet (1994)

Classification of species into vegetation belts

For a given study area, a species was associated to the vegetation belt in which most of its occurrence records fell into.

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Supporting information, Appendix S5: ordinary and logistic regressions of species suitable habitat loss against study area elevation range, study area size and species distribution along the elevation gradient.

The proportion of species projected to lose 100% or >80% of their suitable habitats by 2070-2100 under A1FI, A2, B1 and B2 climate change scenarios was related to the following three explanatory variables using ordinary and logistic regressions:

- Study area elevation range. Study areas with greater elevation range are expected to have lower species habitat loss levels because they offer more room for species to migrate upwards.
- Study area surface: Study areas with larger surface extent are expected to have lower species habitat loss levels because they offer more opportunities for providing some climatically suitable refuges.
- Position of species along the altitudinal gradient of the study area. Species located towards the bottom of the study area are expected to be less threatened because they are provided with the opportunity to migrate upwards. This information was summarized in a "species elevation index".

The "species elevation index" of each study area was derived as follows: First, each study area was divided into 10 equal altitudinal slices having each an elevation range of one tenth of the study area's elevation range. These elevation slices received a value from "1", for the top-most slice, to "10", the lowest elevation slice. Each species was then associated to the altitudinal slice in which the mean of its observed occurrences was falling into (histograms of species occurrence frequency along the elevation gradient were visually checked to ensure that no species had a bi-modal distribution). A species falling into the highest elevation slice was thus awarded a ranking of "1" and a species falling into the lowest elevation slice a ranking of 10.
Finally, to derive the species elevation index of a study area (Table S5.1), the rankings for all species in a given study area were averaged. The smaller the index (i.e., the closer to 1), the closer the species' spatial distribution is to the top of the study area, the larger (i.e., the closer to 10), the more the species occupies the lower parts of the study area's elevation gradient. Note that the division of a study area into 10 equal altitudinal slices was used only to compute species elevation indexes, and not in any other analysis carried-out throughout the present study.

Table S5.1: Elevation range, species elevation index and surface extent of the different dataset.
* denotes study areas were not used in the regression analyses due to their small number of species.

Study Area name	Elevation range [m]	Species elevation index	Surface [km^2]
East. Austrian Alps	1767	3.72	741
South-East Carpathians	2250	2.15	38'157
French Alps 1	4785	8.56	57'496
French Alps 2	1695	4.61	63
Central Apennines *	785	2.90	59
Norwegian Scandes	2443	5.98	18'366
Pyrenees 1	2734	6.80	8'996
Pyrenees 2 *	2395	4.40	5'206
Scottish Highlands	1095	4.89	438
Swiss inner Alps 1	3085	7.25	243
Swiss inner Alps 2	1610	7.39	19
Swiss Western Alps	2749	5.97	704

Figure S5.1 and Table 5.2 show the linear regressions of the proportion of species projected to lose 100% of their suitable habitats by 2070-2100 against either of the three above-mentioned explanatory variables (study area elevation range, species elevation index, study area surface extent).

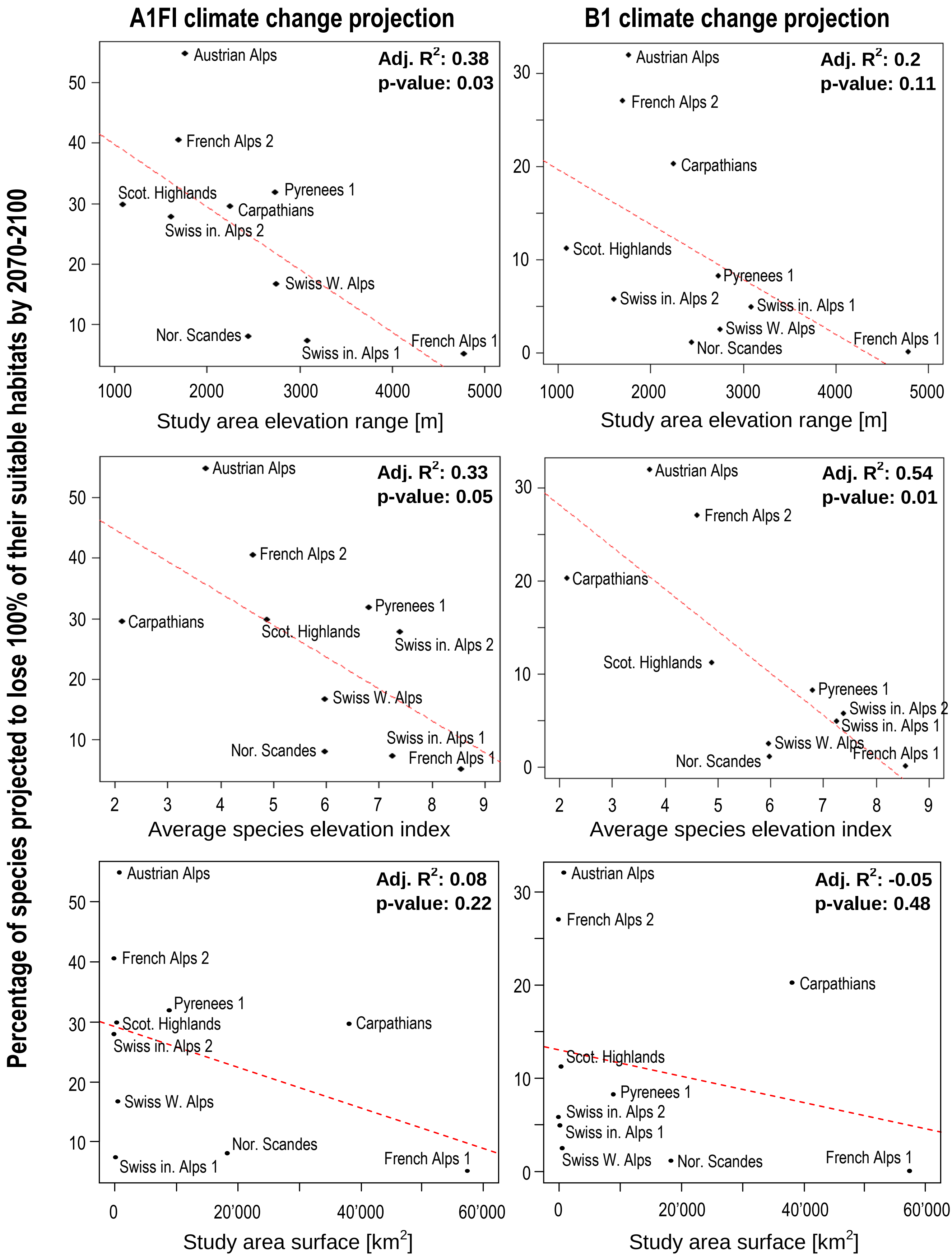

Figure S5.1 Percentage of species projected to lose 100% of their suitable habitats by 2070-2100 as a function of a study area's elevation range (top panels), species elevation index (middle panels) and surface extent (bottom panels) under A1FI (left panels) and B1 (right panels) climate change projections. The dotted lines represent the regression line of a linear model. Adjusted deviance and p-value associated with the regression line are indicated in the upper right corner of each plot.

Table S5.2. Explanatory power (Adjusted R^2), regression slope and intercept of univariate linear models relating the percentage of species projected to lose 100% or 80% of their suitable habitats by 2070-2100 (response variables) to either study area elevation range, species position along elevation gradient (species elevation index) or study area surface extent (explanatory variable).

Significativity codes are the following: * = p-value < 0.1, ** = p-value < 0.5, *** = p-value < 0.01, **** = p-value < 0.001

Response variable	Climate change scenario	Explanatory variable	Adj. R2	Regression slope	Intercept
Percentage of species projected to lose 100% of their suitable habitats by 2070-2100.	A1FI	Study area elev. range	0.38	-0.01**	50.21***
		Sp. position along elev. gradient	0.33	-5.26**	55.31***
		Study area surface extent	0.08	-0.0003	29.36****
	B1	Study area elev. range	0.2	-0.005*	25.54**
		Sp. position along elev. gradient	0.54	-4.52***	37.17***
		Study area surface extent	0.05	-0.0001	13.08**
	A2	Study area elev. range	0.43	-0.01**	44.28***
		Sp. position along elev. gradient	0.63	-6.28***	56.12****
		Study area surface extent	0.0005	-0.0002	23.18***
	B2	Study area elev. range	0.17	-0.006	24.81**
		Sp. position along elev. gradient	0.59	-4.45***	36.88***
		Study area surface extent	-0.05	-0.0001	13.16**
Percentage of species projected to lose 80% of their suitable habitats by 2070-2100.	A1FI	Study area elev. range	0.15	-0.007	64.71****
		Sp. position along elev. gradient	-0.02	-4.5***	61.27***
		Study area surface extent	0.06	-0.0001	13.07**
	B1	Study area elev. range	0.24	-0.009*	52.19***
		Sp. position along elev. gradient	0.32	-5.55*	61.51***
		Study area surface extent	0.07	-0.0003	34.03****
	A2	Study area elev. range	0.34	-0.01**	67.22****
		Sp. position along elev. gradient	0.11	-3.81	64.98***
		Study area surface extent	0.13	-0.0004	47.89****
	B2	Study area elev. range	0.28	-0.009*	53.16***
		Sp. position along elev. gradient	0.34	-5.25**	61.23***
		Study area surface extent	0.06	-0.0003	35.06****

Logistic Regressions

We fitted binomial logistic regressions (generalized linear models) with logit link ($Y = e^{LP}/(e^{LP} + 1)$, where LP is the linear predictor) to respectively relate the rate of species projected lose 100% and >80% of their suitable habitats by 2070-2100 to a study area's elevation range, surface extent and species elevation index. The Central Apennines and Spanish Pyrenees 2 datasets were left out of this analysis as they had too little species to provide meaningful rates of habitat loss. Logistic regressions were fitted with a single variable at a time (Table 5.3) as well as with all three variables together (Table 5.4).

Table S5.3 Percentage of explained deviance for each of the three explanatory variables (study area elevation range, study area surface extent, and species elevation index) when related to the proportion of species projected to decrease in distribution by 100% or >80% by 2070-2100 using univariate logistic regression (i.e. only one variable considered at a time). Rates of species projected to lose 100% or >80% of their habitats were derived from the consensus (i.e. weighted average) projections.

Response variable	Climate change scenario	Percentage of variance explained by each explanatory variable		
		Study area range	Sp. elevation index	Study area surface
Percentage of species projected to lose 100% of their suitable habitats by 2070-2100.	A1FI	49.1	37.6	18.8
	B1	35.6	56.4	7.1
	A2	55.8	62.1	11.5
	B2	32.9	58.1	7.6
Percentage of species projected to lose 80% of their suitable habitats by 2070-2100.	A1FI	24.8	9.6	15.9
	B1	34.2	37.6	17.7
	A2	41.7	20.4	22.5
	B2	37.9	39.6	16.6

Table S5.4 Summary of the calibrated generalized linear models (logistic regressions). Estimates are given in the space of the linear predictor. Rates of species projected to lose 100% or >80% of their habitats were derived from the consensus (i.e. weighted average) projections.

Rate of sp. projected to lose 100% of suitable habitats under A1FI (Y) ~ Elevation range (X1) + Sp. elevation index (X2) + Study area surface (X3)

```
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)  1.201e+00  1.717e-01   6.995 2.65e-12 ***
X1          -2.705e-04  9.069e-05  -2.983  0.00285 **
X2          -2.731e-01  3.673e-02  -7.437 1.03e-13 ***
X3          -2.046e-05  4.454e-06  -4.593 4.36e-06 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 389.09  on 9  degrees of freedom
Residual deviance: 139.51  on 6  degrees of freedom
AIC: 203.57
Explained deviance: 64.1%
```

Rate of sp. projected to lose 100% of suitable habitats under B1 (Y) ~ Elevation range (X1) + Sp. elevation index (X2) + Study area surface (X3)

```
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)  1.753e+00  2.741e-01   6.398 1.58e-10 ***
X1           2.864e-05  1.417e-04   0.202     0.84
X2          -6.857e-01  6.139e-02 -11.169  < 2e-16 ***
X3          -4.613e-05  6.763e-06  -6.822 8.98e-12 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 350.239  on 9  degrees of freedom
Residual deviance:  64.058  on 6  degrees of freedom
AIC: 115.97
Explained deviance: 81.7%
```

Rate of sp. projected to lose 100% of suitable habitats under A2 (Y) ~ Elevation range (X1) + Sp. elevation index (X2) + Study area surface (X3)

```
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)  1.846e+00  2.029e-01   9.100  < 2e-16 ***
X1          -3.113e-04  1.043e-04  -2.984  0.00285 **
X2          -4.398e-01  4.302e-02 -10.223  < 2e-16 ***
X3          -2.507e-05  5.162e-06  -4.856  1.2e-06 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

    Null deviance: 389.544  on 9  degrees of freedom
Residual deviance:  45.312  on 6  degrees of freedom
AIC: 106.61
Explained deviance: 88.3%
```

Rate of sp. projected to lose 100% of suitable habitats under B2 (Y) ~ Elevation range (X1) + Sp. elevation index (X2) + Study area surface (X3)

```
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)  1.528e+00  2.678e-01   5.705 1.16e-08 ***
X1           1.972e-04  1.420e-04   1.389    0.165
X2          -7.025e-01  6.171e-02 -11.384  < 2e-16 ***
X3          -4.930e-05  6.735e-06  -7.320 2.48e-13 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

    Null deviance: 325.31  on 9  degrees of freedom
Residual deviance:  51.05  on 6  degrees of freedom
AIC: 105.36
Explained deviance: 84.3%
```

Rate of sp. projected to lose 80% of suitable habitats under A1FI (Y) ~ Elevation range (X1) + Sp. elevation index (X2) + Study area surface (X3)

```
Coefficients:
              Estimate Std. Error z value Pr(>|z|)    
(Intercept)  6.166e-01  1.273e-01   4.843 1.28e-06 ***
X1          -1.876e-04  7.755e-05  -2.418   0.0156 *  
X2          -3.355e-02  2.989e-02  -1.122   0.2617    
X3          -5.143e-06  3.283e-06  -1.567   0.1172    
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 237.25  on 9  degrees of freedom
Residual deviance: 175.97  on 6  degrees of freedom
AIC: 244.68
Explained deviance: 24.5%
```

Rate of sp. projected to lose 80% of suitable habitats under B1 (Y) ~ Elevation range (X1) + Sp. elevation index (X2) + Study area surface (X3)

```
Coefficients:
              Estimate Std. Error z value Pr(>|z|)    
(Intercept)  1.047e+00  1.552e-01   6.746 1.52e-11 ***
X1           6.868e-05  8.627e-05   0.796    0.426    
X2          -3.256e-01  3.488e-02  -9.334  < 2e-16 ***
X3          -2.621e-05  4.024e-06  -6.513 7.39e-11 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 391.93  on 9  degrees of freedom
Residual deviance: 163.94  on 6  degrees of freedom
AIC: 229.54
Explained deviance: 58.2%
```

Rate of sp. projected to lose 80% of suitable habitats under A2 (Y) ~ Elevation range (X1) + Sp. elevation index (X2) + Study area surface (X3)

```
Coefficients:
              Estimate Std. Error z value Pr(>|z|)    
(Intercept)  8.839e-01  1.321e-01   6.691 2.21e-11 ***
X1          -2.627e-04  7.817e-05  -3.361 0.000776 ***
X2          -7.940e-02  3.032e-02  -2.619 0.008824 ** 
X3          -7.435e-06  3.404e-06  -2.184 0.028931 *  
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

    Null deviance: 290.80  on 9  degrees of freedom
Residual deviance: 161.88  on 6  degrees of freedom
AIC: 230.18
Explained deviance: 44.3%
```

Rate of sp. projected to lose 80% of suitable habitats under B2 (Y) ~ Elevation range (X1) + Sp. elevation index (X2) + Study area surface (X3)

```
Coefficients:
              Estimate Std. Error z value Pr(>|z|)    
(Intercept)  9.014e-01  1.474e-01   6.117 9.54e-10 ***
X1          -3.037e-05  8.461e-05  -0.359     0.72    
X2          -2.585e-01  3.347e-02  -7.723 1.14e-14 ***
X3          -1.789e-05  3.843e-06  -4.656 3.23e-06 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

    Null deviance: 321.21  on 9  degrees of freedom
Residual deviance: 137.48  on 6  degrees of freedom
AIC: 203.86
Explained deviance: 57.2%
```

Supporting information, Appendix S6: Details of model evaluation and comparison. Evaluation of species distribution models, comparison of evaluations across modeling methodologies and comparison of spatial projections across modeling methodologies.

Evaluation of species distribution models predictive power using AUC and TSS measures

The results of the evaluation procedure, i.e. the AUC (area under the receiver operating characteristic curve) and TSS (True Skill Statistic) scores, are presented for each modeling technique and each study area in Figure S6.1, Table S6.1 and Table S6.2 (next pages).

With an average AUC of 0.78 ±0.7 (1 standard deviation) over all modeled species, GBM is the technique that earned the highest evaluation scores. It is followed by RF (average AUC: 0.77 ±0.7) and GLM (average AUC: 0.76 ±0.7). MARS (average AUC: 0.73 ±0.7) and GAM (average AUC: 0.70 ±0.8) were the least well performing methods among the five. The exact same trend is found when looking at TSS evaluation measures (Table S6.1).
Given that the differences in AUC and TSS evaluation values between the three highest ranked modeling techniques (GBM, RF and GLM) are minim, these should probably be considered as offering equal performance.
Looking at the proportion of useful models (defined as models with AUC > 0.7 or TSS > 0.4), the observed trend in model ranking is similar: GBM produced the highest proportion of useful models, with 76.8 ±21.7% of the species having models scoring above the AUC threshold and 58.9 ±27.4% above the TSS threshold. In 10 out of 12 study areas, GBM is the method that had the highest percentage of species scoring above either the AUC or the TSS threshold. RF models and GLM generally ranked second or third, while MARS generally ranked fourth and GAM was the method getting the lowest percentages of models considered as useful.

Table S6.1 Average AUC and TSS values across all species for each study area and each modeling technique. Mean and standard deviation across all species (i.e. pooling all species of all study areas) are also given in the rightmost column.

	Modeling technique	Austrian Alps	French Alps 1	French Alps 2	Swiss Inner Alps 2	Central Apennines	Spanish Pyrenees 1	Swiss Western Alps	Norwegian Scandes	Spanish Pyrenees 2	Scottish Highlands	South East Carpathians	Swiss Inner Alps 1	**All species pooled**
Mean AUC value	**GLM**	0.74	0.86	0.66	0.77	0.74	0.63	0.82	0.85	0.77	0.77	0.74	0.74	0.76 ±0.07
	GAM	0.70	0.84	0.60	0.71	0.68	0.57	0.80	0.82	0.65	0.65	0.67	0.69	0.70 ±0.08
	GBM	0.76	0.90	0.70	0.77	0.75	0.65	0.82	0.88	0.79	0.79	0.75	0.78	0.78 ±0.07
	RF	0.75	0.91	0.70	0.75	0.74	0.64	0.81	0.87	0.80	0.80	0.75	0.72	0.77 ±0.07
	MARS	0.71	0.84	0.65	0.73	0.70	0.62	0.78	0.84	0.72	0.72	0.72	0.73	0.73 ±0.07
Mean TSS value	**GLM**	0.46	0.65	0.35	0.52	0.47	0.32	0.60	0.66	0.58	0.58	0.46	0.47	0.51 ±0.11
	GAM	0.38	0.62	0.19	0.41	0.35	0.15	0.57	0.59	0.32	0.32	0.33	0.36	0.38 ±0.15
	GBM	0.49	0.72	0.42	0.53	0.48	0.35	0.59	0.70	0.60	0.60	0.48	0.53	0.54 ±0.11
	RF	0.45	0.72	0.41	0.43	0.46	0.34	0.57	0.68	0.61	0.61	0.45	0.40	0.51 ±0.12
	MARS	0.42	0.62	0.34	0.43	0.42	0.28	0.54	0.65	0.50	0.50	0.43	0.45	0.47 ±0.11
Number of species/models		269	597	114	100	10	1118	287	90	5	124	116	265	3095

Table S6.2 Percentage of species with distribution model considered as useful (i.e., AUC > 0.7 and TSS > 0.4) in each study area and for each modeling technique. Mean and standard deviation across all study areas are also given in the rightmost column.

	Modeling technique	Austrian Alps	French Alps 1	French Alps 2	Swiss Inner Alps 2	Central Apennines	Spanish Pyrenees 1	Swiss Western Alps	Norwegian Scandes	Spanish Pyrenees 2	Scottish Highlands	South East Carpathians	Swiss Inner Alps 1	**Mean across study areas**
% of species with AUC > 0.7	**GLM**	64.7	96.5	28.9	68.0	20.0	68.4	96.9	89.9	80	62.1	62.1	81.0	68.2 ±24.0
	GAM	55.4	93.6	17.5	48.0	10.0	54.8	90.6	82.0	40	43.5	48.3	65.4	54.1 ±26.1
	GBM	72.5	100	45.6	70.0	30.0	75.0	94.8	97.8	100	70.2	82.8	83.7	76.8 ±21.7
	RF	68.4	99.8	48.2	67.0	20.0	63.0	94.8	97.8	100	66.9	58.6	73.8	71.5 ±24.0
	MARS	58.7	97.0	31.6	48.0	10.0	59.4	88.9	94.4	80	54.0	62.1	76.4	63.4 ±26.0
% of species with TSS > 0.4	**GLM**	45.0	82.6	14.0	42.0	10.0	51.1	83.3	83.1	80	40.3	41.4	53.6	52.2 ±25.7
	GAM	37.2	78.7	9.6	26.0	0.0	43.6	74.6	74.2	40	28.2	31.0	40.7	40.3 ±24.9
	GBM	49.8	97.3	24.6	41.0	20.0	52.3	80.8	92.1	100	40.3	52.6	56.3	58.9 ±27.4
	RF	37.2	97.3	20.2	36.0	20.0	32.3	71.4	87.6	100	29.0	23.3	35.0	49.1 ±30.8
	MARS	29.7	81.1	12.3	28.0	10.0	36.4	64.5	83.1	60	31.5	37.1	38.8	42.7 ±24.3
Number of species/models		269	597	114	100	10	1118	287	90	5	124	116	265	3095

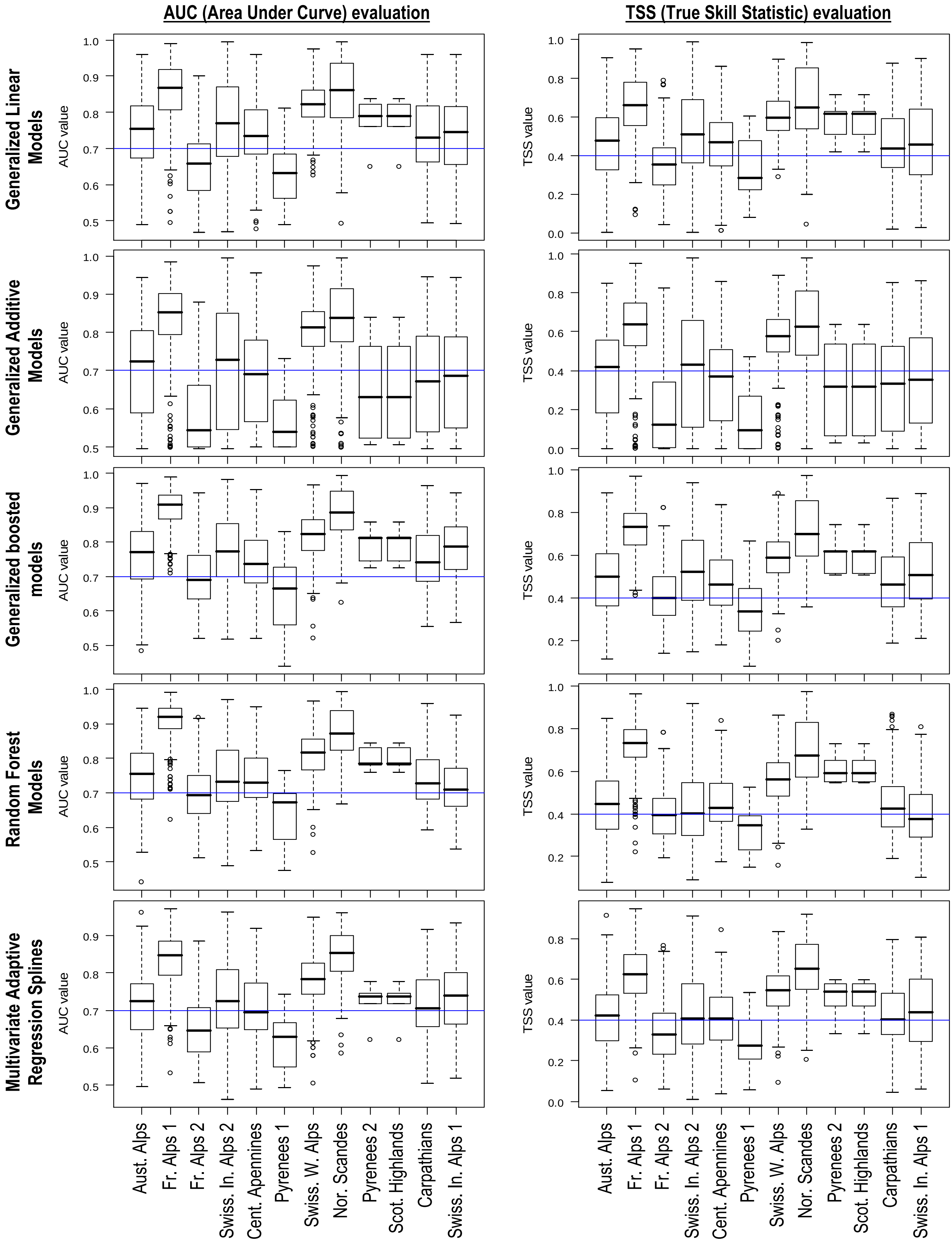

Figure S6.1 Boxplots of AUC and TSS evaluation values for each study area and each modeling technique. Blue lines highlight the AUC = 0.7 and TSS = 0.4 thresholds above which a model was considered as useful and kept for analysis.

Comparison of AUC and TSS model evaluation measures
With a correlation varying between 95-98% (N=15'475) depending on the study area, the AUC and TSS measures provided quasi-equivalent model evaluation. In other words, models that obtained a high AUC score almost always had a high TSS score too. Indeed, across all modeling techniques, 94% ±1.9% (1 standard deviation, N=15'475) of the time, these two evaluation measures agreed upon classifying a model as useful or not (i.e., AUC > 0.7 and TSS > 0.4).

Comparison of model evaluation across modeling techniques
Comparing evaluation values between modeling techniques reveals that in 78% of the cases (N=240), the correlation in evaluation measure (either AUC or TSS) between any two modeling techniques was > 80%. Furthermore, 91% ±1.4% (1 standard deviation, N=20) of the time, the evaluation measures between any two pairs of modeling technique agreed upon classifying a model as useful or not (i.e., AUC > 0.7 and TSS > 0.4). This means that species that were successfully modeled with one technique were generally also well modeled using another methodology, and those that had poor models with one technique were also poorly modeled when using another modeling method. Such result is reassuring as it indicates that the underlying species biology or field data is more important in determining the quality of a distribution model than the particular technique that was used. Our result also corroborates with previous findings from Elith *et al.* (2006) in a large methodological comparison study involving 226 species and 16 modeling methods.

Spatial agreement between projections obtained from AUC-based and TSS-based reclassification thresholds
For each modeling technique (GLM, GAM, GBM, RF, MARS and WA), we compared the binary spatial projections (i.e. habitat is suitable or not) obtained using either the AUC-based or the TSS-based reclassification threshold. This comparison that we name "spatial agreement" is the percentage of pixels, for a given species in a given study area, that are reclassified equally by both the AUC-based and TSS-based threshold, i.e. the pixels are either both suitable or both non-suitable. This spatial agreement was computed under current climatic conditions and the four projections of future climate change scenarios (A1FI, A2, B1 and B2).
The spatial projections obtained using either the AUC-based or TSS-based reclassification threshold were highly similar: on average, 94 ±11.3% (1 standard deviation) of the pixels were predicted identically across all study areas, climatic scenarios, species and modeling techniques (number of models, N=92'850). No important difference in this spatial agreement was observed across climatic scenarios or modeling techniques (Table S6.3). This means that projections of suitable habitat obtained by reclassifying the original probabilistic values with either the AUC-based or the TSS-based threshold yielded, in their large majority, very similar results.

Table S6.3 Mean and standard deviation (SD) of the spatial agreement (% of identically predicted pixels) between AUC-based and TSS-based reclassification thresholds. Mean and SD Values are based on 3095 × 6 models when computed by climate change and 3095 × 5 models when computed by modeling technique.

By Climatic Scenario			**By modeling technique**		
Climatic Scenario	**Mean**	**SD**	**Modeling technique**	**Mean**	**SD**
Present	93.7	9.4	GLM	96.6	4.9
A1FI	94.8	13.1	GAM	95.5	7.1
A2	94.8	11.8	GBM	96.6	7.8
B1	94.5	10.9	RF	91.5	16.4
B2	94.5	10.9	MARS	95.1	12.6
			WA (weighted average)	91.3	13.1

Spatial agreement between modeling techniques

To compare the spatial projections yielded by the different modeling techniques (GLM, GAM, GBM, RF, MARS and WA), we computed the spatial agreement as defined above between all modeling techniques. This spatial agreement was measured pair-wise for all species, all modeling techniques and all climatic scenarios (Present climate, A1FI, A2, B1 and B2).

GLM, GAM, GBM, RF and WA provided reasonably similar projections, with and average of 75 ±25% (1 standard deviation) spatial agreement between any two of these modeling techniques across all study areas and climatic scenarios (Table S6.4). MARS proved to be the method having always the least spatial agreement with any other method: on average, only 55 ±32% (1 standard deviation) of the pixels had the same value as projected by the method it was compared to.

Comparing the spatial agreement between modeling techniques across the different climatic conditions, showed that, on average, the agreement was of 5.5 ±4.5% higher under current climatic conditions than under projected future climatic scenarios. More extreme climate change scenarios (e.g. A1FI) also showed lower levels of spatial agreement than less extreme ones (e.g. B1, Table S6.4), but this difference was rather small (1.5 ±1.7%) and thus not of significance.

Interestingly, the WA method provided spatial projections having the highest spatial agreement with any other individual modeling technique (85 ±21% similarity with GLM, GAM, GBM and RF and 60 ±33% with MARS). This result thus further supports the implementation of ensemble forecasting as an effective way of providing robust projections. It also provides strong support for the results from Marmion *et al.* (2009) who already found that WA is a robust consensus method.

Table S6.4 Mean ±standard error of the spatial agreement (% of identically predicted pixels) between modeling techniques under **a)** all climatic conditions (average of present, A1FI, A2, B1 and B2), **b)** current climatic conditions, **c)** A1FI climate change scenario and, **d)** B1 climate change scenario.

a) All climatic conditions

	GLM	GAM	GBM	RF	MARS	WA
GLM	-	-	-	-	-	-
GAM	78.4 ±26.5	-	-	-	-	-
GBM	77.4 ±25.3	77.8 ±25.7	-	-	-	-
RF	72.1 ±26.7	71.3 ±28.8	80.1 ±25.4	-	-	-
MARS	56.9 ±31.4	56.6 ±32.4	55.2 ±34.5	55.6 ±33.8	-	-
WA	85.2 ±19.5	81.6 ±24.4	86.7 ±19.3	82.8 ±22.7	60.4 ±33	-

b) Present climatic conditions

	GLM	GAM	GBM	RF	MARS	WA
GLM	-	-	-	-	-	-
GAM	83.4 ±17.8	-	-	-	-	-
GBM	83 ±12.3	78.7 ±19.3	-	-	-	-
RF	75.6 ±14.9	71.8 ±21.9	85.8 ±11.8	-	-	-
MARS	66.5 ±24.8	64.6 ±26.4	65.8 ±27.7	62.5 ±28.6	-	-
WA	85.4 ±12.7	80 ±21.3	90 ±9.6	88.1 ±12	68.2 ±26.4	-

c) A1FI climatic change projections

	GLM	GAM	GBM	RF	MARS	WA
GLM	-	-	-	-	-	-
GAM	75.9 ±31.1	-	-	-	-	-
GBM	74.4 ±31.6	77.9 ±29.8	-	-	-	-
RF	68.9 ±33.2	70.1 ±33.9	75.9 ±31.9	-	-	-
MARS	53.9 ±34.3	53.5 ±35.4	51.6 ±36.7	53.8 ±35.6	-	-
WA	84.8 ±23.9	82.6 ±26.6	85 ±24	79 ±28.5	58 ±35.4	-

d) B1 climatic change projections

	GLM	GAM	GBM	RF	MARS	WA
GLM	-	-	-	-	-	-
GAM	78 ±25.9	-	-	-	-	-
GBM	77.1 ±24.3	77.3 ±25.3	-	-	-	-
RF	72.6 ±25.6	71.9 ±27.7	80.6 ±24.3	-	-	-
MARS	54.5 ±31.2	54.9 ±32.1	52.6 ±34.7	53.1 ±34.4	-	-
WA	85.4 ±18.6	81.6 ±24.1	86.4 ±18.8	83.1 ±21.4	58.3 ±33.5	-

References:

Elith J, Graham CH, Anderson RP, *et al.* (2006) Novel methods improve prediction of species' distributions from occurrence data. *Ecography,* **29** (2), 129-151.

Marmion M, Parviainen M, Luoto M, Heikkinen RK, Thuiller W (2008) Evaluation of consensus methods in predictive species distribution modelling. *Diversity and Distributions*, **15**, 59-69.

Supporting information, Table S7: Projected decrease in species distributions by study area. Percentage of species, for each study area, with a projected decrease in potentially suitable habitat by 2070-2100 of respectively 100%, >90% or >80% under A1FI, A2, B1 and B2 climate change scenarios. The "consensus" columns represent the mean value obtained from the AUC and TSS weighted average projections. The "80% Range" columns indicate the range of values observed across 80% of the individual modeling techniques that yielded results closest to the consensus value (this is equivalent to showing the range of results yielded by all but the two most outlying models). The average values across all datasets ±1 standard deviation are given in the last row of the tables. Values from datasets denoted by a * (Spanish Pyrenees 2 and Central Apennines) were not considered for the computing of the average values as these datasets had too few species that could be modeled to provide a reliable percentage.

Table S7.1 Percentages of species with projected decrease in distribution by 2070-2100 of 100%, >90% or >80% under A1FI climate change scenario (most extreme: + 5.6 °C by 2070-2100).

		100% Habitat loss		>90% Habitat loss		>80% Habitat loss	
Dataset	**# modeled sp.**	**Consensus**	**80% Range**	**Consensus**	**80% Range**	**Consensus**	**80% Range**
East Austrian Alps	200	54.8	21.9 - 65.1	61.6	36.9 - 74.9	62.6	37.5 - 75.9
French Alps 1	597	5.1	0.2 - 7.9	22.8	10.3 - 34.8	31.1	14.7 - 42.7
French Alps 2	63	40.5	22.2 - 71.2	47.6	29.6 - 75	47.6	29.6 - 75
Swiss Western Alps	281	16.6	0.4 - 39.1	37.2	7.8 - 64.9	45.9	22 - 68.4
Swiss inner Alps 1	231	7.4	0.5 - 12.3	24.2	6.5 - 42.7	28.9	10 - 52.3
Swiss inner Alps 2	79	27.8	2.1 - 41.5	44.1	12.5 - 60	47.3	16.7 - 62.9
Norwegian Scandes	88	8.0	0 - 15.9	33.2	6.9 - 37.9	34.9	10.3 - 44.8
Scottish Highlands	94	29.8	22.7 - 37	55.5	31.8 - 67.8	58.9	36.5 - 69
South East Carpathians	97	29.5	1.5 - 53.5	41.8	13.9 - 65.6	44.6	13.9 - 65.6
Spanish Pyrenees 1	894	31.8	12.3 - 45.1	70.9	45.5 - 93.3	75.3	57.1 - 93.8
Spanish Pyrenees 2 *	5	20.0	0 - 25	33.3	25 - 80	70.0	60 - 100
Central Apennines *	3	33.3	0 - 50	60.0	0 - 66.7	50.0	0 - 100
Average	262.4	25.1 ±15.9		43.9 ±15.6		47.7 ±14.6	

Table S7.2 Percentages of species with projected decrease in distribution by 2070-2100 of 100%, >90% or >80% under B1 climate change scenario (least extreme: + 3.0°C by 2070-2100).

		100% Habitat loss		>90% Habitat loss		>80% Habitat loss	
Dataset	**# modeled sp.**	**Consensus**	**80% Range**	**Consensus**	**80% Range**	**Consensus**	**80% Range**
East Austrian Alps	200	31.9	15.2 - 38	53.8	24.4 - 62.4	59.3	32.5 - 66.4
French Alps 1	597	0.1	0 - 0.5	3.3	0.6 - 5	6.1	1.3 - 10.4
French Alps 2	63	27.0	2.8 - 50	38.1	7.7 - 68.8	42.9	24.1 - 75
Swiss Western Alps	281	2.5	0.4 - 4.4	13.4	1.5 - 29.4	22.2	4.5 - 44.9
Swiss inner Alps 1	231	4.9	0.5 - 9.9	11.0	2.6 - 17.3	15.7	0.5 - 27.9
Swiss inner Alps 2	79	5.8	1.7 - 7.7	19.4	2.1 - 32.3	23.3	5.9 - 33.3
Norwegian Scandes	88	1.2	0 - 2.7	9.7	1.2 - 17.5	12.0	2.3 - 22.5
Scottish Highlands	94	11.2	9.1 - 18.4	27.7	23.4 - 33.3	31.5	27.3 - 36.5
South East Carpathians	97	20.3	0 - 23.7	33.3	13.2 - 55.2	36.0	15.3 - 57.3
Spanish Pyrenees 1	894	8.2	0.2 - 15.6	32.4	17.5 - 43.2	47.6	31.6 - 63
Spanish Pyrenees 2 *	5	0.0	0 - 0	33.3	0 - 20	40.0	20 - 80
Central Apennines *	3	0.0	0 - 0	20.0	0 - 50	33.3	0 - 50
Average	262.4	11.3 ±11.2		24.2 ±15.6		29.7 ±16.9	

Table S7.3 Percentages of species with projected decrease in distribution by 2070-2100 of 100%, >90% or >80% under A2 climate change scenario (intermediate: + 4.5°C by 2070-2100).

		100% Habitat loss		>90% Habitat loss		>80% Habitat loss	
Dataset	**# modeled sp.**	**Consensus**	**80% Range**	**Consensus**	**80% Range**	**Consensus**	**80% Range**
East Austrian Alps	200	46.9	17.1 - 60.4	60.1	31.3 - 65.8	62.9	34.4 - 67.2
French Alps 1	597	1.3	0 - 1.8	11.8	4.4 - 20.8	19.5	9.9 - 27.9
French Alps 2	63	34.1	5.6 - 68.8	42.1	12.8 - 71.2	45.2	25.9 - 75
Swiss Western Alps	281	11.3	0 - 22.1	32.4	11.2 - 57	39.5	16.1 - 62.7
Swiss inner Alps 1	231	5.4	0.5 - 10.3	13.9	0 - 17.2	22.6	0.5 - 40.2
Swiss inner Alps 2	79	14.8	0 - 23.1	36.9	7.8 - 54.3	41.5	8.6 - 55.7
Norwegian Scandes	88	8.0	0 - 15.9	29.2	8.1 - 35.6	33.2	9.2 - 42.5
Scottish Highlands	94	29.8	22.4 - 37	55.2	33.7 - 66.7	58.1	36.1 - 67.8
South East Carpathians	97	31.1	11.1 - 53.1	37.6	12.5 - 59.4	41.4	13.9 - 62.5
Spanish Pyrenees 1	894	18.4	3.8 - 31.2	55.7	38.6 - 67.3	67.5	46.5 - 79.5
Spanish Pyrenees 2 *	5	0.0	0 - 0	33.3	0 - 100	50.0	20 - 100
Central Apennines *	3	16.7	0 - 33.3	40.0	0 - 50	33.3	0 - 50
Average	262.4	20.1 ±14.7		35.7 ±16.6		43.1 ±16.0	

Table S7.4 Percentages of species with projected decrease in distribution by 2070-2100 of 100%, >90% or >80% under B2 climate change scenario (intermediate: + 3.3°C by 2070-2100).

		100% Habitat loss		>90% Habitat loss		>80% Habitat loss	
Dataset	**# modeled sp.**	**Consensus**	**80% Range**	**Consensus**	**80% Range**	**Consensus**	**80% Range**
East Austrian Alps	200	35.2	17.7 - 38.5	53.2	27.5 - 61.7	59.1	36.3 - 65.8
French Alps 1	597	0.3	0 - 0.5	3.6	0.7 - 5.9	8.3	3.9 - 12.2
French Alps 2	63	22.2	3.7 - 56.3	35.7	10.3 - 62.5	40.5	11.1 - 65.4
Swiss Western Alps	281	5.0	0 - 9.9	17.9	2.2 - 39.1	26.5	6.7 - 50
Swiss inner Alps 1	231	4.2	0 - 5	10.3	3.2 - 15.9	13.0	0 - 23.5
Swiss inner Alps 2	79	5.8	1.7 - 10	21.4	6.9 - 38.6	27.3	6.3 - 44.6
Norwegian Scandes	88	1.2	0 - 7.3	12.6	2.3 - 21.3	19.4	5.8 - 27.5
Scottish Highlands	94	10.7	9.1 - 17.2	27.0	20.6 - 34.9	32.7	27.7 - 36.5
South East Carpathians	97	19.8	0 - 21.7	34.4	12.5 - 57.3	37.0	12.5 - 60.4
Spanish Pyrenees 1	894	9.5	0.2 - 18	31.9	19.9 - 41.5	47.5	36.1 - 57.6
Spanish Pyrenees 2 *	5	0.0	0 - 0	16.7	0 - 50	40.0	20 - 80
Central Apennines *	3	0.0	0 - 0	30.0	0 - 33.3	16.7	0 - 33.3
Average	262.4	11.4 ±11.1		24.8 ±14.7		31.1 ±15.6	

Supporting information, Table S8: Projected decrease in species distributions by study area and vegetation belt. Percentage of species, for each vegetation belt, with a projected decrease in potentially suitable habitat by 2070-2100 of respectively 100%, >90% or >80% under A1FI, A2, B1 and B2 climate change scenarios. The "consensus" columns represent the mean value obtained from the AUC and TSS weighted average projections. The "80% Range" columns indicate the range (minimum – maximum) of values observed in 80% of the individual models that yielded results closest to the consensus value (this is equivalent to showing the range of results yielded by all but the two most outlying models). The average values across all datasets are given ±1 standard deviation. Vegetation belts denoted by a * (star symbol) were not considered for the computing of the average values as they had too few species that could be modeled to provide reliable percentages.

Table S8.1 A1FI climate change scenario (most extreme: +5.6°C by 2070-2100).

			100% Habitat loss		>90% Habitat loss		>80% Habitat loss	
Dataset	**Veg. belt**	**# modeled sp.**	**Consensus**	**80% Range**	**Consensus**	**80% Range**	**Consensus**	**80% Range**
Eastern Austrian Alps	Alpine	47	89.4	65 - 100	92.6	73.8 - 100	92.6	74.4 - 100
	SubAlpine	153	43.9	12.7 - 56.7	51.9	23.7 - 66.9	53.2	24.6 - 68.2
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
French Alps 1	Alpine	0	-	-	-	-	-	-
	SubAlpine	38	40.8	13.2 - 55.3	90.8	68.4 - 100	98.7	79 - 100
	Montane	224	5.6	0 - 11.2	35.1	11 - 51.8	49.1	20.5 - 59.4
	Coline	335	0.8	0 - 1.3	6.9	1 - 12	11.3	2.7 - 14.9
French Alps 2	Alpine	57	43.0	25 - 76.1	50.9	33.3 - 80.4	50.9	33.3 - 80.4
	SubAlpine	6	16.7	0 - 33.3	16.7	0 - 33.3	16.7	0 - 33.3
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
Swiss Western Alps	Alpine	126	24.3	0.9 - 52.5	45.9	11.2 - 70.8	57.8	35.9 - 92.5
	SubAlpine	75	14.8	0 - 38.4	48.4	12.7 - 79.2	56.4	21.1 - 80.6
	Montane	74	6.8	0 - 13.5	14.2	1.4 - 24.3	18.9	2.7 - 28.4
	Coline	6	0.0	0 - 0	0.0	0 - 0	0.0	0 - 16.7
Swiss inner Alps 1	Alpine	130	5.8	0 - 6.7	31.7	6.4 - 54.2	39.5	10.1 - 69.2
	SubAlpine	101	9.4	0 - 15	15.3	5.6 - 29	16.3	1.2 - 24
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
Swiss inner Alps 2	Alpine	28	44.6	5.6 - 75	64.3	19.1 - 88	67.9	22.2 - 92
	SubAlpine	51	18.2	0 - 29.3	32.6	11.4 - 44.4	35.6	13.3 - 50
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
Norwegian Scandes	Alpine	73	9.7	0 - 19.4	40.0	8.3 - 45.8	42.1	12.5 - 52.8
	SubAlpine	15	0.0	0 - 0	0.0	0 - 0	0.0	0 - 6.7
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
Scottish Highlands	Alpine	63	40.5	29.6 - 51.6	59.9	48.7 - 73.1	63.3	52.7 - 74.6
	SubAlpine	31	10.0	0 - 17.9	47.6	0 - 57.1	50.9	4.4 - 60
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
South-East Carpathians	Alpine	11	72.7	20 - 90.9	72.7	30 - 90.9	72.7	40 - 90.9
	SubAlpine	85	24.0	0 - 25.9	38.1	3.6 - 63.1	41.3	3.6 - 63.1
	Montane*	1	0.0	0 - 0	0.0	0 - 0	0.0	0 - 0
	Coline	0	-	-	-	-	-	-
Pyrenees 1	Alpine*	4	100.0	75 - 100	100.0	100 - 100	100.0	100 - 100
	SubAlpine	168	79.8	36.3 - 99.4	98.8	78.6 - 100	99.4	83.8 - 100
	Montane	711	20.3	2.3 - 33.6	65.0	33.7 - 91.8	70.4	46 - 92.4
	Coline	11	0.0	0 - 9.1	0.0	0 - 9.1	0.0	0 - 9.1
Pyrenees 2	Alpine	0	-	-	-	-	-	-
	SubAlpine*	4	25.0	0 - 50	75.0	33.3 - 100	87.5	50 - 100
	Montane*	1	0.0	0 - 0	0.0	0 - 100	0.0	0 - 100
	Coline	0	-	-	-	-	-	-
Central Apennines	Alpine*	2	50.0	0 - 100	50.0	0 - 100	75.0	0 - 100
	SubAlpine*	1	0.0	0 - 0	0.0	0 - 100	0.0	0 - 100
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-

Table S8.2 B1 climate change scenario (least extreme: +3.0 °C by 2070-2100).

			100% Habitat loss		>90% Habitat loss		>80% Habitat loss	
Dataset	**Veg. belt**	**# modeled sp.**	**Consensus**	**80% Range**	**Consensus**	**80% Range**	**Consensus**	**80% Range**
Eastern Austrian Alps	Alpine	47	85.1	50 - 93.6	94.7	66.7 - 100	94.7	71.4 - 100
	SubAlpine	153	15.3	0.9 - 20.3	40.9	9.3 - 52.9	48.3	18.6 - 58.7
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
French Alps 1	Alpine	0	-	-	-	-	-	-
	SubAlpine	38	0.0	0 - 7.9	22.4	2.6 - 42.1	34.2	7.9 - 60.5
	Montane	224	0.0	0 - 0	3.4	0 - 5.4	8.3	0 - 14.3
	Coline	335	0.2	0 - 0.3	1.0	0.3 - 0.6	1.5	0.3 - 2.3
French Alps 2	Alpine	57	29.8	4.2 - 55.6	41.2	18.8 - 72.2	45.6	27.1 - 78.3
	SubAlpine	6	0.0	0 - 0	8.3	0 - 33.3	16.7	0 - 33.3
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
Swiss Western Alps	Alpine	126	2.4	0 - 4.1	18.4	1.7 - 41.5	34.7	8.6 - 50
	SubAlpine	75	4.0	0 - 5.6	14.8	1.4 - 30.1	18.2	1.4 - 45.2
	Montane	74	1.4	0 - 2.7	4.7	1.4 - 10.8	6.8	1.4 - 12.2
	Coline	6	0.0	0 - 0	0.0	0 - 16.7	0.0	0 - 16.7
Swiss inner Alps 1	Alpine	130	3.7	0 - 4.4	11.0	1.5 - 14.2	19.8	8.7 - 35.8
	SubAlpine	101	6.4	0 - 9	10.9	3.4 - 21	10.9	1.2 - 20
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
Swiss inner Alps 2	Alpine	28	10.7	0 - 14.3	39.3	4.4 - 68.8	44.6	8.7 - 80
	SubAlpine	51	3.0	0 - 4.7	8.1	0 - 11.6	11.1	5.4 - 14
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
Norwegian Scandes	Alpine	73	1.4	0 - 3.5	11.0	1.5 - 20.7	13.8	1.5 - 20.7
	SubAlpine	15	0.0	0 - 0	3.3	0 - 6.7	3.3	0 - 6.7
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
Scottish Highlands	Alpine	63	16.3	12.2 - 25.4	39.0	32.7 - 49.2	44.1	36.7 - 54.2
	SubAlpine	31	1.7	0 - 3.6	6.6	0 - 10.7	8.3	3.2 - 13.3
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
South-East Carpathians	Alpine	11	63.6	20 - 81.8	72.7	20 - 90.9	72.7	40 - 90.9
	SubAlpine	85	14.7	0 - 17.7	28.3	5.3 - 51.2	31.5	7.3 - 53.6
	Montane*	1	0.0	0 - 0	0.0	0 - 0	0.0	0 - 0
	Coline	0	-	-	-	-	-	-
Pyrenees 1	Alpine*	4	50.0	0 - 100	75.0	50 - 100	100.0	75 - 100
	SubAlpine	168	22.0	0.6 - 40.5	67.6	31.7 - 98.2	85.1	53 - 99.4
	Montane	711	4.9	0 - 9.6	24.1	12.6 - 32.2	38.7	23.8 - 54.3
	Coline	11	0.0	0 - 0	4.5	0 - 9.1	9.1	0 - 11.1
Pyrenees 2	Alpine	0	-	-	-	-	-	-
	SubAlpine*	4	0.0	0 - 0	25.0	0 - 25	50.0	25 - 75
	Montane*	1	0.0	0 - 0	0.0	0 - 0	0.0	0 - 100
	Coline	0	-	-	-	-	-	-
Central Apennines	Alpine*	2	0.0	0 - 0	50.0	0 - 100	50.0	0 - 100
	SubAlpine*	1	0.0	0 - 0	0.0	0 - 0	0.0	0 - 0
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-

Table S8.3 A2 climate change scenario (intermediate: +4.5 °C by 2070-2100).

			100% Habitat loss		>90% Habitat loss		>80% Habitat loss	
Dataset	**Veg. belt**	**# modeled sp.**	**Consensus**	**80% Range**	**Consensus**	**80% Range**	**Consensus**	**80% Range**
Eastern Austrian Alps	Alpine	47	85.1	60 - 93.6	93.6	69.2 - 100	93.6	71.8 - 100
	SubAlpine	153	34.9	4.2 - 51.9	49.6	19.5 - 57.7	53.3	21.2 - 59.6
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
French Alps 1	Alpine	0	-	-	-	-	-	-
	SubAlpine	38	10.5	0 - 21.1	73.7	47.4 - 92.1	93.4	71.1 - 100
	Montane	224	1.3	0 - 2.2	15.4	2.7 - 28.1	29.9	10.5 - 44.6
	Coline	335	0.2	0 - 0.3	2.4	0.9 - 3.3	4.2	1.2 - 6.6
French Alps 2	Alpine	57	36.0	6.1 - 66.7	44.7	29.2 - 76.1	48.2	29.2 - 78.3
	SubAlpine	6	16.7	0 - 33.3	16.7	0 - 33.3	16.7	0 - 33.3
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
Swiss Western Alps	Alpine	126	11.6	0 - 26.8	42.3	18.1 - 67.5	53.4	22.4 - 70
	SubAlpine	75	17.5	0 - 30.1	39.7	10.8 - 65.8	46.3	13.9 - 75
	Montane	74	5.4	0 - 10.8	10.8	1.4 - 17.6	12.2	4.2 - 21.6
	Coline	6	0.0	0 - 0	0.0	0 - 0	0.0	0 - 16.7
Swiss inner Alps 1	Alpine	130	2.9	0 - 6.7	15.9	0 - 22.3	30.0	0 - 57.7
	SubAlpine	101	8.4	0 - 12	11.4	3.3 - 21	13.9	1.2 - 22
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
Swiss inner Alps 2	Alpine	28	33.9	4.4 - 56	57.1	11.1 - 84	64.3	14.3 - 88
	SubAlpine	51	4.0	0 - 7	25.3	6.3 - 37.8	28.5	6.7 - 39.5
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
Norwegian Scandes	Alpine	73	9.7	0 - 13.9	35.2	9.7 - 43.1	40.0	11.1 - 51.4
	SubAlpine	15	0.0	0 - 0	0.0	0 - 0	0.0	0 - 0
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
Scottish Highlands	Alpine	63	44.7	35.9 - 54.2	62.7	50 - 72.9	67.2	51.3 - 74.6
	SubAlpine	31	1.7	0 - 10.3	41.0	4.4 - 53.6	41.0	4.4 - 53.6
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
South-East Carpathians	Alpine	11	72.7	20 - 90.9	77.3	20 - 90.9	77.3	40 - 90.9
	SubAlpine	85	25.8	1.8 - 48.8	32.6	3.6 - 56	37.0	7.3 - 59.5
	Montane*	1	0.0	0 - 0	0.0	0 - 0	0.0	0 - 0
	Coline	0	-	-	-	-	-	-
Pyrenees 1	Alpine*	4	100.0	50 - 100	100.0	100 - 100	100.0	100 - 100
	SubAlpine	168	56.0	13.7 - 86.9	98.5	78.6 - 100	99.4	85.1 - 100
	Montane	711	9.2	0 - 18.1	45.8	25.1 - 59.5	60.6	32.1 - 75
	Coline	11	0.0	0 - 0	0.0	0 - 9.1	0.0	0 - 9.1
Pyrenees 2	Alpine	0	-	-	-	-	-	-
	SubAlpine*	4	0.0	0 - 0	50.0	25 - 100	62.5	33.3 - 100
	Montane*	1	0.0	0 - 0	0.0	0 - 100	0.0	0 - 100
	Coline	0	-	-	-	-	-	-
Central Apennines	Alpine*	2	25.0	0 - 50	50.0	0 - 100	50.0	0 - 100
	SubAlpine*	1	0.0	0 - 0	0.0	0 - 0	0.0	0 - 0
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-

Table S8.4 B2 climate change scenario (intermediate: +3.3 °C by 2070-2100).

			100% Habitat loss		>90% Habitat loss		>80% Habitat loss	
Dataset	**Veg. belt**	**# modeled sp.**	**Consensus**	**80% Range**	**Consensus**	**80% Range**	**Consensus**	**80% Range**
Eastern Austrian Alps	Alpine	47	88.3	60 - 93.6	92.6	71.8 - 100	95.8	78.6 - 100
	SubAlpine	153	18.6	1.7 - 22.2	40.9	13.6 - 51.9	47.6	21.2 - 57.7
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
French Alps 1	Alpine	0	-	-	-	-	-	-
	SubAlpine	38	2.6	0 - 7.9	29.0	5.3 - 47.4	54.0	18.4 - 76.3
	Montane	224	0.0	0 - 0	4.0	0 - 7.6	10.5	0.9 - 17.9
	Coline	335	0.2	0 - 0.3	0.5	0 - 1.7	1.7	0.3 - 3.6
French Alps 2	Alpine	57	24.6	4.2 - 50	39.5	12.1 - 64.7	44.7	16.7 - 69.6
	SubAlpine	6	0.0	0 - 33.3	0.0	0 - 33.3	0.0	0 - 33.3
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
Swiss Western Alps	Alpine	126	6.4	0 - 11.2	23.9	3.4 - 50.8	39.5	11.1 - 58.3
	SubAlpine	75	6.1	0 - 9.5	22.2	2.8 - 38.4	26.2	5.6 - 52.1
	Montane	74	2.0	0 - 4.1	4.7	0 - 10.8	6.8	1.4 - 12.2
	Coline	6	0.0	0 - 0	0.0	0 - 16.7	0.0	0 - 16.7
Swiss inner Alps 1	Alpine	130	2.9	0 - 3.5	9.4	2.9 - 15	13.9	0 - 22.3
	SubAlpine	101	5.9	0 - 9	11.4	3.3 - 17	11.9	3.4 - 21
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
Swiss inner Alps 2	Alpine	28	10.7	0 - 14.3	41.1	4.4 - 68.8	50.0	13 - 84
	SubAlpine	51	3.0	0 - 5	10.2	0 - 14	14.3	5.4 - 16.3
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
Norwegian Scandes	Alpine	73	1.4	0 - 9	15.2	2.8 - 26.2	23.5	6.9 - 32.3
	SubAlpine	15	0.0	0 - 0	0.0	0 - 0	0.0	0 - 0
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
Scottish Highlands	Alpine	63	16.3	12.2 - 25.4	40.5	30.2 - 52.5	45.8	38.8 - 56.4
	SubAlpine	31	0.0	0 - 3.3	1.7	0 - 6.7	8.3	3.2 - 14.3
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-
South-East Carpathians	Alpine	11	59.1	20 - 90.9	72.7	20 - 90.9	72.7	40 - 90.9
	SubAlpine	85	14.7	0 - 16.5	29.6	3.6 - 53.6	32.6	5.5 - 57.1
	Montane*	1	0.0	0 - 0	0.0	0 - 0	0.0	0 - 0
	Coline	0	-	-	-	-	-	-
Pyrenees 1	Alpine*	4	75.0	0 - 100	100.0	75 - 100	100.0	100 - 100
	SubAlpine	168	26.2	0.6 - 48.8	81.5	45.5 - 99.4	94.3	68.5 - 99.4
	Montane	711	5.3	0 - 10.6	19.9	9.5 - 30.4	36.4	23.5 - 47.5
	Coline	11	0.0	0 - 0	0.0	0 - 9.1	0.0	0 - 9.1
Pyrenees 2	Alpine	0	-	-	-	-	-	-
	SubAlpine*	4	0.0	0 - 0	37.5	0 - 50	50.0	25 - 75
	Montane*	1	0.0	0 - 0	0.0	0 - 0	0.0	0 - 100
	Coline	0	-	-	-	-	-	-
Central Apennines	Alpine*	2	0.0	0 - 0	25.0	0 - 50	25.0	0 - 50
	SubAlpine*	1	0.0	0 - 100	0.0	0 - 100	0.0	0 - 100
	Montane	0	-	-	-	-	-	-
	Coline	0	-	-	-	-	-	-

Supporting information, Table S9: Projected decrease in species distribution by vegetation belt (all species pooled). This table presents the projected suitable habitat loss or gain by vegetation belt by 2070-2010 under the four different climate change scenarios for all species pooled together. Values are percentages of surface loss or gain as compared to a species' suitable habitat under current climatic conditions. The values were obtained by pooling together the data from all 2632 species. Weights were attributed to each species so that each study area has equal influence on the distribution. E.g., the value of 55.2 for the alpine vegetation belt in the "-80 – -100%" row of the A1FI scenario table means that, on average across all study areas, 55.2% of the alpine species are projected to lose between 80 – 100% of their climatically suitable habitats by 2070-2100 under the A1FI climate change scenario. The values for A1FI and B1 climate change scenarios are the same than those found in Figure 2 of the main text.
The "consensus" column represents the average value obtained from the AUC and TSS weighted average projections. The "80% range" column gives the range (minimum – maximum) of values observed in 80% of the individual models that yielded results closest to the consensus value (i.e. equivalent to showing the range of results yielded by all but the two most outlying models).

Table S9 Projected suitable habitat loss or gain by vegetation belt by 2070-2010 under the four different climate change scenarios for all species pooled together.

A1FI climate change scenario

	Alpine Vegetation belt		Subalpine vegetation belt		Montane vegetation belt		Colline vegetation belt	
habitat loss (-) or gain (+)	Consensus	80% Range	Consensus	80% Range	Consensus	80% Range	Consensus	80% Range
-80 – -100%	55.2	26.7 – 75.7	50.9	23.7 – 59.9	45.6	36.7 – 71.5	10.8	2.6 – 15.9
-60 – -80%	8.7	3.9 – 12.5	2.2	1.1 – 7.6	5.8	4.2 – 8.1	5.0	0.9 – 5.4
-40 – -60%	4.7	2.7 – 6.6	3.2	0.9 – 4.4	3.9	3.2 – 5.9	2.8	0.6 – 5.5
-20 – -40%	4.8	2.4 – 7.5	1.5	1.0 – 2.6	3.2	1.3 – 4.9	3.8	0.6 – 6
0 – -20%	3.7	1.8 – 8.6	3.8	0.4 – 4.9	2.4	2 – 16.3	2.4	0.6 – 5.5
0 – +20%	3.5	2.0 – 4.4	4.7	2.1 – 7.7	9.4	1.8 – 15.6	3.3	1.4 – 5.4
+20 – +40%	2.4	0.7 – 4.3	3.3	2.1 – 4.6	9.4	2.4 – 4.2	3.7	0.3 – 4.9
+40 – +60%	2.3	0.9 – 3.8	2.8	1.7 – 3.2	1.7	1.3 – 2.7	3.0	1.6 – 4.2
+60 – +80%	1.6	0.6 – 2.3	2.1	1.2 – 3.1	1.4	0.7 – 2.3	3.3	1.1 – 4.8
+80 – +100%	0.7	0.1 – 1.1	2.5	1.6 – 3.8	1.3	0.7 – 2.7	2.3	1.1 – 3.4
+100 – +120%	0.9	0.0 – 1.0	0.7	0.5 – 2.3	1.5	0.6 – 2.1	2.4	1.2 – 3.6
+120 – +140%	0.9	0.2 – 1.2	0.9	0.4 – 2.3	1.5	0.7 – 2.4	1.7	0.6 – 3.7
+140 – +160%	0.9	0.2 – 1.8	2.0	0.7 – 2.1	1.6	0.8 – 2.6	1.0	0.6 – 2.5
+160 – +180%	1.2	0.2 – 1.5	1.4	0.1 – 2.1	1.5	0.8 – 2	2.0	0.6 – 2.8
> +180%	8.3	2.2 – 22.0	18.0	9.3 – 28.2	9.7	2.3 – 27.7	52.6	26.4 – 67.6

B1 climate change scenario

	Alpine vegetation belt		Subalpine vegetation belt		Montane vegetation belt		Colline vegetation belt	
habitat loss (-) or gain (+)	Consensus	80% Range	Consensus	80% Range	Consensus	80% Range	Consensus	80% Range
-80 – -100%	36.3	20 – 49.4	30.6	12.3 – 42.9	19.5	9.4 – 30	1.6	0.3 – 2.8
-60 – -80%	11.6	5.2 – 13.4	6.6	4.8 – 13.9	12.8	7.1 – 18.5	2.8	0.6 – 4
-40 – -60%	7.4	5.7 – 8.4	10.1	5.2 – 11.1	11.7	2.4 – 23.6	3.1	0.7 – 4.8
-20 – -40%	8.0	4.8 – 9.9	4.1	0.8 – 5.3	6.7	4.3 – 8.8	5.2	1.7 – 7.7
0 – -20%	4.7	4.4 – 9.6	3.1	1.9 – 5.5	4.8	1.9 – 9.7	4.3	1.7 – 7.2
0 – +20%	7.3	3.3 – 9.8	5.7	4.3 – 8.5	4.9	2.7 – 18.7	4.1	1.5 – 7.1
+20 – +40%	3.6	2.6 – 5.3	3.9	2.4 – 6.2	17.1	3.1 – 17.5	3.7	2.6 – 6.3
+40 – +60%	2.8	0.8 – 4.9	5.5	2.1 – 8	3.6	2 – 4.6	4.0	1.4 – 6.3
+60 – +80%	4.6	1 – 6.7	2.9	1.7 – 4.1	2.2	1.3 – 3.5	4.1	1.7 – 6.1
+80 – +100%	1.2	0.6 – 1.9	4.0	1.5 – 5.3	2.1	0.9 – 3.2	3.7	2 – 5.5

+100 – +120%	2.6	0.7 – 4.4	2.4	1 – 3.8	2.0	1 – 3.2	4.8	2 – 6.2
+120 – +140%	0.7	0.1 – 1.2	1.7	1.1 – 7.1	2.1	1 – 2.7	4.5	2 – 6.2
+140 – +160%	0.6	0.1 – 1.3	1.7	0.6 – 2.2	2.0	1 – 2.4	4.5	2.3 – 5.7
+160 – +180%	0.9	0.1 – 1.5	2.0	0.8 – 2.7	1.1	0.7 – 1.4	4.0	2.6 – 5.3
> +180%	7.9	3.6 – 17.6	15.7	8.6 – 19.8	7.4	1.1 – 28.2	45.5	24.7 – 60.4

A2 climate change scenario

	Alpine vegetation belt		Subalpine vegetation belt		Montane vegetation belt		Colline vegetation belt	
habitat loss (-) or gain (+)	Consensus	80% Range	Consensus	80% Range	Consensus	80% Range	Consensus	80% Range
-80 – -100%	51.6	25.9 – 70.9	42.6	22.3 – 51.2	35.2	14.3 – 46.3	4.0	1.2 – 6.4
-60 – -80%	7.0	3.8 – 10.7	8.0	3.3 – 13.2	11.4	4 – 12.5	4.2	0.7 – 7.7
-40 – -60%	5.4	4.7 – 6.1	2.7	0.7 – 3.8	5.1	2.3 – 6.6	4.4	0 – 4.8
-20 – -40%	7.3	4.2 – 9.5	2.7	0.6 – 4.3	4.5	2.5 – 6.6	4.1	1.1 – 7.1
0 – -20%	6.1	2.8 – 12.4	2.0	1.8 – 3.9	9.5	2.1 – 16.6	3.9	0.3 – 7.2
0 – +20%	3.4	2.3 – 5.3	4.9	2.6 – 9	9.3	3.2 – 15.5	2.6	1.2 – 6.3
+20 – +40%	2.6	0.8 – 4.4	3.6	3.3 – 4.3	3.3	1.9 – 4.6	3.0	0.9 – 6.4
+40 – +60%	2.9	0.9 – 4.8	3.0	2.1 – 3.4	2.3	1.8 – 3.5	2.8	1.7 – 4.8
+60 – +80%	1.7	0.5 – 2.5	2.6	1.1 – 3.4	1.8	1.1 – 2.7	4.1	2 – 5.4
+80 – +100%	1.2	0.6 – 1.6	1.9	1.5 – 4.1	1.9	0.6 – 3	2.7	1.7 – 4.1
+100 – +120%	1.0	0.4 – 1.4	4.0	1.3 – 4.2	2.3	1.4 – 2.9	2.8	0.6 – 5
+120 – +140%	0.6	0 – 1.3	1.1	0.6 – 2	1.5	0.5 – 1.9	1.8	1.3 – 3.3
+140 – +160%	0.8	0.3 – 1.3	1.9	0.1 – 2.4	2.6	0.9 – 3.5	2.7	2.3 – 3.5
+160 – +180%	1.3	0 – 1.6	1.3	0.5 – 1.7	0.5	0.2 – 1.8	1.8	1.4 – 3.6
> +180%	7.2	2.4 – 19.6	17.6	10 – 26.6	8.9	1.4 – 26.2	55.0	40.7 – 80.2

B2 climate change scenario

	Alpine vegetation belt		Subalpine vegetation belt		Montane vegetation belt		Colline vegetation belt	
habitat loss (-) or gain (+)	Consensus	80% Range	Consensus	80% Range	Consensus	80% Range	Consensus	80% Range
-80 – -100%	37.6	20.2 – 53.1	32.1	14.2 – 44.3	19.1	9.1 – 26.9	1.6	0.3 – 4.1
-60 – -80%	14.2	7.2 – 16.3	8.7	5.2 – 14.6	16.2	7.3 – 25	2.8	0.7 – 4.5
-40 – -60%	6.7	4.4 – 8.2	7.4	1.3 – 10.7	9.8	3.5 – 10.9	3.8	0.9 – 6.8
-20 – -40%	7.6	6.2 – 9.3	3.5	1.8 – 7.4	5.7	3.1 – 8.5	3.8	2.1 – 6.5
0 – -20%	4.9	3.8 – 11.4	6.9	0.9 – 10.4	4.6	1.7 – 17.1	3.5	1.1 – 7.2
0 – +20%	5.9	3.6 – 7.9	5.0	3.3 – 10.3	18.4	4 – 19.2	3.3	1.2 – 7.2
+20 – +40%	2.8	1.5 – 4.7	3.9	2.6 – 5.8	3.3	2.1 – 5.2	4.0	2 – 7.3
+40 – +60%	2.7	1.1 – 4.4	3.0	2 – 4.1	3.3	2.1 – 4.3	3.3	2 – 5.8
+60 – +80%	1.6	0.5 – 2.7	3.0	0.9 – 4.1	2.6	1.1 – 3.7	4.5	3.1 – 7.6
+80 – +100%	3.3	0.9 – 5.9	4.1	1.6 – 6.4	2.2	1.5 – 3.1	3.0	1.7 – 6.8
+100 – +120%	0.4	0.1 – 3.2	1.6	0.6 – 2.8	1.8	0.8 – 2.4	2.6	2 – 4.5
+120 – +140%	2.6	0.3 – 3.9	1.3	0.6 – 2.7	2.3	1.1 – 3.9	3.8	2.4 – 4.9
+140 – +160%	1.0	0.2 – 1.8	3.9	1 – 6.6	1.6	0.7 – 2	5.0	2.3 – 6.9
+160 – +180%	0.7	0 – 1.3	1.7	0.4 – 2.4	1.2	0.5 – 1.9	3.3	2 – 4.5
> +180%	7.9	2.4 – 18.3	13.9	8.7 – 21.3	7.9	0.8 – 26.5	51.8	29.2 – 62.1