Supporting Information

Table S1. Providers of hare presence data used in Ecological Niche Modelling, sorted by country and (sub-)species. AH = Alpine hare; EH = European hare; HH = heath hare; IH = Irish hare; MH = >1 mountain hare subspecies; NH = Northern hare; SH = Scottish hare.

Source	Country	Species
DOFbasen	Denmark	EH
Anoushka Hof, University of Wisconsin, Madison	Fennoscandia	EH, NH
Jukka Rintala, Pekka Helle, Juha Tiainen, Natural Resources Institute Finland	Finland	NH
Jerome Letty, Office National de la Chasse et de la Faune Sauvage	France	AH, EH
Joerns Fickels, Leibniz-Inst. for Zoo and Wildlife Research	Germany	EH
Francesco Bisi, Adriano Martinoli, Insubria University	Italy	AH
Francesco Santilli, Game & Wildlife Management Consulting	Italy	EH
Anthony Caravaggi, Queen's University Belfast	Northern Ireland	EH, IH
Centre for Environmental Data and Recording	Northern Ireland	EH, IH
Neil Reid, Queen's University Belfast	Northern Ireland	EH, IH
Norwegian Biodiversity Information Centre	Norway	EH, NH
Global Biodiversity Information Facility	Pan-European	EH, MH
Glasgow Museum Biological Records Centre	Scotland	EH, SH
North East Scotland Biological Records Centre	Scotland	EH, SH
The Wildlife Information Centre	Scotland	EH, SH
Centre Suisse de Cartographie de la Faune	Switzerland	AH, EH
Judith Zellweger-Fischer, Swiss Ornithological Institute	Switzerland	EH
British Trust for Ornithology	UK	EH, IH, MH
Buckinghamshire and Milton Keynes Environmental Records Centre	UK	EH
Cambridgeshire and Peterborough Environmental Records Centre	UK	EH
Cheshire, Halton, Warrington and Wirral Local Biological Records Centre	UK	EH
Cumbria Biodiversity Data Centre	UK	EH
Devon Biodiversity Records Centre	UK	EH
Doncaster MBC Local Records Centre	UK	EH
Dorset Wildlife Trust	UK	EH
Environmental Records Centre for Cornwall and the Isles of Scilly	UK	EH
Environmental Records Information Centre for the North East of England.	UK	EH
Gloucestershire Centre for Environmental Record	UK	EH
Greater Lincolnshire Nature Partnership	UK	EH
Hampshire Biodiversity Information Centre	UK	EH
Herefordshire Biological Records Centre	UK	EH
Hertfordshire Environmental Records Centre	UK	EH
Kent and Medway Biological Records Centre	UK	EH
Leicestershire and Rutland Environmental Records Centre	UK	EH
National Biodiversity Network	UK	EH, IH, SH
Norfolk Biodiversity Information Service	UK	EH
North & East Yorkshire Ecological Data Centre	UK	EH
Northamptonshire Biodiversity Records Centre	UK	EH
Rotherham Biodiversity Records Centre	UK	EH
Somerset Environmental Records Centre	UK	EH
Staffordshire Ecological Record	UK	EH
Sussex Biodiversity Records Centre	UK	EH
Thames Valley Environmental Records Centre	UK	EH
West Yorkshire Ecology	UK	EH
Wiltshire and Swindon Biological Records Centre	UK	EH

Source	Country	Species
Worcestershire Biological Records Centre	UK	EH
Biodiversity Information Service for Powys & Brecon Beacons National Park	Wales	EH
Cofnod - North Wales Environmental Information Service	Wales	EH
South East Wales Biodiversity Records Centre	Wales	EH
West Wales Biodiversity Information Centre	Wales	EH

Table S2. The number of hare species occurrences (≤1km resolution, 1950-2014) collected from across Europe (see Table S1 for details of data providers) for the construction of Environmental Niche Models. $_p$ = pre-thinning; $_t$ = post-thinning. For occurrence distribution maps, see Fig. S1.

Species	**Occurences$_p$**	**Occurrences$_t$**
Alpine hare	682	493
Irish hare	11,536	472
Heath hare	517	320
Northern hare	29,187	1,680
Scottish hare	8,968	1,765
European hare	235,768	4,345

Table S3. Bioclimatic and habitat variables, and descriptions, used in Ecological Niche Modelling. Original CORINE shapefile names are highlighted by *. Habitat variable relevance (i.e. food/cover) and appropriate references are given.

Variable	Description	Relevance (food/cover)	Source
coniferous*	Coniferous forest	Cover[1,2]	EEA (2010)
Crops	Merged rasters: ann_perm_crops*; arable_w_natural_veg*; irrigated_n*; irrigated_p*; rice*	Food[3,4]	EEA (2010)
Hilliness Index	Surface roughness index (see below)	-	Leach *et al.* (2015)
Mean temperature	Mean annual temperature	-	Leach *et al.* (2015)
mixed_forest*	Mixed forest	Cover[1,2]	EEA (2010)
moor_heath*	Moors and heathland	Food & cover[1,5]	EEA (2010)
NDVI	Normalised Difference Vegetation Index (see below)	-	Leach *et al.* (2015)
pasture*	Pastures	Food[3,6]	EEA (2010)
peat*	Peat bogs	Food & cover[7,8]	EEA (2010)
trans_wood*	Transitional woodland-shrub	Cover[1,9]	EEA (2010)
Precipitation seasonality	Precipitation seasonality	-	Leach *et al.* (2015)
Temperature seasonality	Temperature seasonality	-	Leach *et al.* (2015)
sparse_veg*	Sparsely vegetated areas	Food & cover[6,10]	EEA (2010)
Water balance	Annual water balance (see below)	-	Leach *et al.* (2015)

[1] Rehnus et al., 2013
[2] Bisi et al., 2013
[3] Caravaggi et al., 2015
[4] Schai-Braun et al., 2015
[5] Hewson, 1976
[6] Thulin, 2003
[7] Tangney et al., 1995
[8] Hewson and Hinge, 1990
[9] Lindlof et al., 1974
[10] Reid and Montgomery, 2007

Annual water balance was calculated by subtracting annual evapotranspiration from mean annual precipitation. Evapotranspiration was calculated according to the Hargreaves equation (Allen et al., 1998):

$$Evapotranspiration = 0.0023 \times (T_{mean} + 17.8) \times (T_{max} - T_{min})^{0.5} \times R_a$$

where,

$R_a = ((24 \times 60)/\pi) \times G_{sc} \times d_r [(\omega_s \times \sin\varphi \times \sin\delta) + (\cos\varphi \times \cos\delta \times \sin\omega_s)]) \times 0.408$

G_{sc} = solar constant = 0.0820 MJ m-2 min-1

d_r = inverse relative distance Earth-Sun = $1 + 0.033 \cos((2\pi/365) \times J)$

ω_s = sunset hour angle [rad] = $\arccos[-\tan(\varphi)\tan(\delta)]$

φ = latitude [radians] (grid file in decimal degrees converted to radians (multiply by $\pi/180$))

δ = solar decimation [rad] = $0.409 \sin(((2\pi/365) \times J) - 1.39)$

J = number of days in the year. J at the middle of the month is approximately given by J = INTEGER (30.4 Month – 15) = 15 on average.

Mean annual Normalised Difference Vegetation Index (NDVI), a measure of plant growth derived from satellite images, was derived from data downloaded from the EDIT Geoplatform (http://edit.csic.es/Soil-Vegetation-LandCover.html). <0 = snow or ice; ~0 = barren land; 0.2-0.3 = grassland; ~1 = rainforests (Holben, 1986). Surface roughness, or hilliness, was calculated according to the difference between maximum and minimum gradient values of a 30 arc-second global Digital Elevation Model downloaded from WorldClim (Newton-Cross et al., 2007).

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Table S4 Bonferroni *post-hoc* results for four models where each principal component was the dependent variable and (sub-) species was the sole explanatory factor.

	(Sub-)species		
Explanatory covariate	**F**	**df**	***p***
PC1	1411.10	5	<0.001
PC2	851.48	5	<0.001
PC3	694.09	5	<0.001
PC4	201.95	5	<0.001

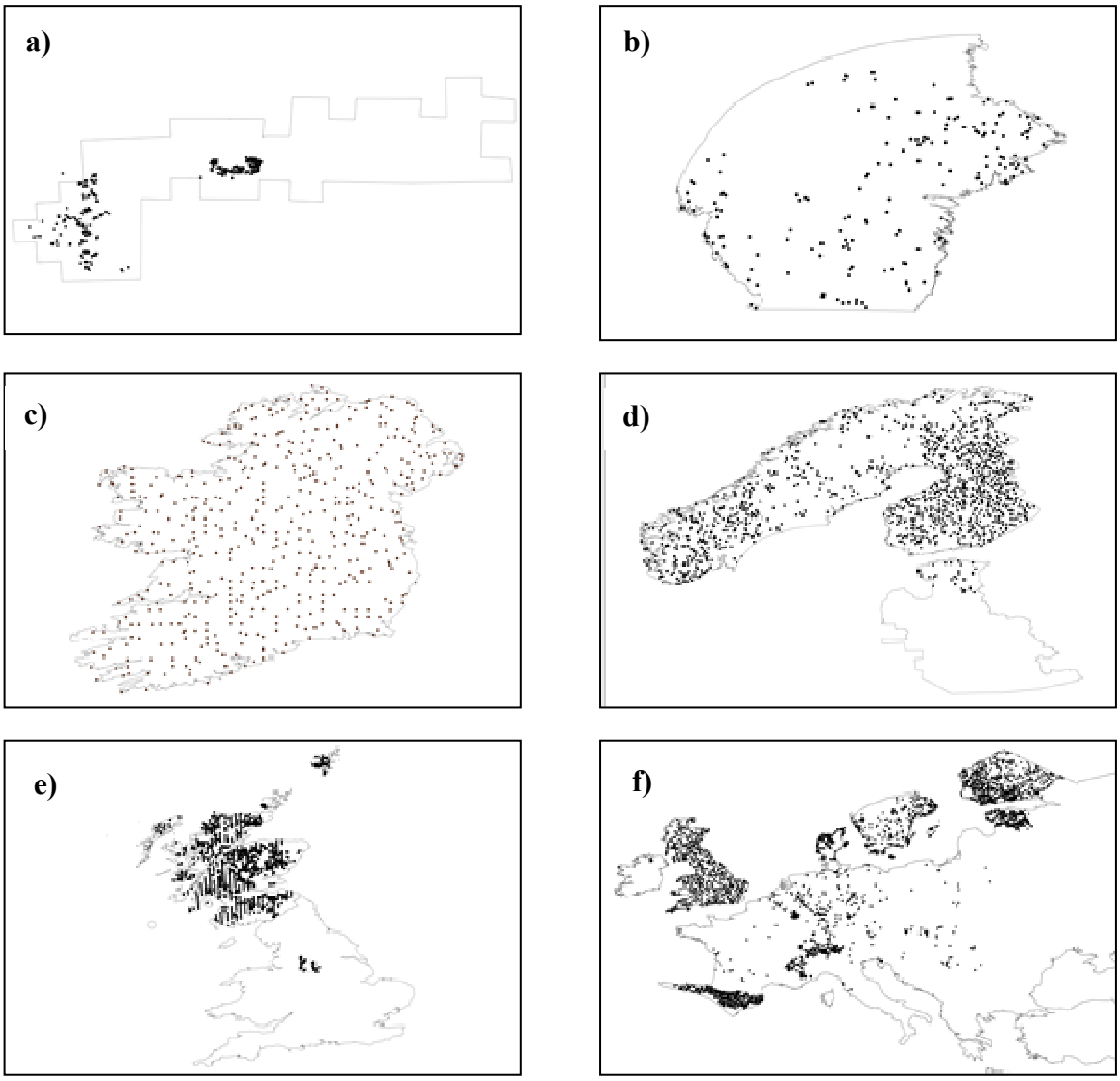

Fig S1. Distribution of **(a)** Alpine hare, **(b)** Heath hare, **(c)** Irish hare, **(d)** Northern hare, **(e)** Scottish hare, and **(f)** European hare records used in Environmental Niche Modelling. Polygons indicate the (sub-)species range extent as derived from IUCN polygons or known distributions (Bergengren, 1969; Winiger, 2014; Caravaggi et al., 2015).

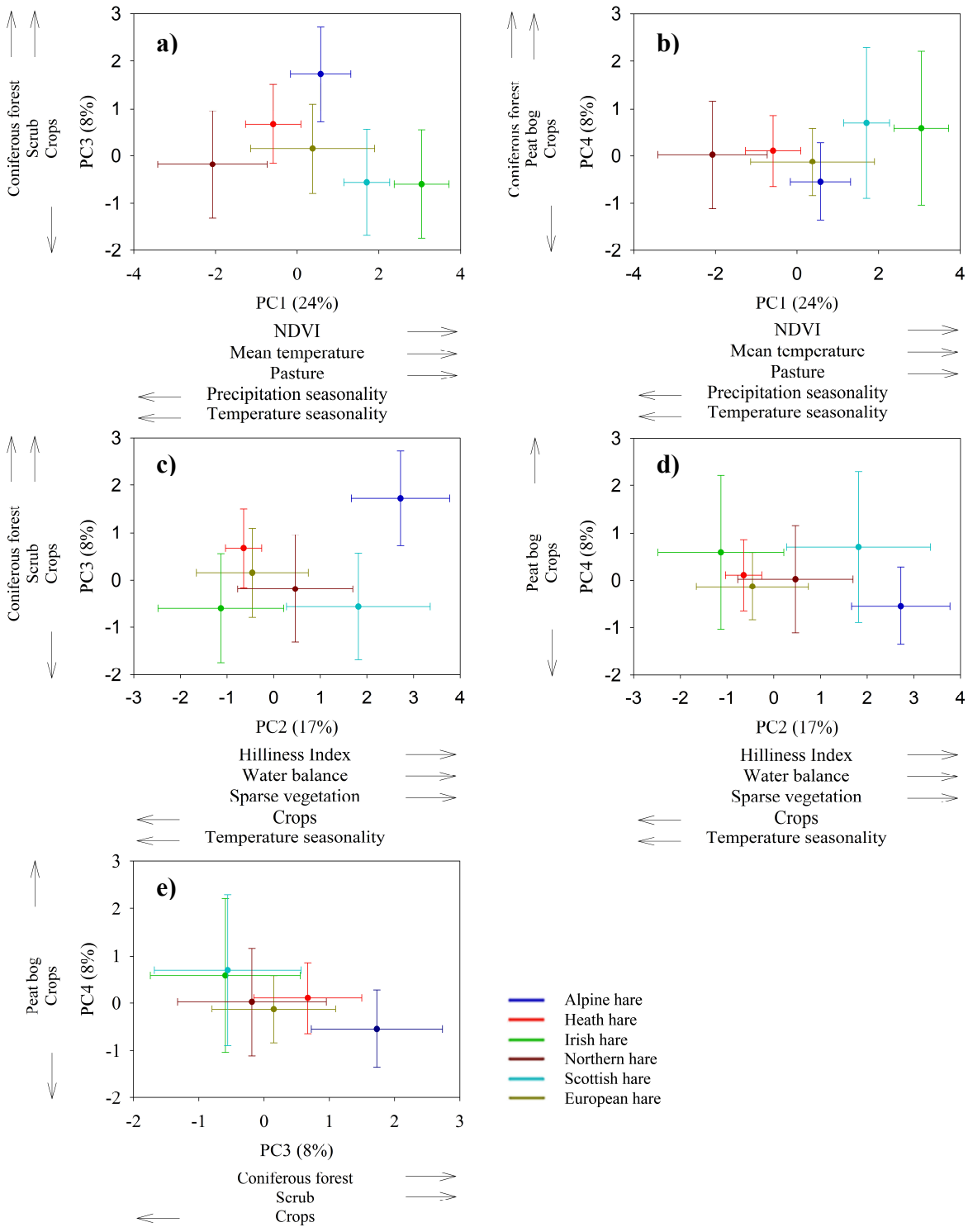

Fig. S2 Principal Component (PC) score (± 1SD) biplots for six (sub-)species of hare in Europe. For an explanation of Environmental Niche Modelling (ENM) variables, see Table S2 and for explanation of plots see Fig. 2.

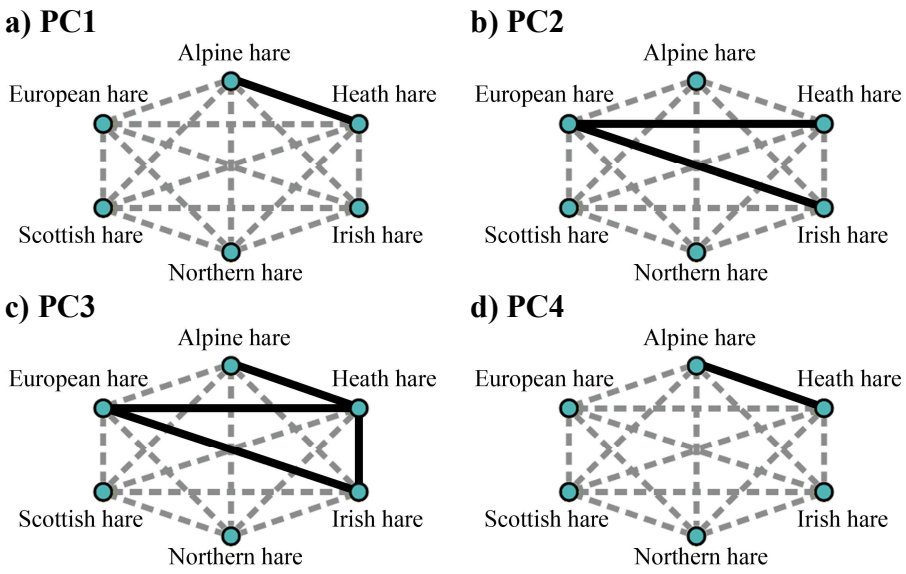

Figure S3. *Post-hoc* pairwise comparisons between (sub-)species for differences in principal component scores where nodes represent (sub-)species (labelled) and the dashed edges (lines) represent pairwise comparisons with statistical significance at $p<0.05$.