S2 Supporting Information.

Species accounts (#1-89)

Key for response curves

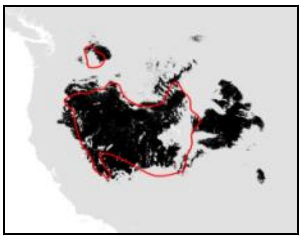
Abbreviation	Description
HII	Human Influence index
Hilliness	Surface Roughness index
MaxPrec	Maximum precipitation
MaxTemp	Maximum temperature
MinPrec	Minimum precipitation
MinTemp	Minimum temperature
PrecSea	Precipitation seasonality
RealMAR	Mean annual precipitation
RealMAT	Mean annual temperature
TempSea	Temperature seasonality
etpsum	Annual evapotranspiration
ndvi	Normalised difference vegetation index
radiation	Solar radiation
wbann	Annual water balance
wbpos	Number of months with a positive water balance

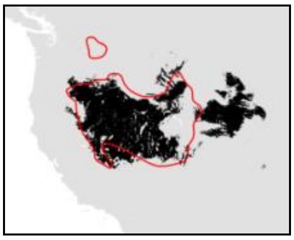
The past and current occurrence records underlying these species accounts can be viewed on http://lagomorphclimatechange.wordpress.com/.

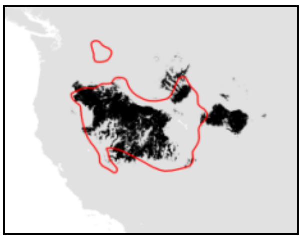
Species account #1 - Pygmy rabbit (*Brachylagus idahoensis*)
n = 39
Expert: Penny Becker, Washington Dept. of Fish & Wildlife, USA
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 15km/year (Expert)
Status: MODELLABLE; **Included in final analysis:** √

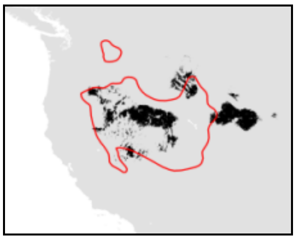
Model evaluation metric	
AUC	0.95
Omission rate	0.10
Sensitivity	0.90
Specificity	1.00
Proportion correct	1.00
Kappa	**0.75**
True Skill Statistic	0.90

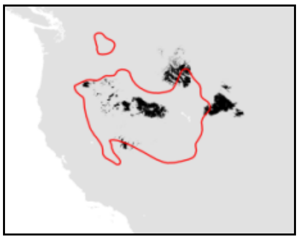
Summary: The Pygmy rabbit's bioclimatic envelope is predicted to decline by 87% with a 1° mean latitudinal poleward shift and mean increase in elevation of ~300m driven predominately by an increase in mean minimum elevation (>600m) with little change in mean maximum elevation (~50m). 95% of the permutation importance of the model was contributed to by mean annual temperature (64.5%), maximum temperature (25.2%) and annual water balance (5.9%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

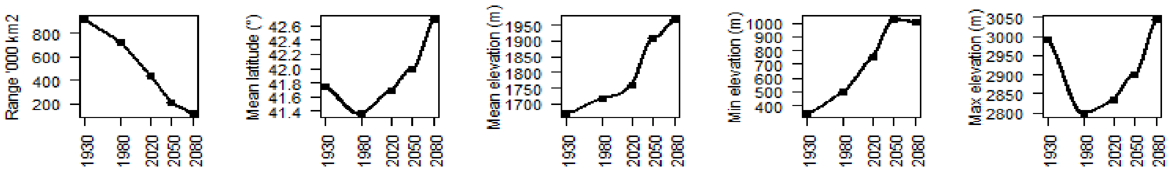

c) ~ 2020s (2010-2039)

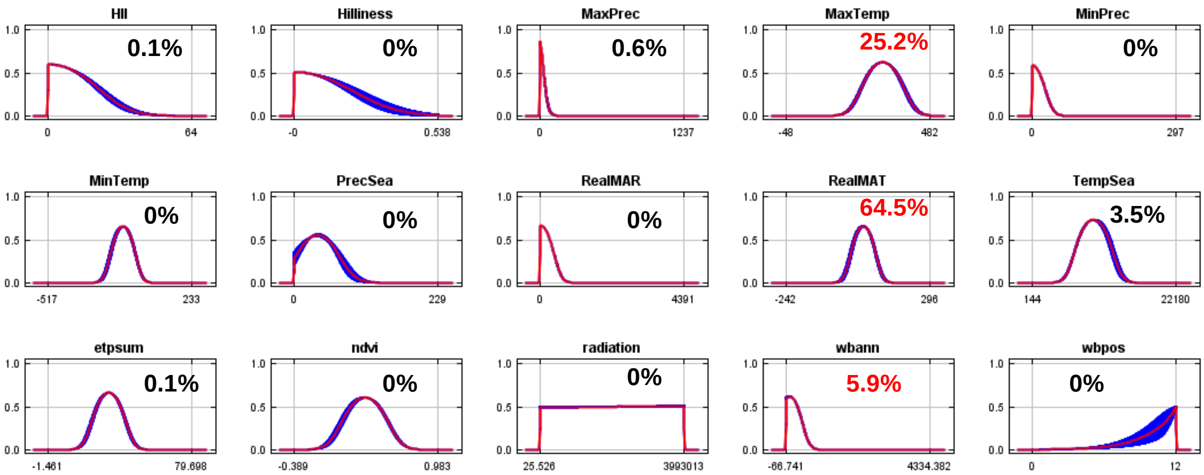

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Beauvais GP, *et al*. 2008)

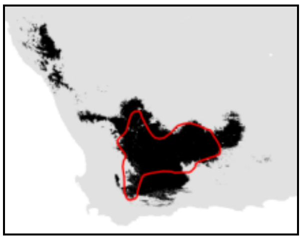




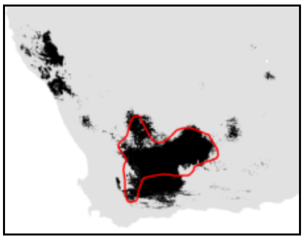
#2 - Riverine rabbit (*Bunolagus monticularis*)
n = 109
Status: Kai Collins, University of Pretoria, South Africa
Expert evaluation: Good
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 7.5km/year (Expert)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.98
Omission rate	0.03
Sensitivity	0.97
Specificity	1.00
Proportion correct	1.00
Kappa	**0.85**
True Skill Statistic	0.97

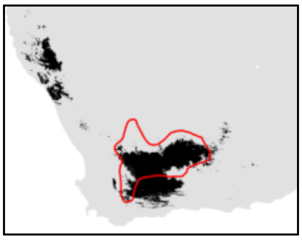
Summary: The Riverine rabbit's bioclimatic envelope is predicted to decline by 85% with a ~1° mean latitudinal poleward shift and mean increase in elevation of ~200m driven by similar increases in both minimum and maximum elevation. 95% of the permutation importance of the model was contributed to by minimum temperature (33.1%) and precipitation (22.5%), temperature seasonality (22.3%), mean annual temperature (6.7%) and precipitation (5.0%), annual evapotranspiration (4.3%) and precipitation seasonality (2.6%).



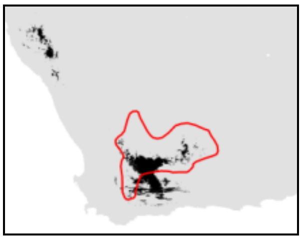
a) ~ 1930s (1900-1949)



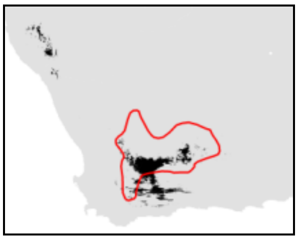
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



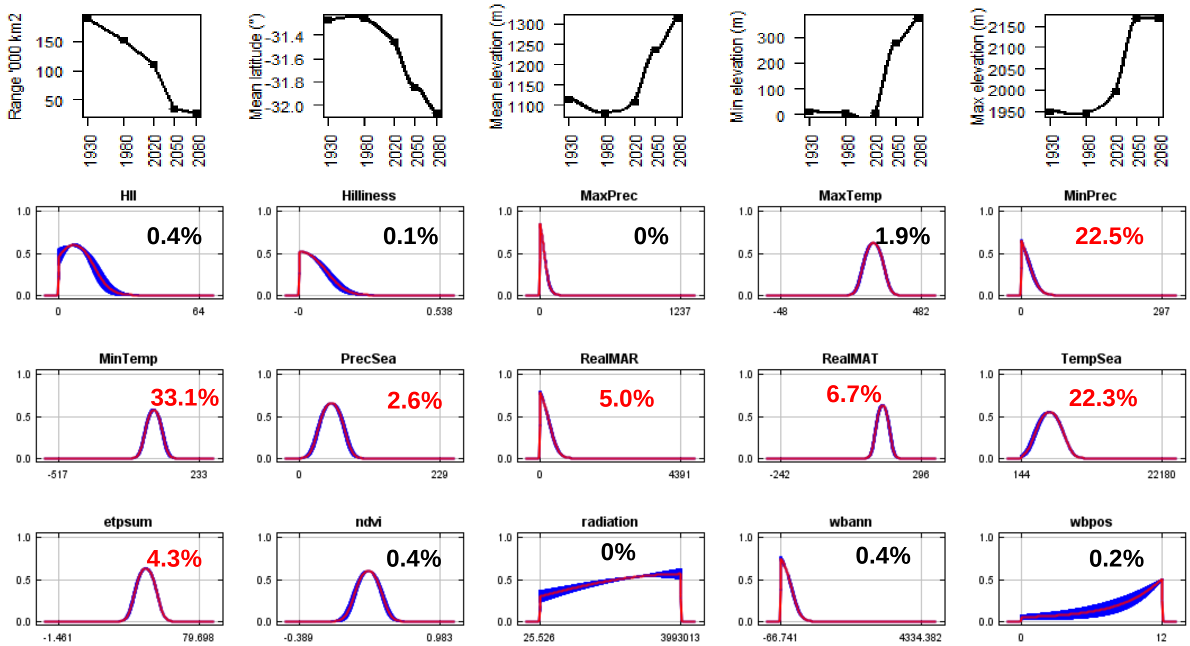
d) ~ 2050s (2040-2069)



e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

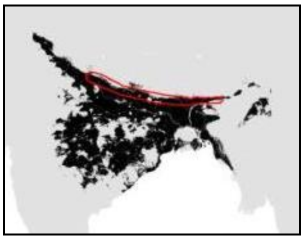
Red polygon = IUCN range (Beauvais GP, *et al*. 2008)

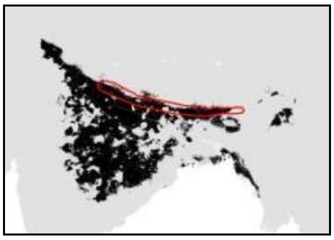


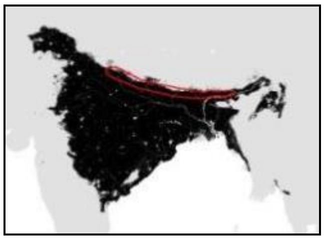
Model evaluation metric	
AUC	0.97
Omission rate	0.06
Sensitivity	0.94
Specificity	0.99
Proportion correct	0.99
Kappa	**0.81**
True Skill Statistic	0.94

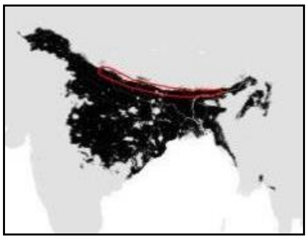
#3 - Hispid hare (*Caprolagus hispidus*)
n = 18
Expert: Gopinathan Maheswaran, Zoological Survey of India
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 5km/year (Expert)
Status: MODELLABLE; **Included in final analysis:** √

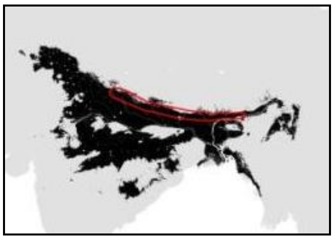
Summary: The Hispid hare's bioclimatic envelope is predicted to increase by 21% with a ~1.5^{o} mean latitudinal poleward shift and mean increase in elevation of ~70m driven by increases in maximum elevation. 95% of the permutation importance of the model was contributed to by mean annual temperature (52.7%), precipitation seasonality (29.0%), annual evapotranspiration (6.6%), number of months with a positive water balance (2.9%), maximum precipitation (2.2%) and minimum temperature (1.7%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

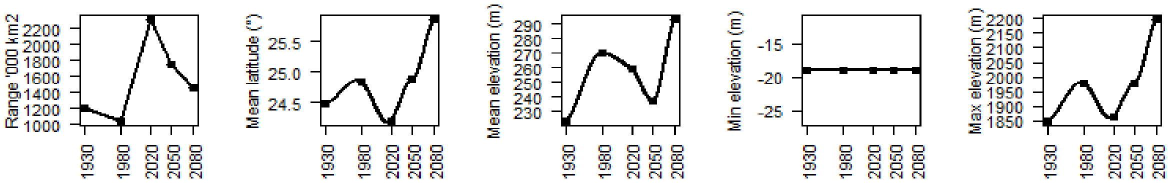

c) ~ 2020s (2010-2039)

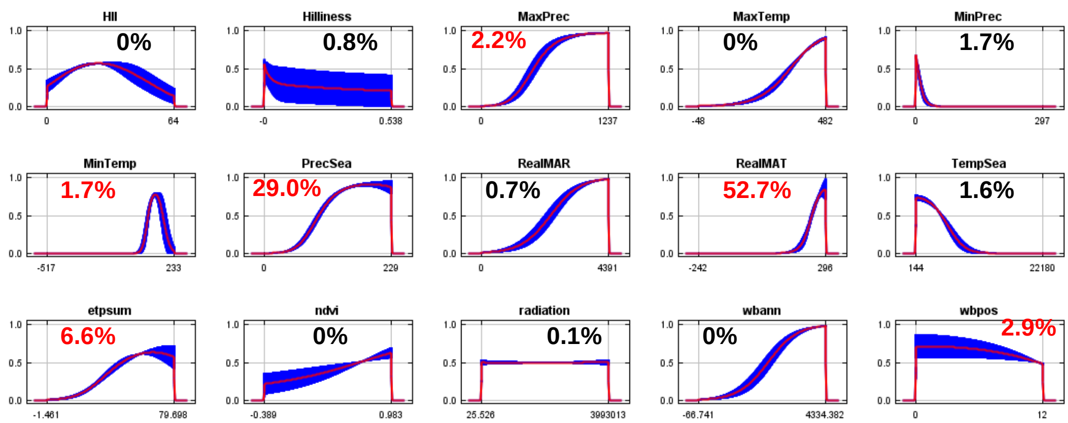

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Maheswaran, G. & Smith, A.T. 2008)

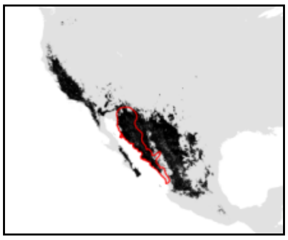


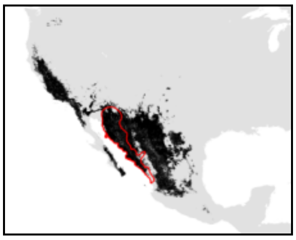


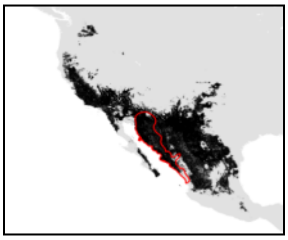
#4 – Antelope jackrabbit (*Lepus alleni*)
n = 32
Expert: Paul Krausman , University of Montana
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 25km/year (Expert)
Status: UNMODELLABLE; **Included in final analysis:** X

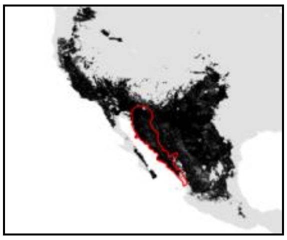
Model evaluation metric	
AUC	0.91
Omission rate	0.16
Sensitivity	0.84
Specificity	0.99
Proportion correct	0.98
Kappa	**0.26**
True Skill Statistic	0.83

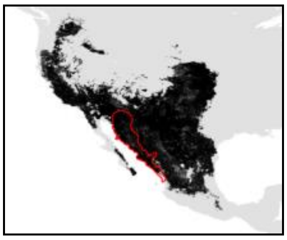
Summary: The Antelope jackrabbit's bioclimatic envelope is predicted to increase by 172% with a ~3° mean latitudinal poleward shift and mean increase in elevation of ~20m driven by increases in maximum elevation. 95% of the permutation importance of the model was contributed to by precipitation seasonality (24.8%), minimum precipitation (21.1%), annual water balance (16.3%), minimum temperature (13.0%), temperature seasonality (7.3%), normalised difference vegetation index (5.8%), annual evapotranspiration (5.2%) and human influence index (3.7%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

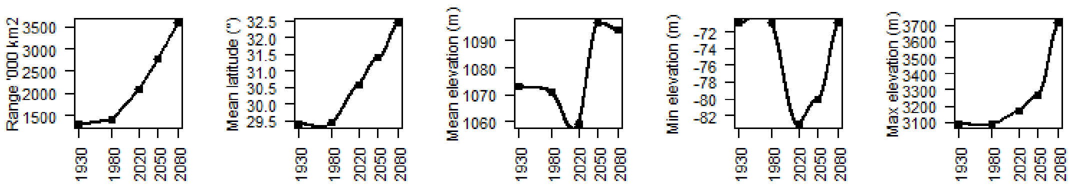

c) ~ 2020s (2010-2039)

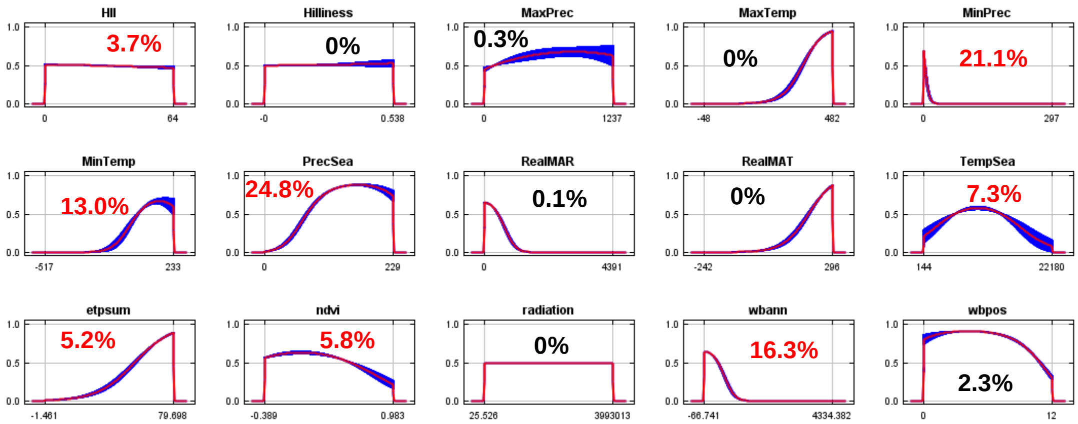

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Malpica, F.J. & Rangel Cordero, H. 2008)

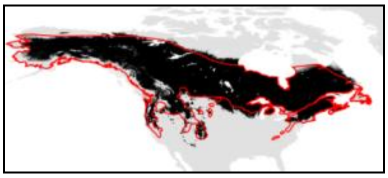




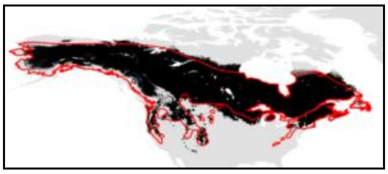
#5 – Snowshoe hare (*Lepus americanus*)
n = 506
Expert: Charles Krebs, University of British Colombia & Rudy Boonstra, University of Toronto Scarborough
Expert evaluation: Good
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 24km/year (Expert)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.95
Omission rate	0.07
Sensitivity	0.93
Specificity	0.97
Proportion correct	0.97
Kappa	**0.72**
True Skill Statistic	0.90

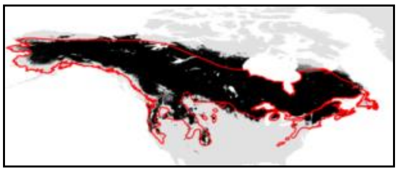
Summary: The Snowshoe hare's bioclimatic envelope is predicted to decline by 7% with a ~2° mean latitudinal poleward shift and mean decrease in elevation of ~10m, but with increases in both minimum and maximum elevation. 95% of the permutation importance of the model was contributed to by mean annual temperature (83.1%), maximum temperature (7.2%), normalised difference vegetation index (2.1%), mean annual precipitation (1.5%) and annual evapotranspiration (1.2%).



a) ~ 1930s (1900-1949)



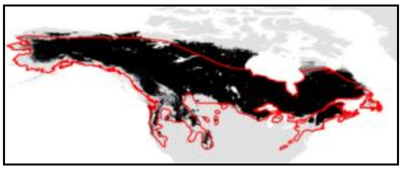
b) ~ 1980s (1950-2000)



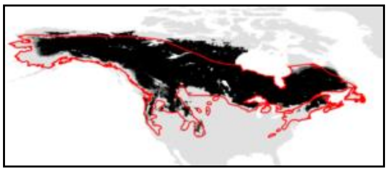
c) ~ 2020s (2010-2039)

Black = predicted suitable envelope

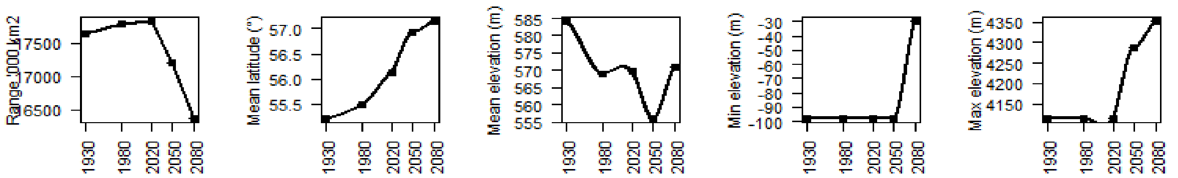
Red polygon = IUCN range (Murray, D. & Smith, A.T. 2008)

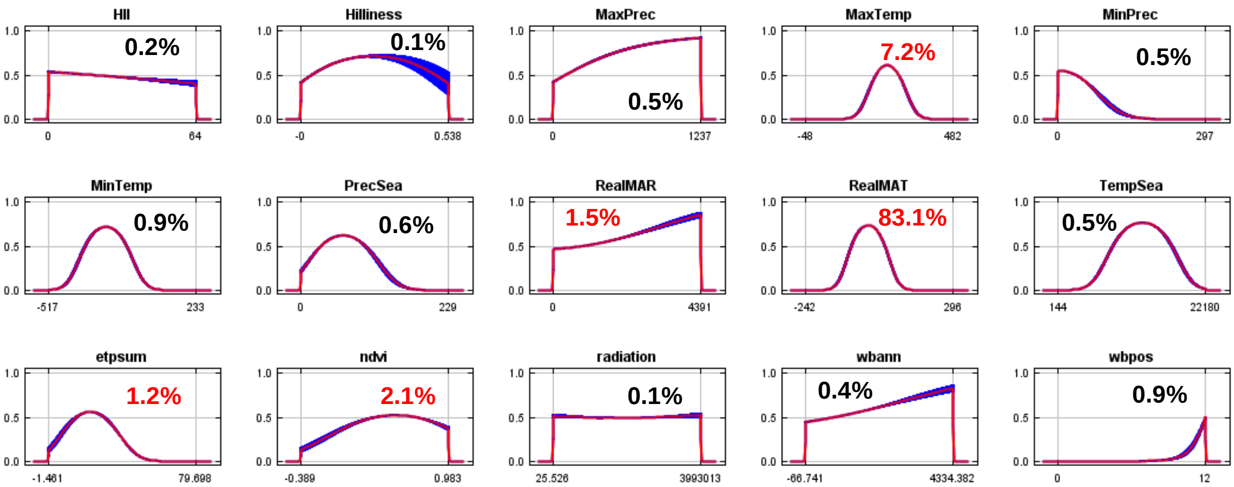


d) ~ 2050s (2040-2069)



e) ~ 2080s (2070-2099)

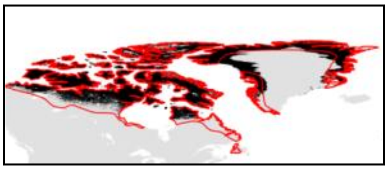


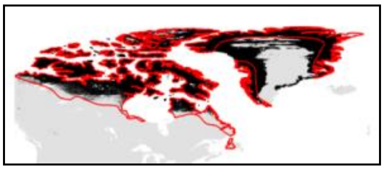


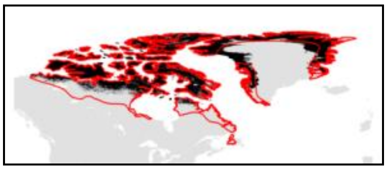
#6 – Arctic hare (*Lepus arcticus*)
n = 18
Expert: David Gray, Grayhound Information Services
Expert evaluation: Poor
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 2km/year (Chapman & Flux, 1990)
Status: UNMODELLABLE; **Included in final analysis:** X

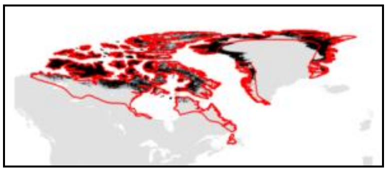
Model evaluation metric	
AUC	0.97
Omission rate	0.06
Sensitivity	0.94
Specificity	0.99
Proportion correct	0.99
Kappa	**0.36**
True Skill Statistic	0.94

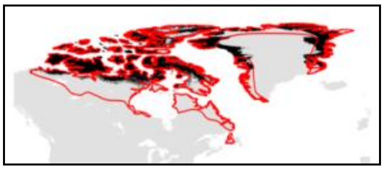
Summary: The Arctic hare's bioclimatic envelope is predicted to decline by 30% with a ~2° mean latitudinal poleward shift and mean decrease in elevation of ~10m driven by decreases in maximum elevation. 95% of the permutation importance of the model was contributed to by maximum temperature (34.0%), annual evapotranspiration (15.4%), surface roughness index (14.4%), human influence index (10.1%), normalised difference vegetation index (9.2%), mean annual temperature (4.4%), precipitation seasonality (1.5%), mean annual precipitation (1.5%), maximum precipitation (0.3%), minimum precipitation (0.3%), solar radiation (0.3%), minimum temperature (0.1%) and number of months with a positive water balance (0.1%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

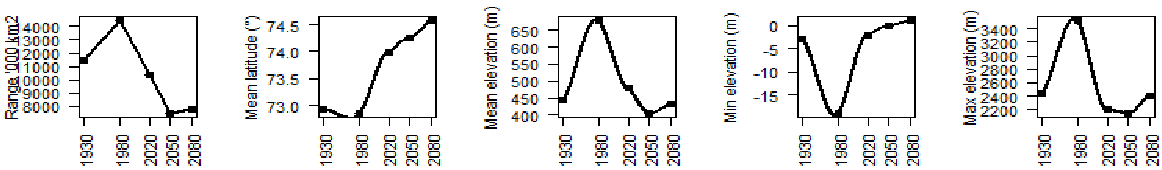

c) ~ 2020s (2010-2039)

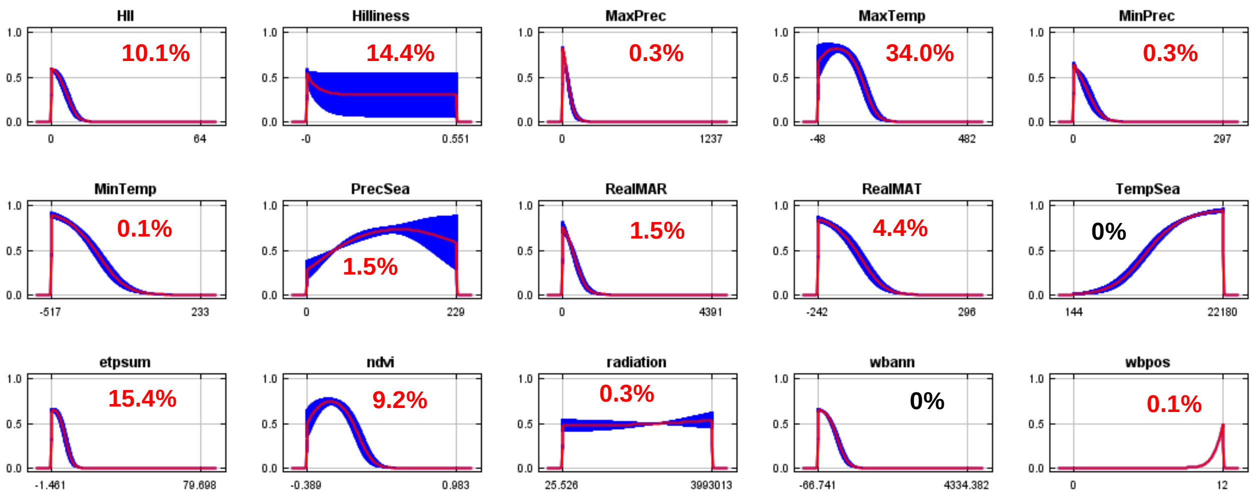

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Murray, D. & Smith, A.T. 2008)

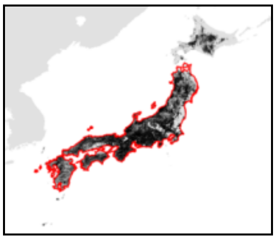


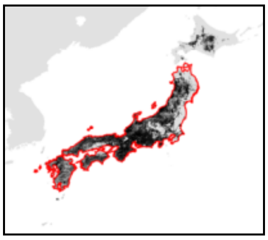


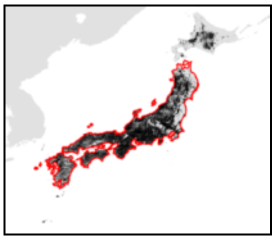
#7 – Japanese hare (*Lepus brachyurus*)
n = 9
Expert: Koji Shimano, Shinshu University, Japan
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 1km/year (Expert)
Status: MODELLABLE; **Included in final analysis:** √

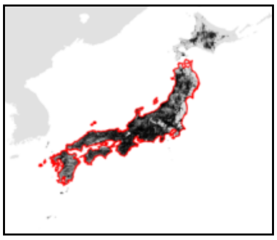
Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.43**
True Skill Statistic	0.99

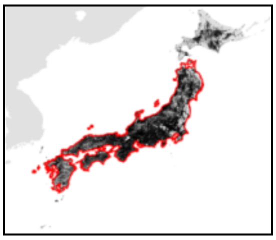
Summary: The Japanese hare's bioclimatic envelope is predicted to increase by 9% with no latitudinal poleward shift and a mean increase in elevation of ~10m driven by a decrease in minimum elevation. 95% of the permutation importance of the model was contributed to by temperature seasonality (31.8%), annual water balance (20.6%), human influence index (13.5%), mean annual precipitation (8.9%), maximum precipitation (6.2%), precipitation seasonality (5.4%) and minimum precipitation (4.4%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

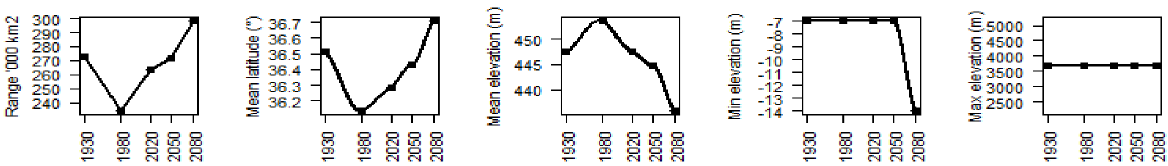

c) ~ 2020s (2010-2039)

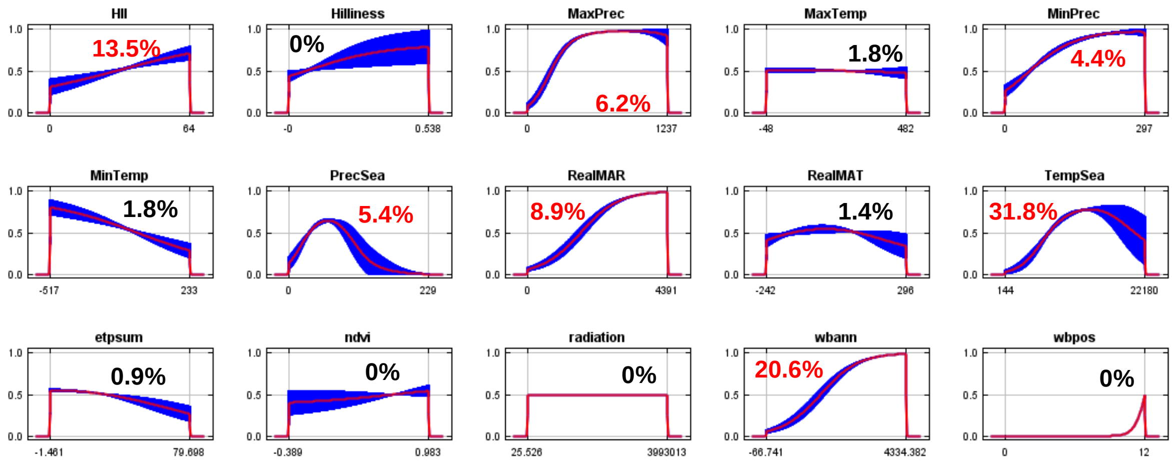

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Yamada, F. & Smith, A.T. 2008)

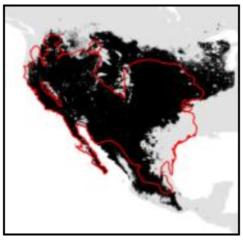


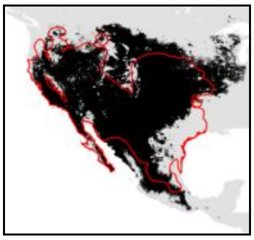


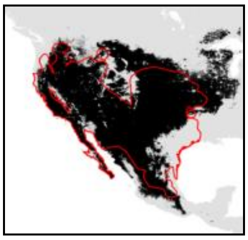
#8 – Black-tailed jackrabbit (*Lepus californicus*)
n = 970
Expert: Alejandro Velasquez, UNAM-Canada
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 18.9km/year (N.Am. leporids, range 2-25)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.93
Omission rate	0.07
Sensitivity	0.93
Specificity	0.94
Proportion correct	0.94
Kappa	**0.69**
True Skill Statistic	0.87

Summary: The Black-tailed jackrabbit's bioclimatic envelope is predicted to decline by 25% with a ~2° mean latitudinal poleward shift and mean decrease in elevation of ~75m, but with increases in both minimum and maximum elevation. 95% of the permutation importance of the model was contributed to by precipitation seasonality (31.8%), annual evapotranspiration (18.5%), maximum temperature (17.0%), mean annual temperature (8.9%), minimum temperature (8.0%), minimum precipitation (4.0%), human influence index (3.9%) and temperature seasonality (3.5%).

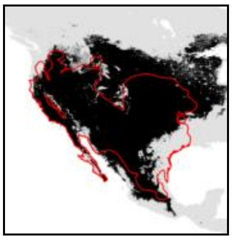

a) ~ 1930s (1900-1949)

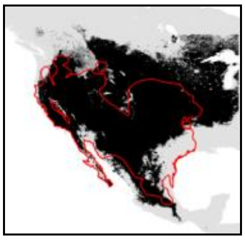

b) ~ 1980s (1950-2000)

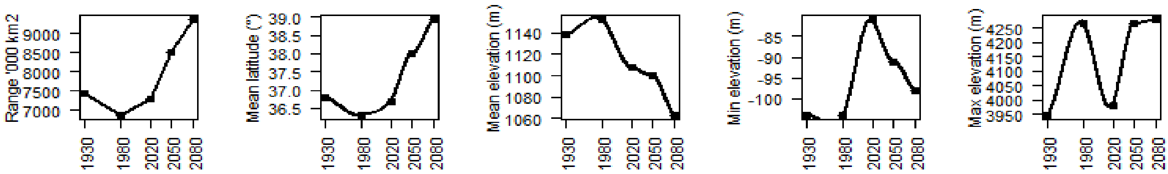

c) ~ 2020s (2010-2039)

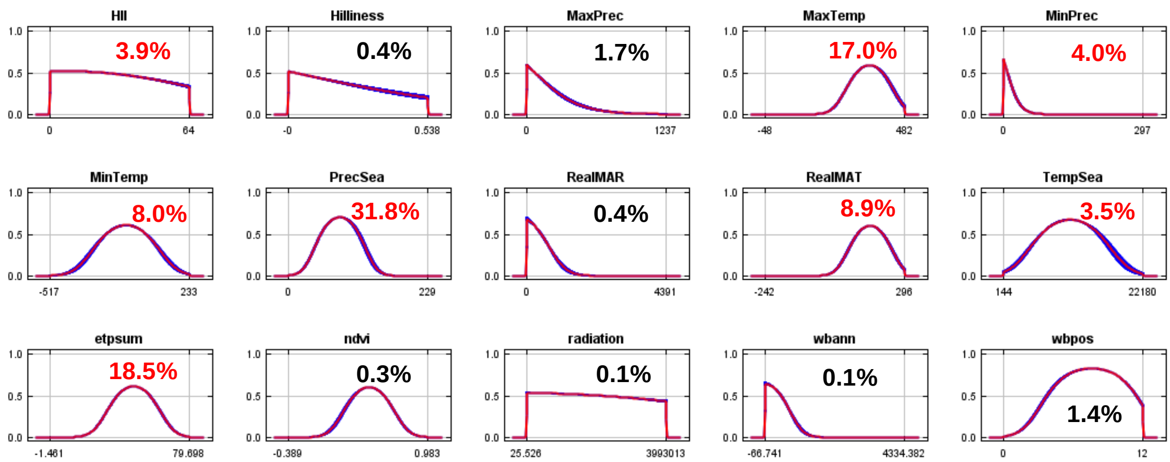
Black = predicted suitable envelope

Red polygon = IUCN range (Romero Malpica, F.J. & Rangel Cordero, H. 2008)


d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

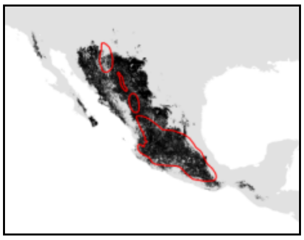




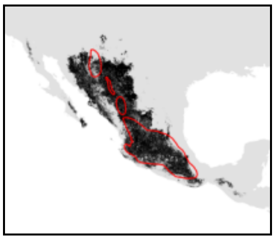
#9 – White-sided jackrabbit (*Lepus callotis*)
n = 37
Expert: Jennifer Frey, New Mexico State University
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 18.9km/year (N.Am. leporids, range 2-25)
Status: UNMODELLABLE; **Included in final analysis:** X

Model evaluation metric	
AUC	0.97
Omission rate	0.05
Sensitivity	0.95
Specificity	0.99
Proportion correct	0.99
Kappa	**0.36**
True Skill Statistic	0.93

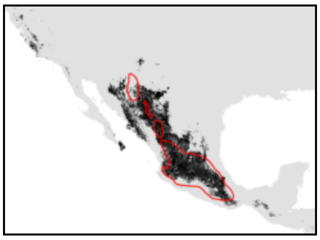
Summary: The White-sided jackrabbit's bioclimatic envelope is predicted to increase by 3% with a ~1° mean latitudinal poleward shift and a mean increase in elevation of ~150m driven by an increase in maximum elevation. 95% of the permutation importance of the model was contributed to by precipitation seasonality (35.4%), annual evapotranspiration (22.3%), minimum temperature (17.0%), mean annual temperature (10.5%), minimum precipitation (6.5%), maximum precipitation (6.5%), surface roughness index (3.0%) and number of months with a positive water balance (2.7%).



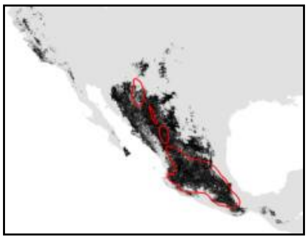
a) ~ 1930s (1900-1949)



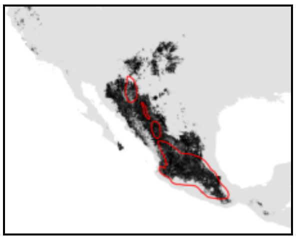
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



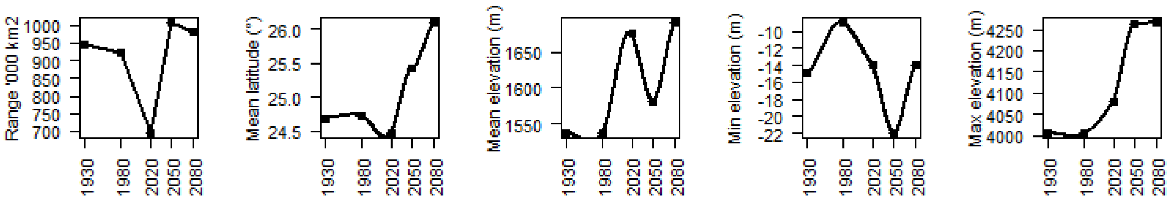
d) ~ 2050s (2040-2069)

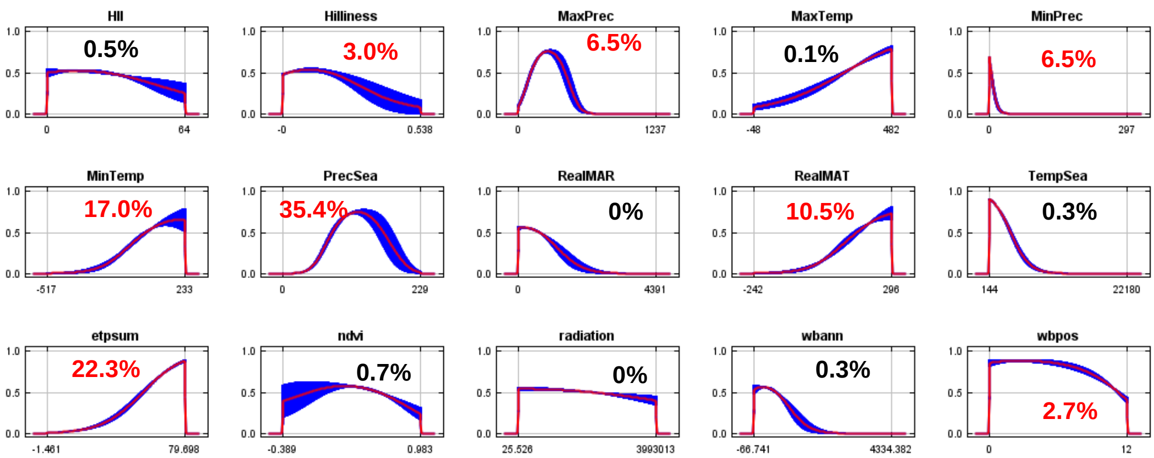


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Romero Malpica, F.J. & Rangel Cordero, H. 2008)

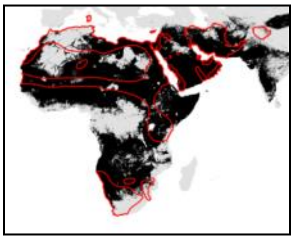


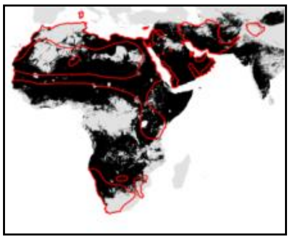


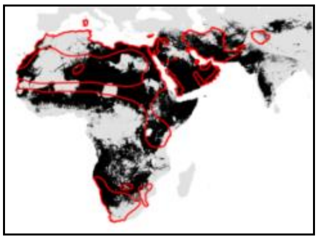
#10 – Cape hare (*Lepus capensis*)
n = 231
Expert: John Flux, IUCN Lagomorph Specialist Group
Expert evaluation: Poor
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 35km/year (Expert)
Status: UNMODELLABLE; **Included in final analysis:** X

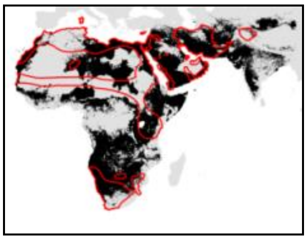
Model evaluation metric	
AUC	0.93
Omission rate	0.10
Sensitivity	0.90
Specificity	0.97
Proportion correct	0.97
Kappa	**0.56**
True Skill Statistic	0.87

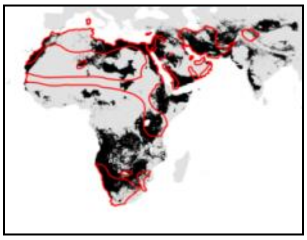
Summary: The Cape hare's bioclimatic envelope is predicted to decrease by 45% with ~2° mean latitudinal shift towards the Equator and a mean increase in elevation of ~330m driven by an increase in maximum elevation. 95% of the permutation importance of the model was contributed to by annual evapotranspiration (33.1%), minimum precipitation (29.6%), maximum temperature (9.7%), human influence index (7.2%), normalised difference vegetation index (4.6%), minimum temperature (3.2%), number of months with a positive water balance (2.9%), maximum precipitation (2.2%), mean annual precipitation (2.1%) and precipitation seasonality (2.0%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

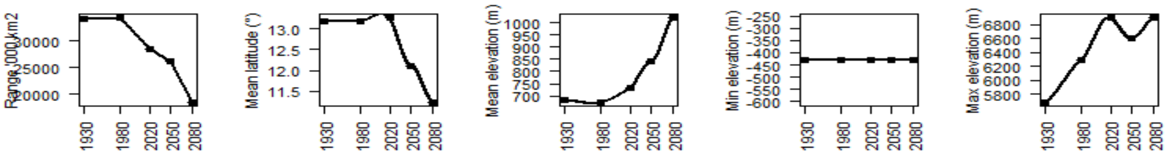

c) ~ 2020s (2010-2039)

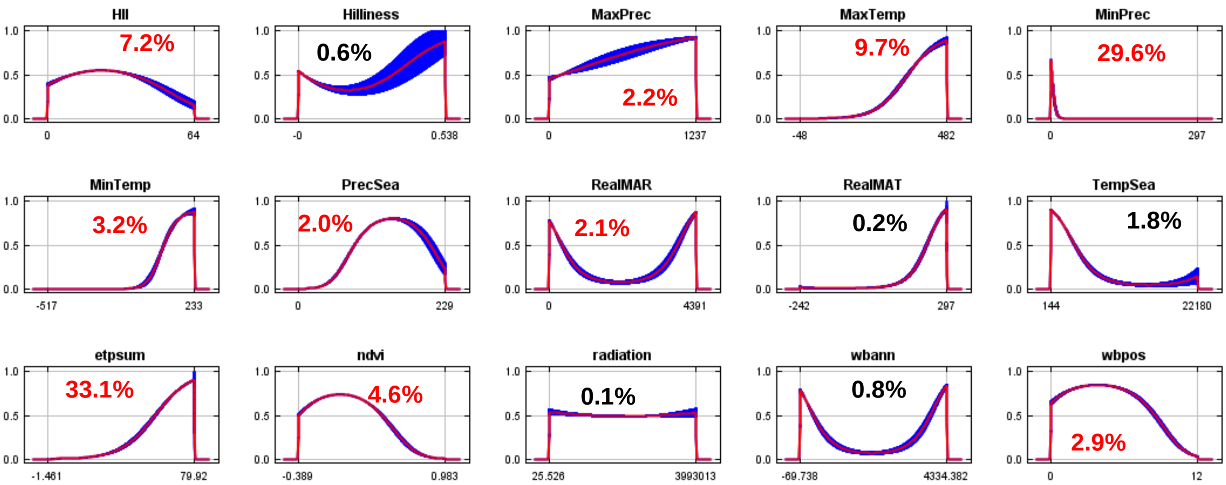

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Drew, C., *et al*. 2008)

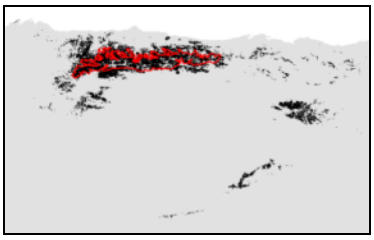




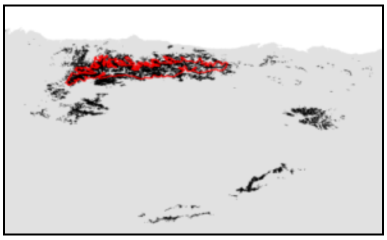
#11 – Broom hare (*Lepus castroviejoi*)
n = 164
Expert: Pelayo Acevedo, University of Porto
Expert evaluation: Medium
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 1km/year (Expert)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.94
Omission rate	0.11
Sensitivity	0.89
Specificity	0.99
Proportion correct	0.99
Kappa	**0.80**
True Skill Statistic	0.89

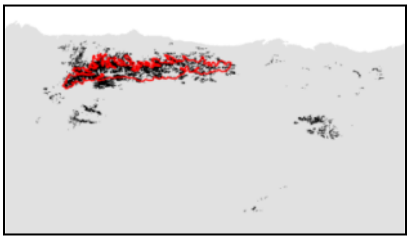
Summary: The Broom hare's bioclimatic envelope is predicted to decrease by 90% with a ~0.2° mean latitudinal poleward shift and a mean increase in elevation of ~450m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by mean annual temperature (62.0%), maximum temperature (20.6%), temperature seasonality (10.9%) and surface roughness index (3.8%).



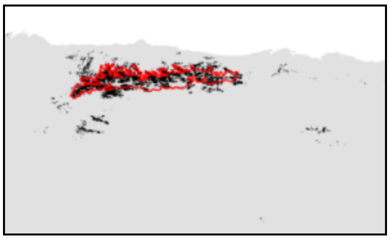
a) ~ 1930s (1900-1949)



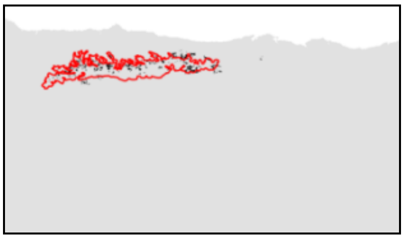
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



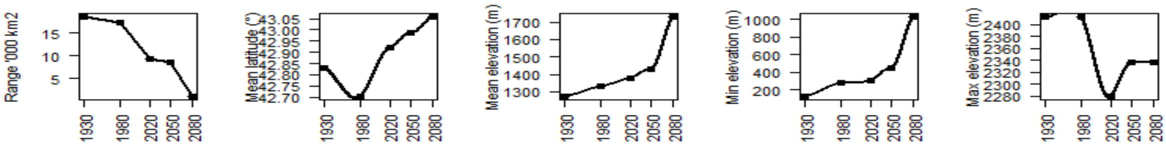
d) ~ 2050s (2040-2069)

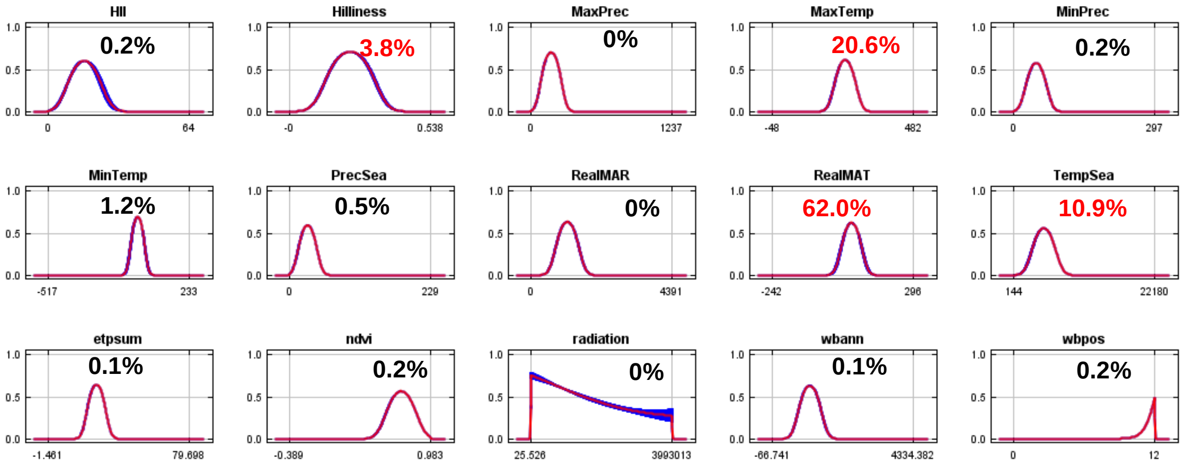


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

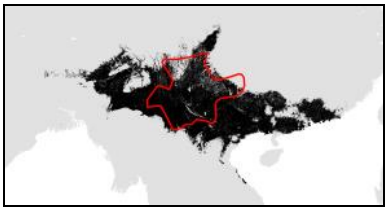




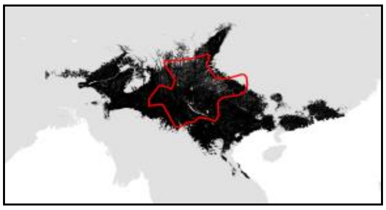
#12 – Yunnan hare (*Lepus comus*)
n = 59
Expert: Weihe Yang, Institute of Zoology, Chinese Academy of Sciences
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 2.5km/year (Asian leporids, range 1-35)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.92
Omission rate	0.15
Sensitivity	0.85
Specificity	0.99
Proportion correct	0.99
Kappa	**0.67**
True Skill Statistic	0.84

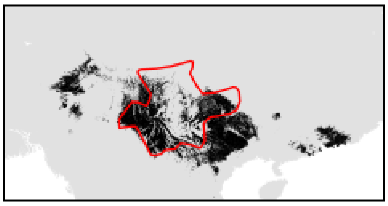
Summary: The Yunnan hare's bioclimatic envelope is predicted to decrease by 65% with a ~0.1° mean latitudinal poleward shift and a mean increase in elevation of ~100m driven by both increases in maximum and minimum elevation. 95% of the permutation importance of the model was contributed to by precipitation seasonality (59.9%), maximum temperature (26.8%), temperature seasonality (2.9%), number of months with a positive water balance (2.6%), annual evapotranspiration (2.0%) and mean annual temperature (1.7%).



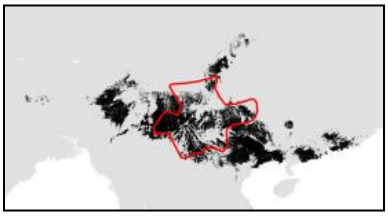
a) ~ 1930s (1900-1949)



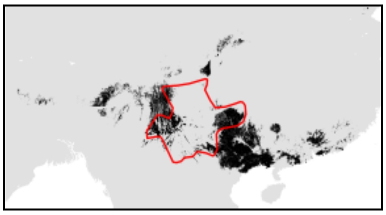
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



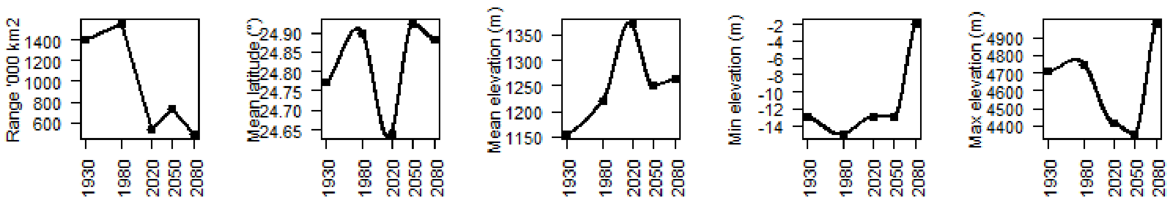
d) ~ 2050s (2040-2069)

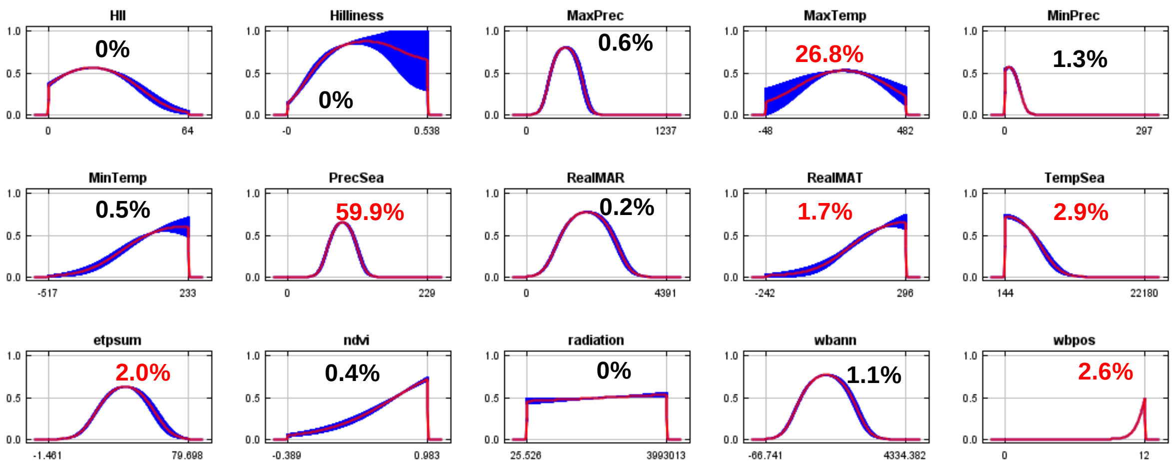


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)



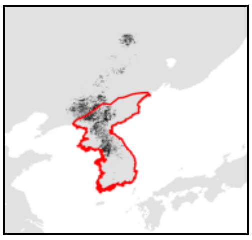


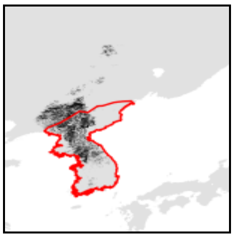
#13 – Korean hare (*Lepus coreanus*)

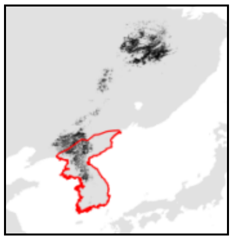
n = 6
Expert: Weihe Yang, Institute of Zoology, Chinese Academy of Sciences
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 2.5km/year (Asian leporids, range 1-35)
Status: MODELLABLE; **Included in final analysis:** √

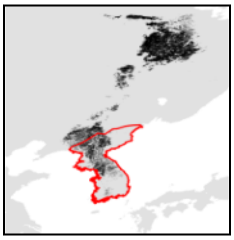
Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.86**
True Skill Statistic	0.99

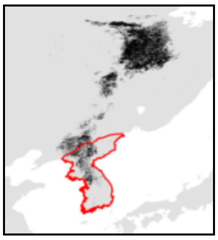
Summary: The Korean hare's bioclimatic envelope is predicted to increase by 500% with a ~8° mean latitudinal poleward shift and a mean increase in elevation of ~70m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by temperature seasonality (27.2%), mean annual precipitation (25.6%), minimum temperature (17.7%), annual water balance (13.1%), normalised difference vegetation index (4.7%), precipitation seasonality (4.5%) and human influence index (2.4%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

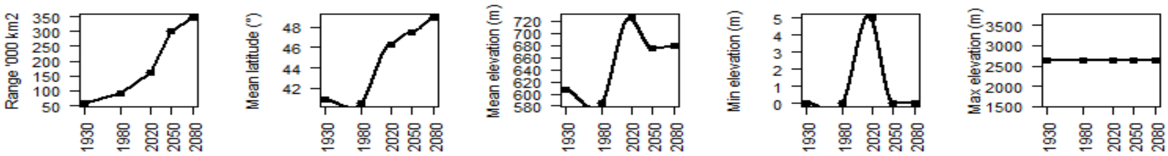

c) ~ 2020s (2010-2039)

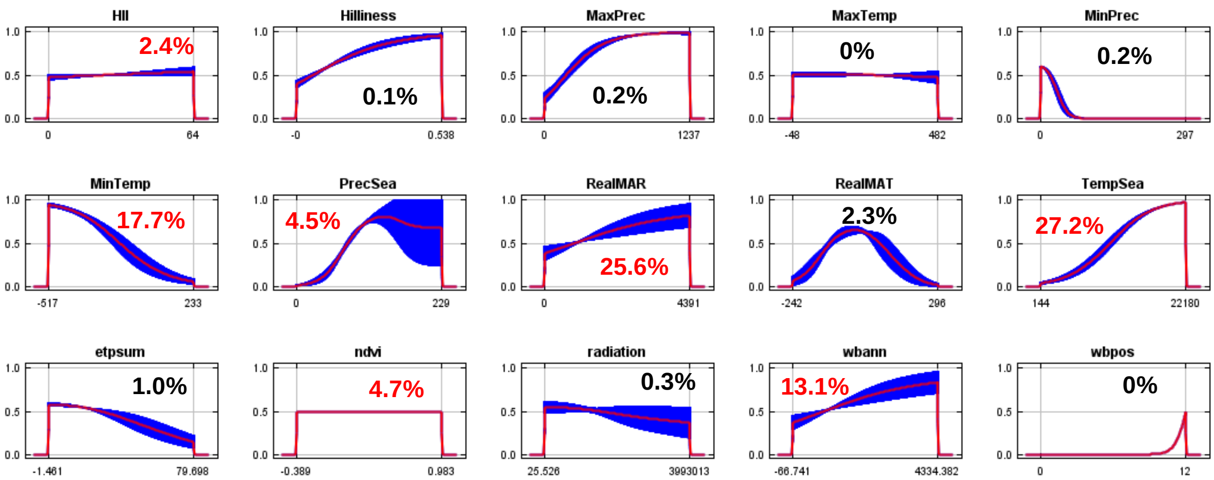

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

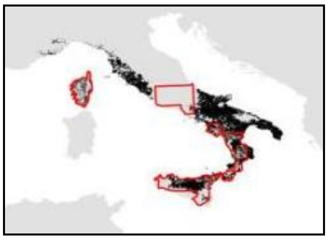




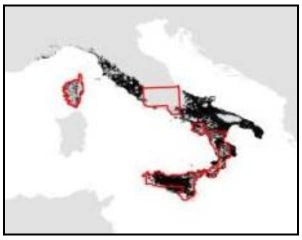
#14 – Apennine hare (*Lepus corsicanus*)
n = 59
Expert: Francesco Angelici, Italian Foundation of Vertebrate Zoology
Expert evaluation: Medium
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 3km/year (Expert)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.53**
True Skill Statistic	0.99

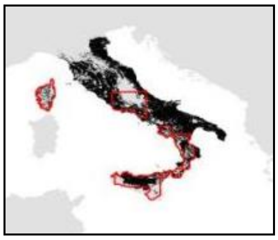
Summary: The Apennine hare's bioclimatic envelope is predicted to increase by 125% with a ~2° mean latitudinal poleward shift and a mean decrease in elevation of ~60m. 95% of the permutation importance of the model was contributed to by minimum temperature (37.9%), annual evapotranspiration (34.3%), temperature seasonality (11.4%), minimum precipitation (11.1%) and maximum temperature (2.8%).



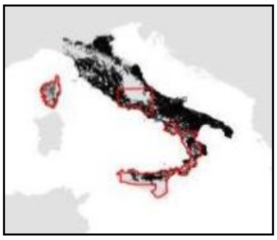
a) ~ 1930s (1900-1949)



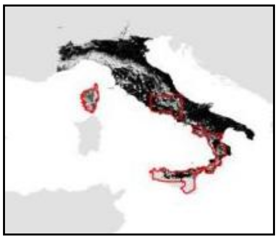
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



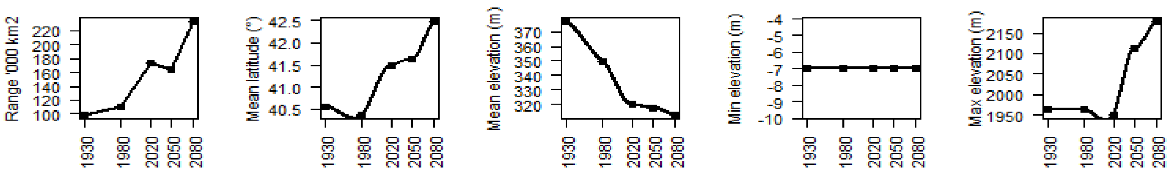
d) ~ 2050s (2040-2069)

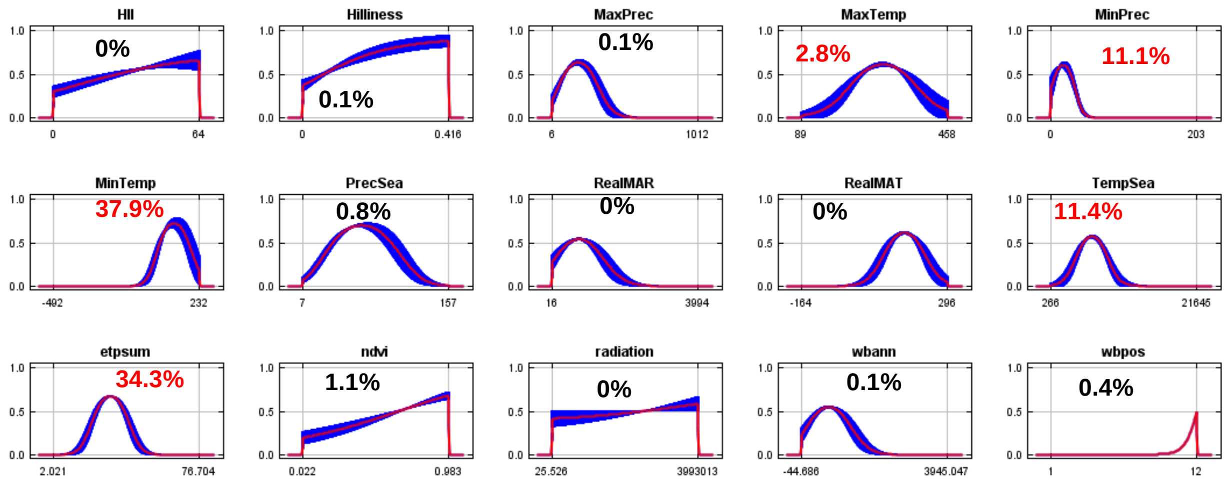


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Angelici, F.M., Randi, E., Riga, F. & Trocchi, V. 2008)

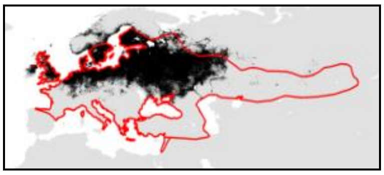


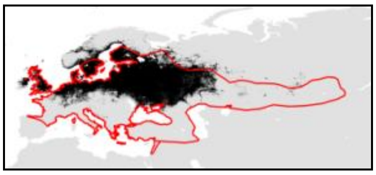


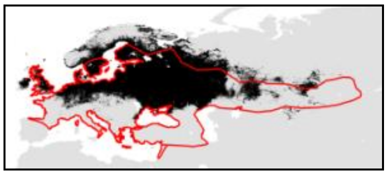
#15 – European hare (*Lepus europaeus*)-native range only
n = 6,186
Expert: Neil Reid, Queen's University Belfast
Expert evaluation: Medium
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 2km/year (Chapman & Flux, 1990)
Status: MODELLABLE; **Included in final analysis:** √

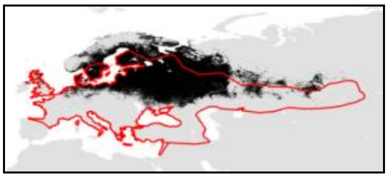
Model evaluation metric	
AUC	0.81
Omission rate	0.07
Sensitivity	0.93
Specificity	0.69
Proportion correct	0.78
Kappa	**0.57**
True Skill Statistic	0.62

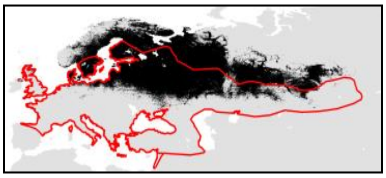
Summary: The European hare's bioclimatic envelope is predicted to increase by 50% with a ~3° mean latitudinal poleward shift and a mean increase in elevation of ~20m driven by an increase in both maximum and minimum elevation. 95% of the permutation importance of the model was contributed to by annual evapotranspiration (58.0%), minimum temperature (9.0%), temperature seasonality (7.3%), surface roughness index (5.5%), human influence index (5.1%), precipitation seasonality (3.3%), annual water balance (3.3%), minimum precipitation (3.0%), normalised difference vegetation index (2.4%) and mean annual temperature (1.5%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

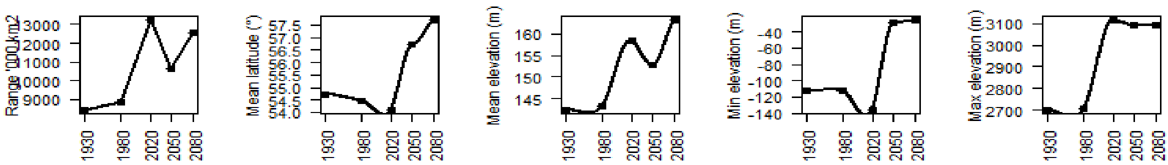

c) ~ 2020s (2010-2039)

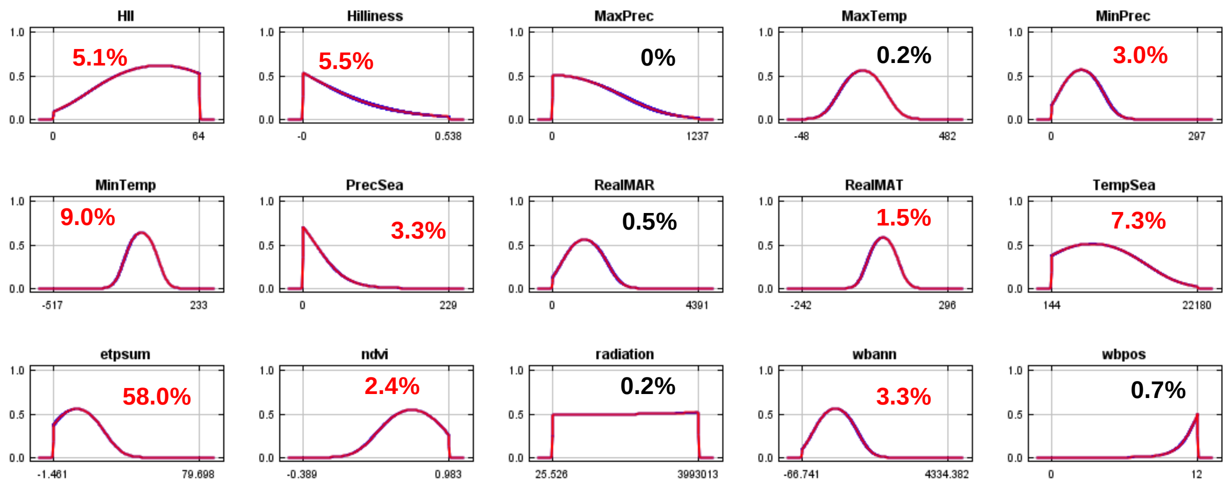

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

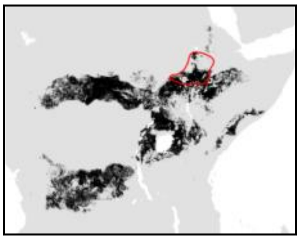




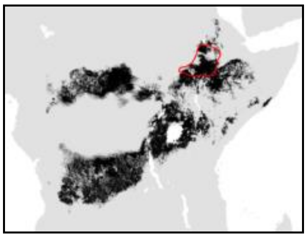
#16 – Ethiopian hare (*Lepus fagani*)
n = 9
Expert: Zelalem Tolesa, Addis Ababa University
Expert evaluation: Poor
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 25km/year (African leporids, range 15-35)
Status: UNMODELLABLE; **Included in final analysis:** X

Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.56**
True Skill Statistic	0.99

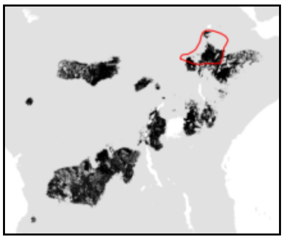
Summary: The Ethiopian hare's bioclimatic envelope is predicted to decrease by 15% with no latitudinal poleward shift and a mean increase in elevation of ~200m driven by an increase in maximum and minimum elevation. 95% of the permutation importance of the model was contributed to by temperature seasonality (92.7%) and annual evapotranspiration (5.3%).



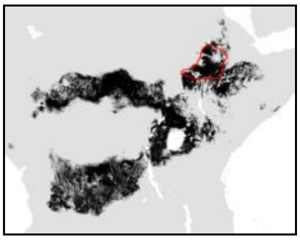
a) ~ 1930s (1900-1949)



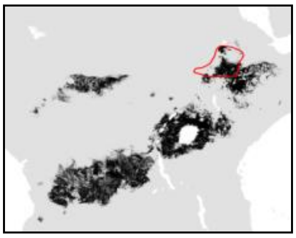
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



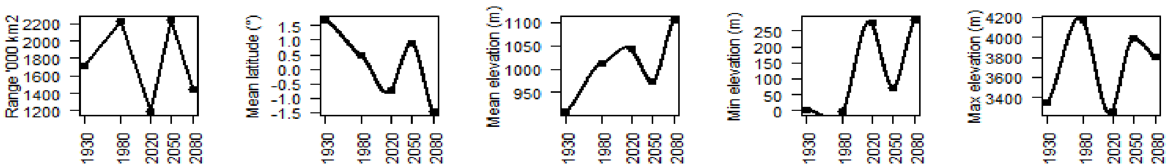
d) ~ 2050s (2040-2069)

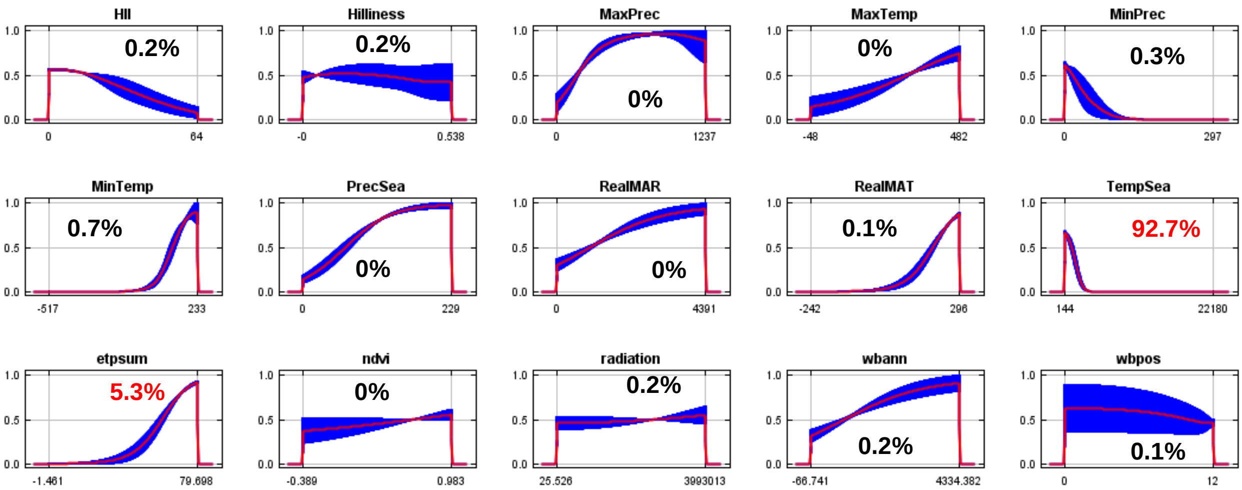


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

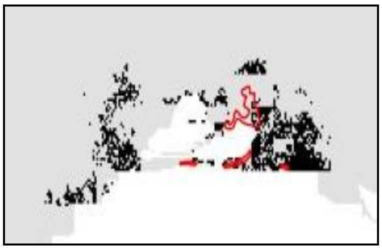




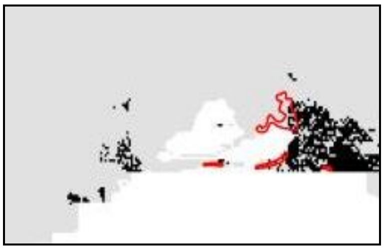
#17 – Tehuantepec jackrabbit (*Lepus flavigularis*)
n = 8
Expert: Arturo Carillo-Reyes, Universidad de Ciencias y Artes de Chiapas
Expert evaluation: Poor
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 0.01km/year (Expert)
Status: UNMODELLABLE; **Included in final analysis:** X

Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.95**
True Skill Statistic	0.99

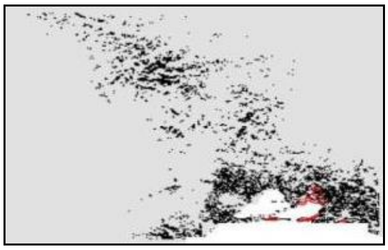
Summary: The Tehuantepec jackrabbit's bioclimatic envelope is predicted to decrease by 45% with a ~1° mean latitudinal poleward shift and a mean increase in elevation of ~450m driven by an increase in maximum and minimum elevation. 95% of the permutation importance of the model was contributed to by temperature seasonality (81.7%), mean annual temperature (2.7%) and normalised difference vegetation index (1.7%).



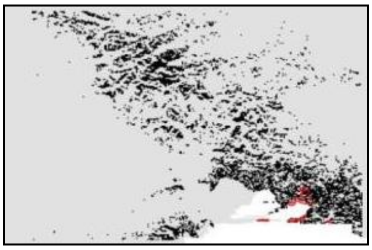
a) ~ 1930s (1900-1949)



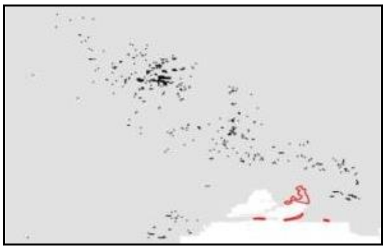
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



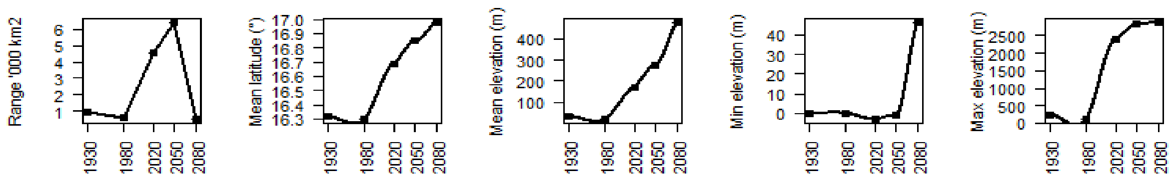
d) ~ 2050s (2040-2069)

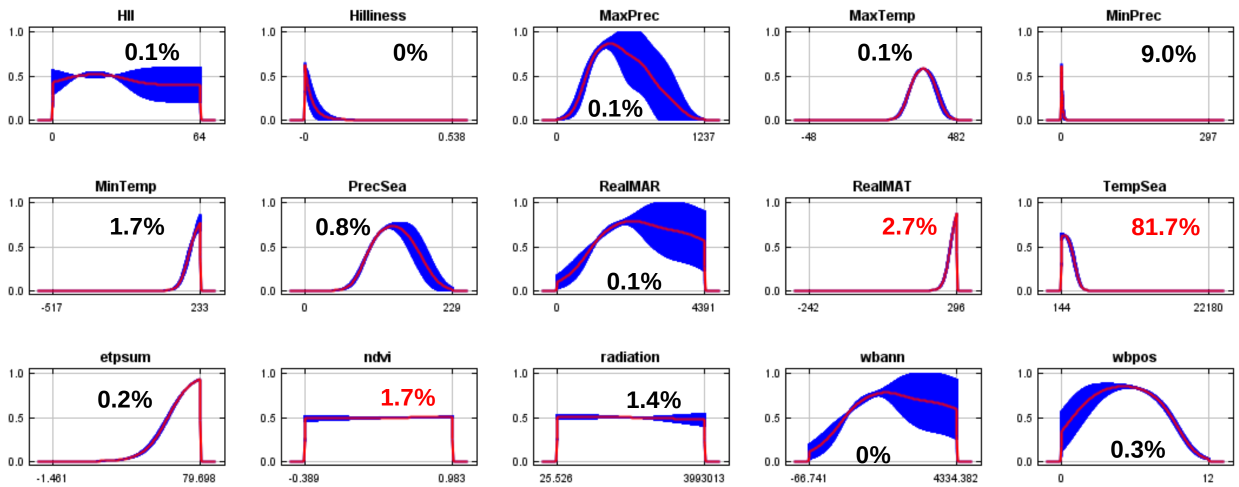


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Cervantes, F.A., *et al*. 2008)

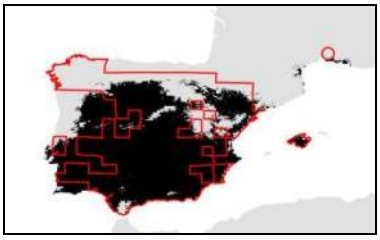


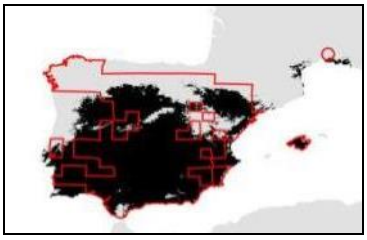


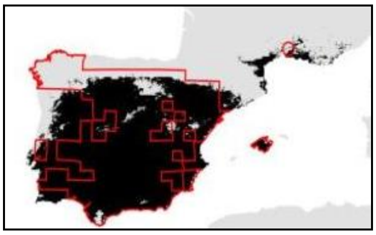
#18 – Iberian hare (*Lepus granatensis*)
n = 1675
Expert: Pelayo Acevedo, University of Porto
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 7km/year (Expert)
Status: MODELLABLE; **Included in final analysis:** √

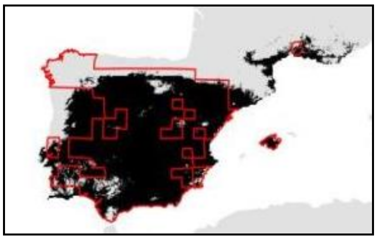
Model evaluation metric	
AUC	0.94
Omission rate	0.08
Sensitivity	0.92
Specificity	0.95
Proportion correct	0.95
Kappa	**0.81**
True Skill Statistic	0.87

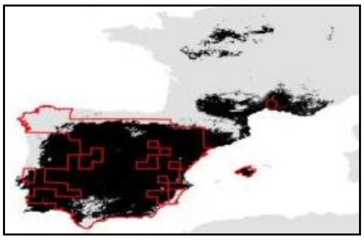
Summary: The Iberian hare's bioclimatic envelope is predicted to increase by 40% with a ~1° mean latitudinal poleward shift and a mean increase in elevation of ~10m driven by an increase in maximum elevation. 95% of the permutation importance of the model was contributed to by maximum precipitation (39.0%), annual evapotranspiration (38.0%), minimum temperature (15.0%) and maximum temperature (3.0%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

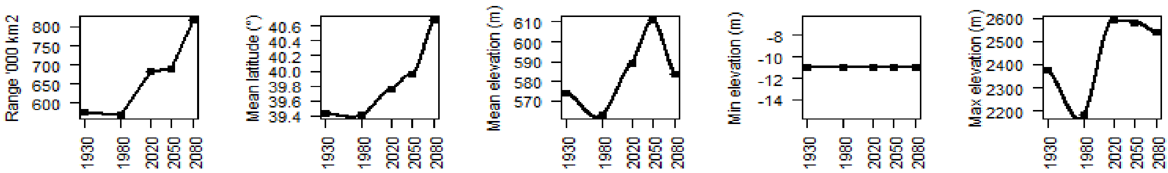

c) ~ 2020s (2010-2039)

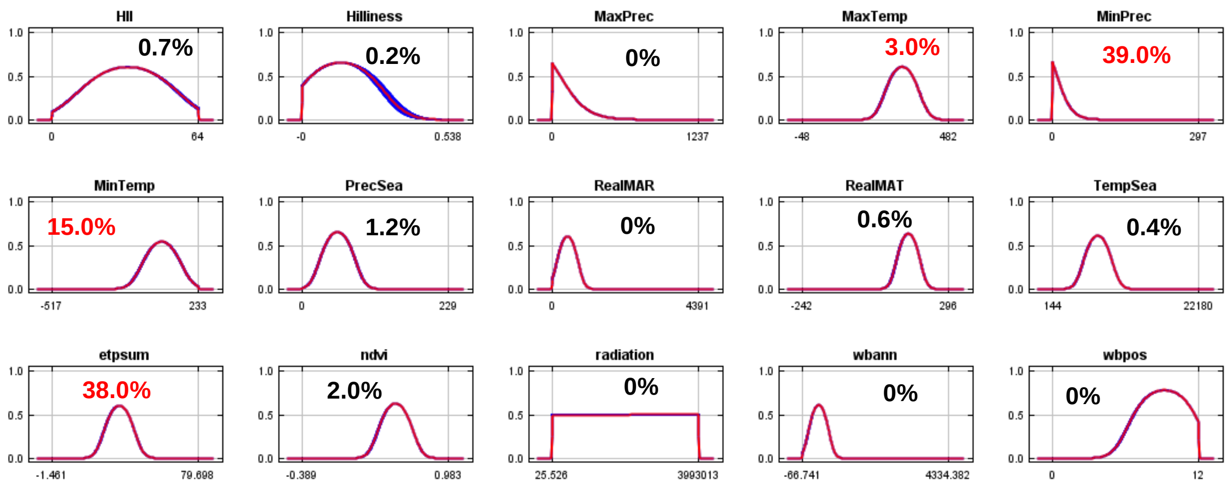

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

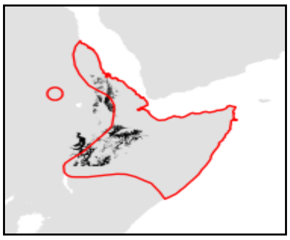


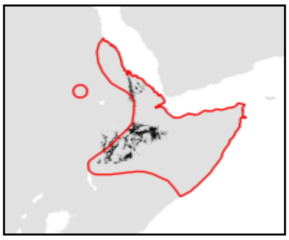


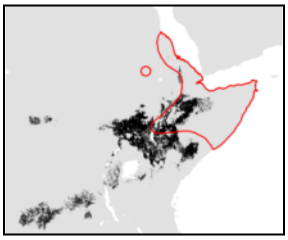
#19 – Abyssinian hare (*Lepus habessinicus*)
n = 7
Expert: Zelalem Tolesa, Addis Ababa University
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 25km/year (African leporids, range 15-35)
Status: MODELLABLE; **Included in final analysis:** √

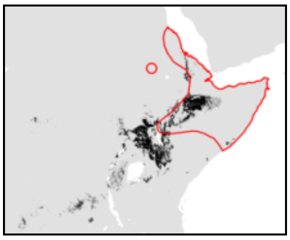
Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.82**
True Skill Statistic	0.99

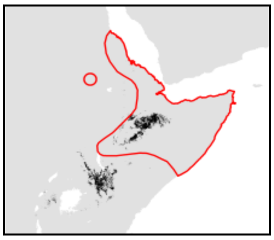
Summary: The Abyssinian hare's bioclimatic envelope is predicted to decrease by 4% with a ~4° mean latitudinal shift towards the Equator and a mean decrease in elevation of ~200m driven by an decrease in maximum elevation. 95% of the permutation importance of the model was contributed to by temperature seasonality (87.6%), annual evapotranspiration (4.9%) and minimum precipitation (4.1%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

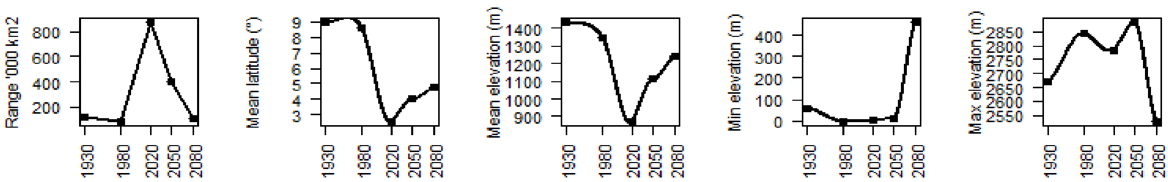

c) ~ 2020s (2010-2039)

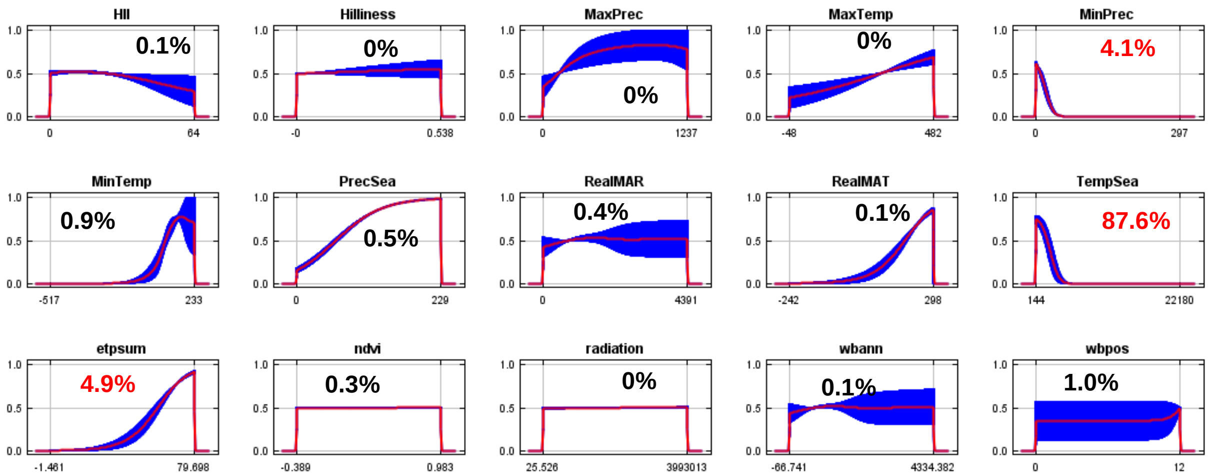

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

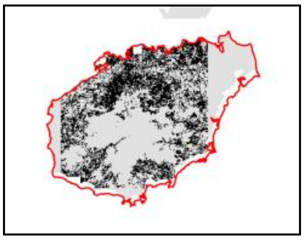


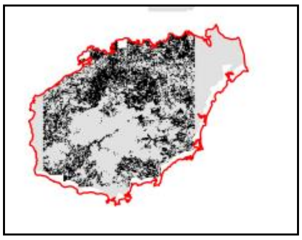


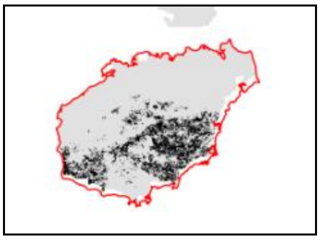
#20 – Hainan hare (*Lepus hainanus*)
n = 9
Expert: Youhua Chen, Wuhan University, China
Expert evaluation: Good
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 0.01km/year (Island species, range 0.01-0.01)
Status: MODELLABLE; **Included in final analysis:** √

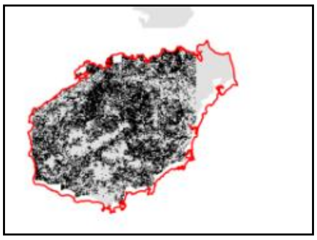
Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.86**
True Skill Statistic	0.99

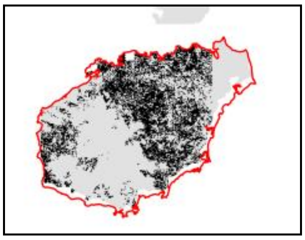
Summary: The Hainan hare's bioclimatic envelope is predicted to increase by 4% with no latitudinal poleward shift and a mean increase in elevation of ~20m driven by an increase in maximum elevation. 95% of the permutation importance of the model was contributed to by minimum temperature (71.0%), mean annual temperature (22.8%) and temperature seasonality (5.4%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

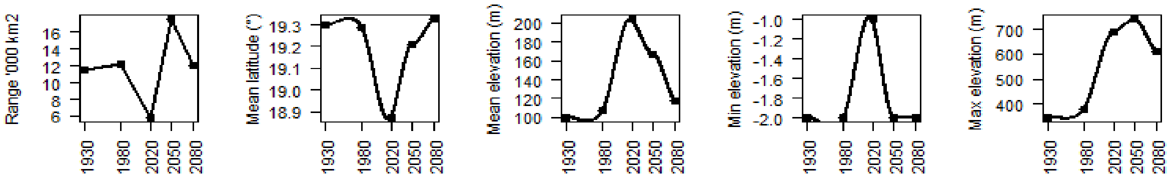

c) ~ 2020s (2010-2039)

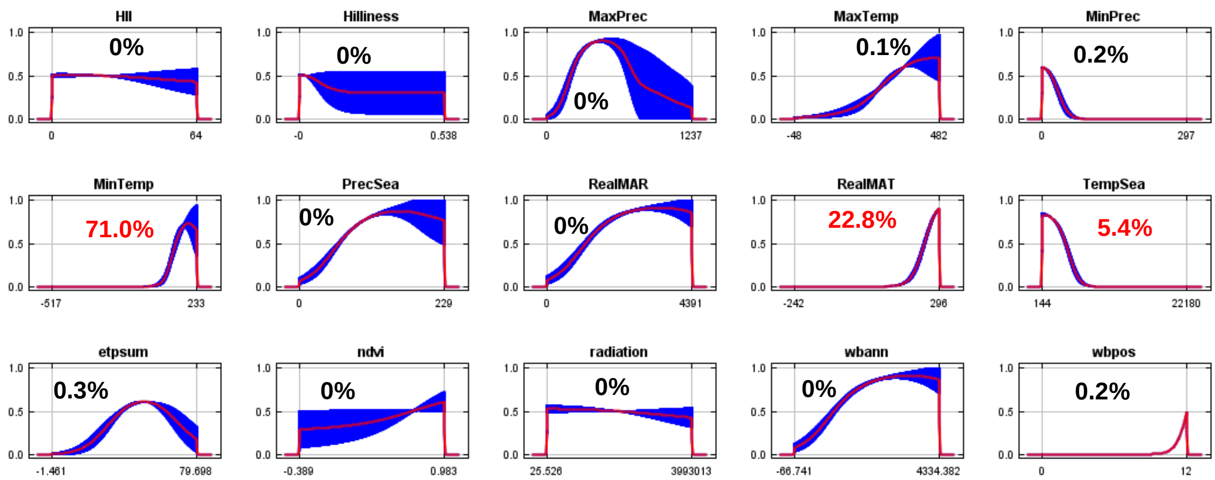

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Lazell, J.,*et al*. 2008)

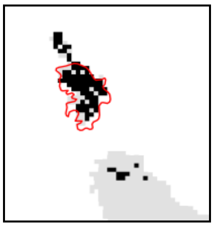




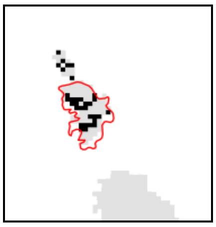
#21 – Black jackrabbit (*Lepus insularis*)
n = 3
Expert: Tamara Rioja Pardela, Universidad de Ciencias y Artes de Chiapas, Mexico
Expert evaluation: Good
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 0.01km/year (Island species, range 0.01-0.01)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	1.00
Omission rate	0.00
Sensitivity	1.00
Specificity	1.00
Proportion correct	1.00
Kappa	**1.00**
True Skill Statistic	1.00

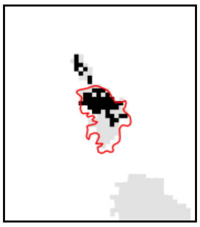
Summary: The Black jackrabbit's bioclimatic envelope is predicted to decrease by 100% with a ~0.3^{o} mean latitudinal polewards shift and a mean increase in elevation of ~50m driven by an increase in both minimum and maximum elevation. 95% of the permutation importance of the model was contributed to by precipitation seasonality (28.6%), minimum precipitation (16.5%), annual water balance (13.3%), minimum temperature (12.9%), mean annual temperature (7.1%), temperature seasonality (5.5%), surface roughness index (5.0%) and normalised difference vegetation index (3.2%).



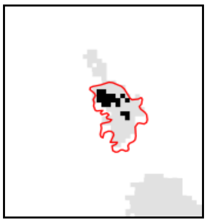
a) ~ 1930s (1900-1949)



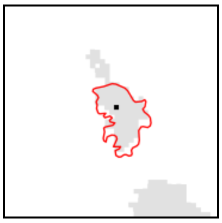
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



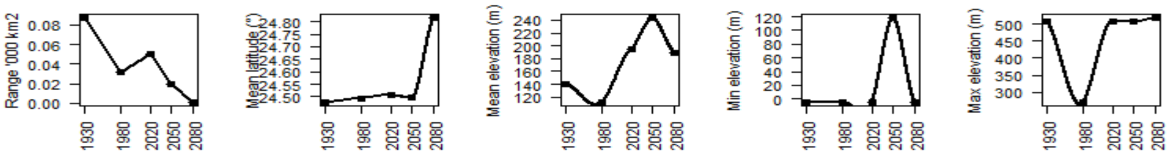
d) ~ 2050s (2040-2069)

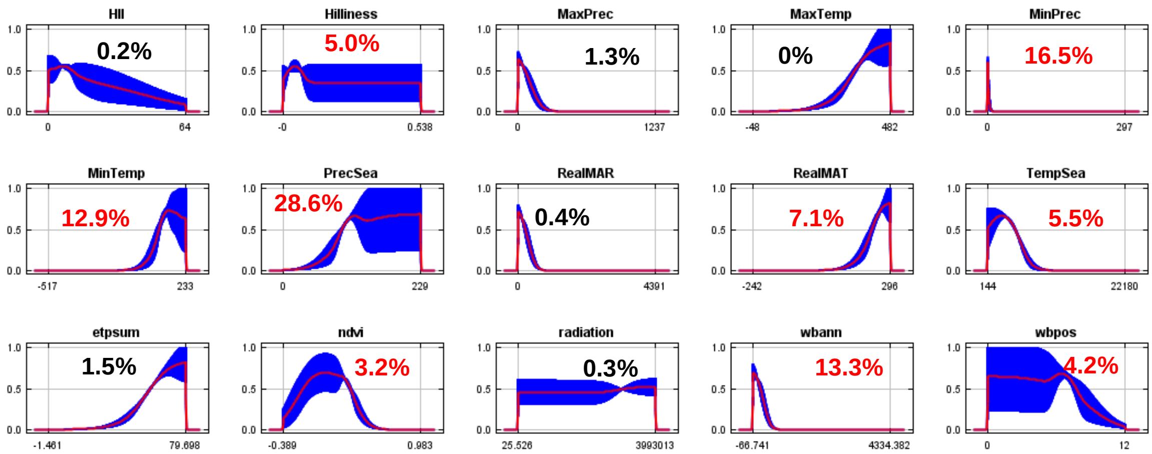


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Romero Malpica, F.J. & Rangel Cordero, H. 2008)

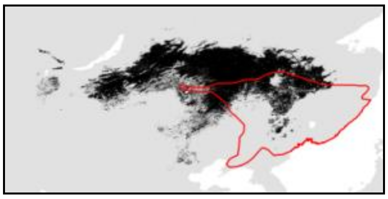


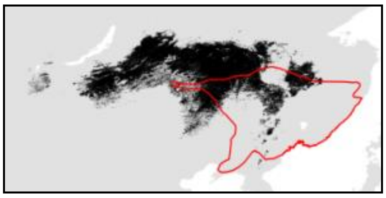


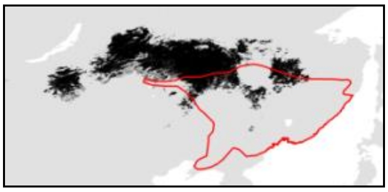
#22 – Manchurian hare (*Lepus mandshuricus*)
n = 36
Expert: Deyan Ge, Institute of Zoology, Chinese Academy of Sciences
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 3km/year (Sokolov, V.E. *et al*., 2009)
Status: MODELLABLE; **Included in final analysis:** √

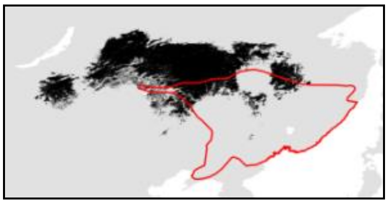
Model evaluation metric	
AUC	0.96
Omission rate	0.08
Sensitivity	0.92
Specificity	0.99
Proportion correct	0.99
Kappa	**0.78**
True Skill Statistic	0.92

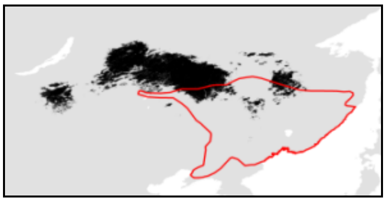
Summary: The Manchurian hare's bioclimatic envelope is predicted to decrease by 50% with a ~1° mean latitudinal polewards shift and a mean increase in elevation of ~70m driven by an increase in maximum and minimum elevation. 95% of the permutation importance of the model was contributed to by precipitation seasonality (77.3%), mean annual temperature (10.4%), minimum temperature (4.5%), normalised difference vegetation index (2.6%) and annual evapotranspiration (2.4%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

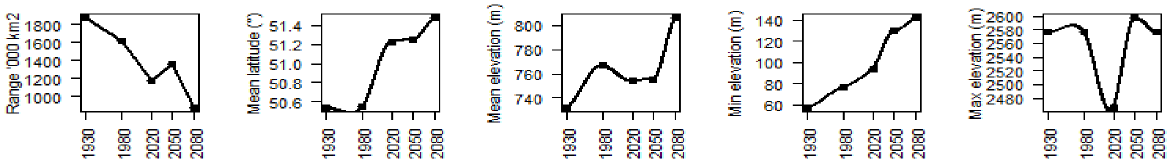

c) ~ 2020s (2010-2039)

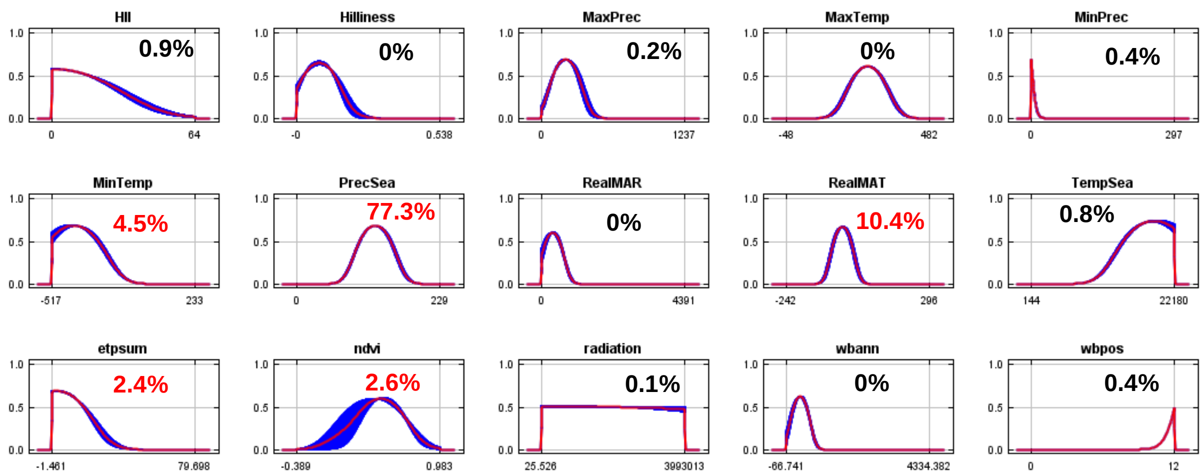

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

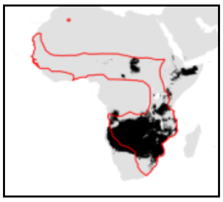


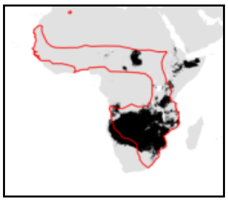


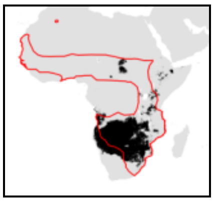
#23 – African savannah hare (*Lepus microtis*)
n = 82
Expert: John Flux, IUCN Lagomorph Specialist Group
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic only
Dispersal distance: 15km/year (Expert)
Status: MODELLABLE; **Included in final analysis:** √

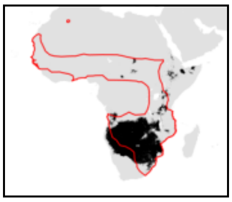
Model evaluation metric	
AUC	0.93
Omission rate	0.13
Sensitivity	0.87
Specificity	0.99
Proportion correct	0.99
Kappa	**0.62**
True Skill Statistic	0.86

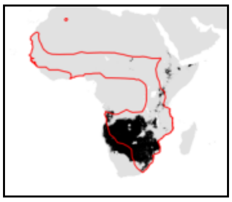
Summary: The African savannah hare's bioclimatic envelope is predicted to decrease by 15% with a ~3° mean latitudinal polewards shift and a mean increase in elevation of ~100m driven by an increase in maximum and minimum elevation. 95% of the permutation importance of the model was contributed to by mean annual temperature (40.9%), maximum temperature (18.5%), annual evapotranspiration (9.2%), minimum precipitation (6.2%), temperature seasonality (5.4%), mean annual precipitation (5.4%), minimum temperature (4.9%), precipitation seasonality (4.1%) and annual water balance (1.7%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

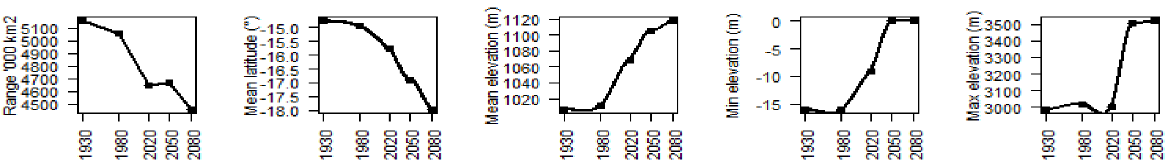

c) ~ 2020s (2010-2039)

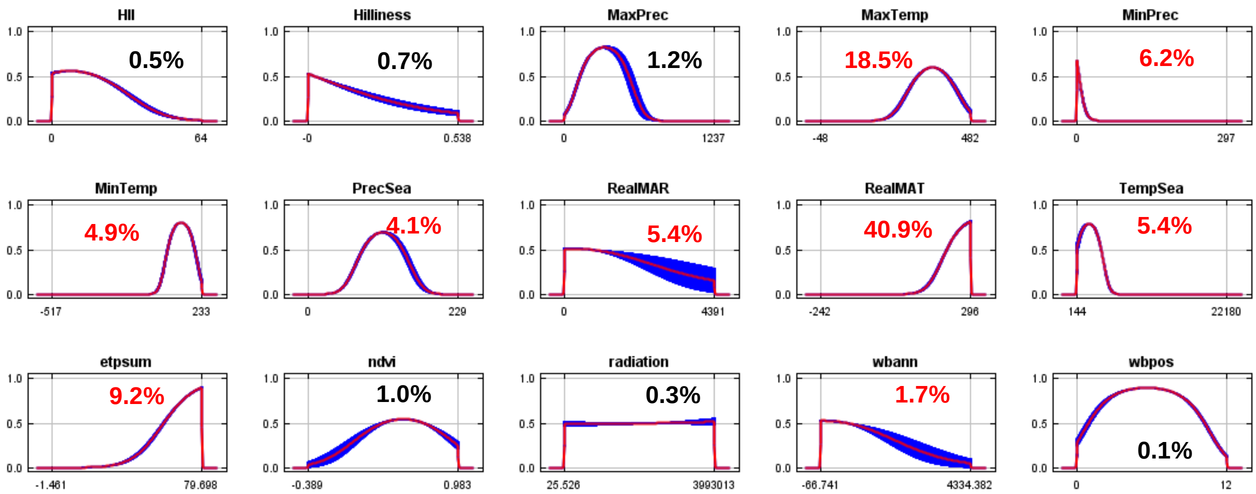

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

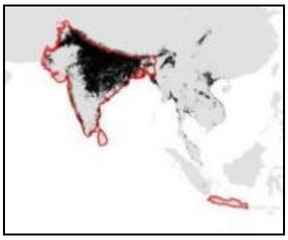


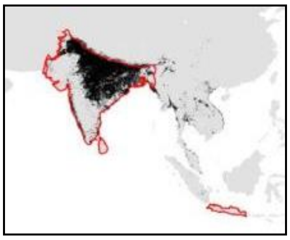


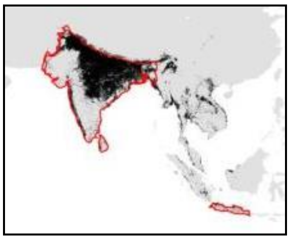
#24 – Indian hare (*Lepus nigricollis*)
n = 17
Expert: Gopinathan Maheswaran , Zoological Survey of India
Expert evaluation: Good
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 6km/year (Expert)
Status: MODELLABLE; **Included in final analysis:** √

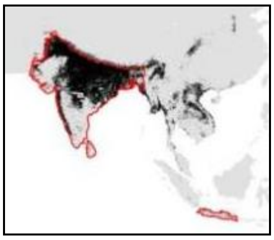
Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.59**
True Skill Statistic	0.99

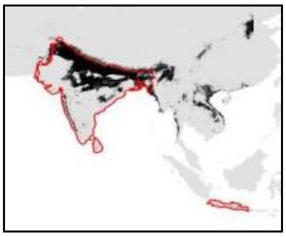
Summary: The Indian hare's bioclimatic envelope is predicted to decrease by 10% with a ~2° mean latitudinal polewards shift and a mean increase in elevation of ~80m driven by an increase in maximum and minimum elevation. 95% of the permutation importance of the model was contributed to by precipitation seasonality (48.0%), mean annual temperature (14.9%), human influence index (11.9%), minimum temperature (10.3%), temperature seasonality (7.0%), number of months with a positive water balance (2.8%) and minimum precipitation (1.5%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

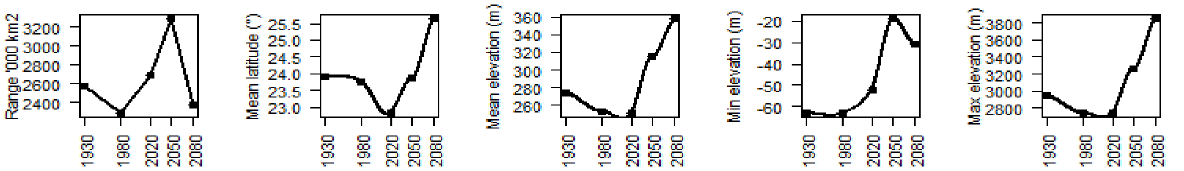

c) ~ 2020s (2010-2039)

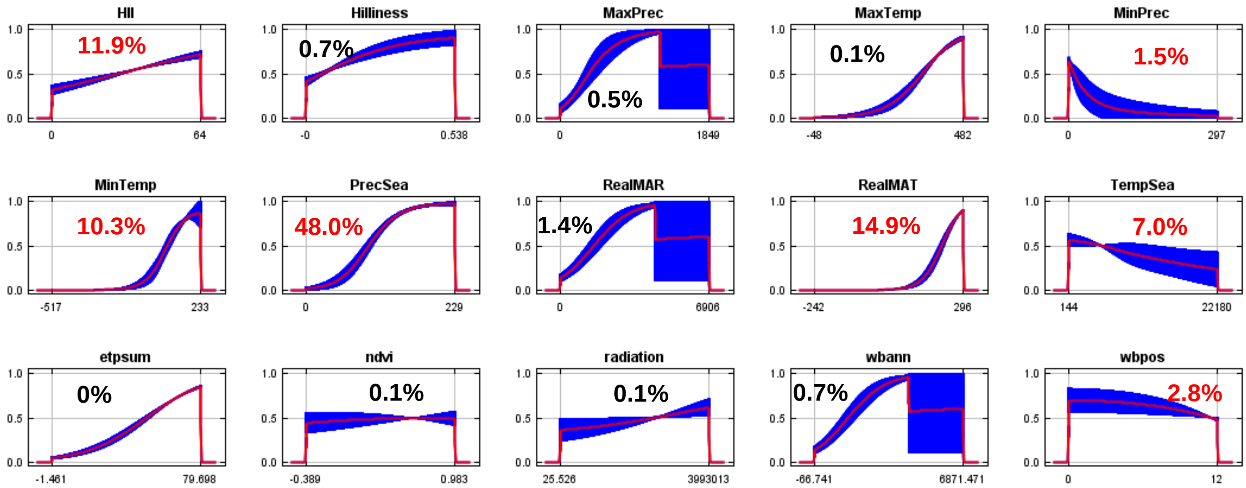

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Maheswaran, G. & Jordan, M. 2008)

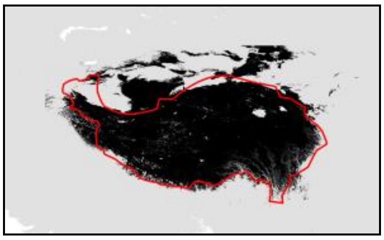




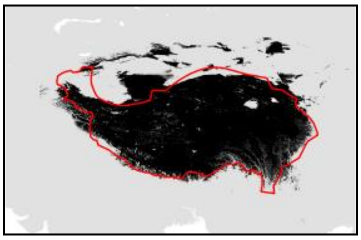
#25 – Woolly hare (*Lepus oiostolus*)
n = 84
Expert: Weihe Yang , Institute of Zoology, Chinese Academy of Sciences
Expert evaluation: Medium
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 2.5km/year (Asian leporids, range 1-35)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.94
Omission rate	0.11
Sensitivity	0.89
Specificity	0.99
Proportion correct	0.99
Kappa	**0.63**
True Skill Statistic	0.89

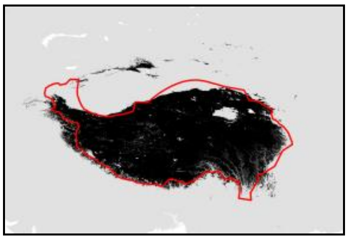
Summary: The Woolly hare's bioclimatic envelope is predicted to decrease by 25% with a ~1° mean latitudinal shift towards the Equator and a mean increase in elevation of ~680m driven by an increase in maximum and minimum elevation. 95% of the permutation importance of the model was contributed to by minimum precipitation (82.1%), maximum temperature (5.0%), minimum temperature (4.6%) and annual evapotranspiration (3.8%).



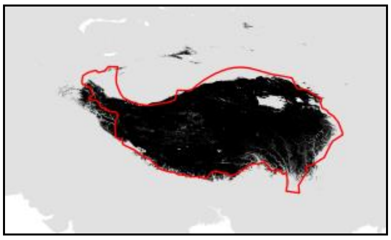
a) ~ 1930s (1900-1949)



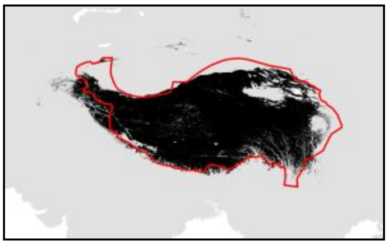
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



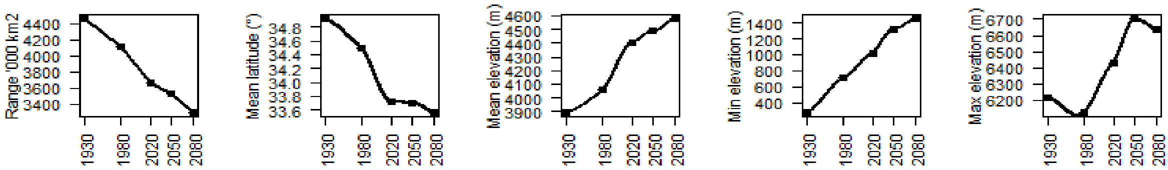
d) ~ 2050s (2040-2069)

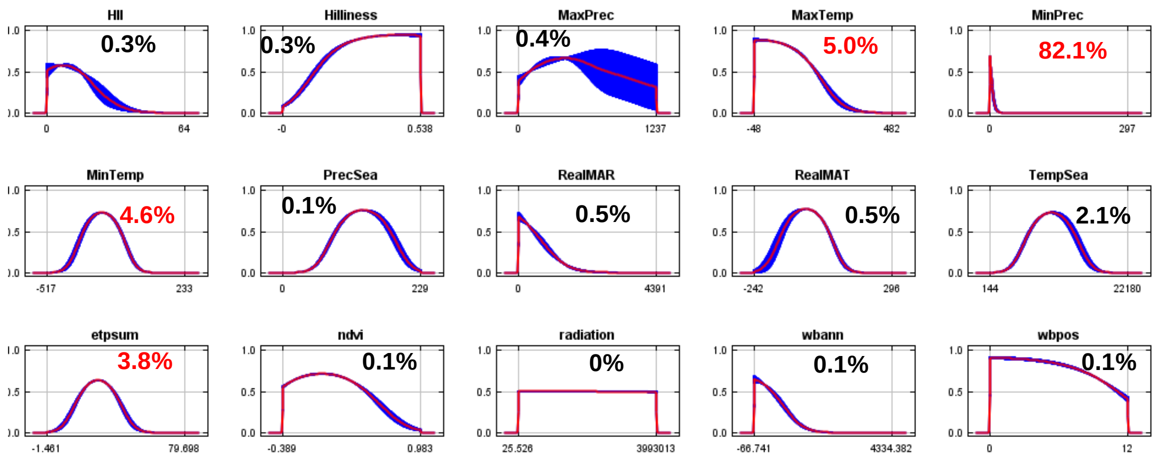


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Indian CAMP Workshop & Johnston, C.H. 2008)

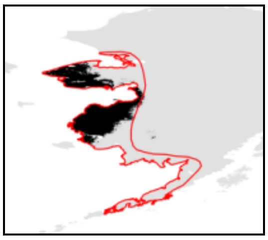


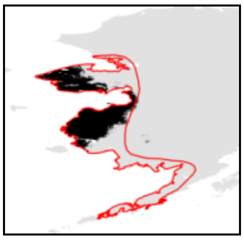


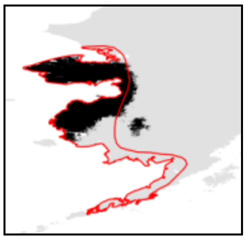
#26 – Alaskan hare (*Lepus othus*)
n = 8
Expert: Eric Waltari, City University of New York
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic only
Dispersal distance: 2km/year (similar to Arctic hare)
Status: MODELLABLE; **Included in final analysis:** √

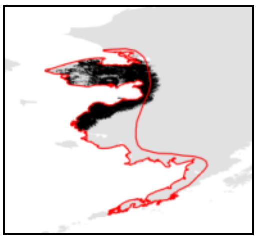
Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.89**
True Skill Statistic	0.99

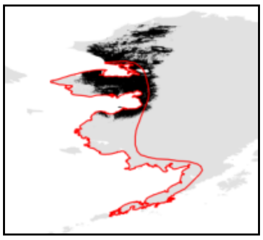
Summary: The Alaskan hare's bioclimatic envelope is predicted to increase by 80% with a ~3° mean latitudinal polewards shift and a mean increase in elevation of ~100m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by annual evapotranspiration (52.8%), mean annual temperature (26.4%), precipitation seasonality (11.3%) and mean annual precipitation (5.0%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

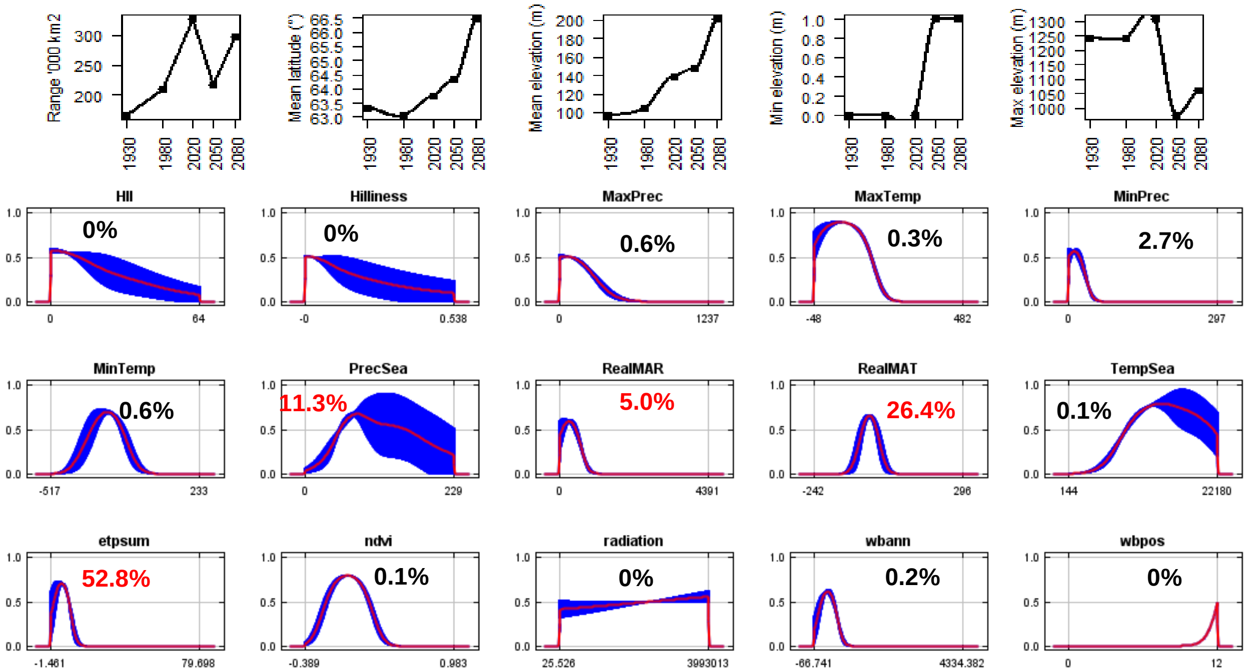

c) ~ 2020s (2010-2039)


d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

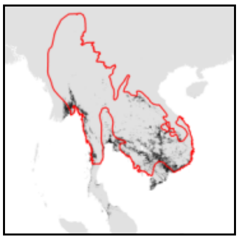
Red polygon = IUCN range (Murray, D. & Smith, A.T. 2008)



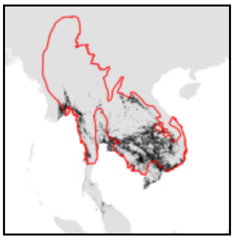
#27 – Burmese hare (*Lepus peguensis*)
n = 7
Expert: Thomas Gray, WWF Greater Mekong
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 2.5km/year (Asian leporids, range 1-35)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.58**
True Skill Statistic	0.99

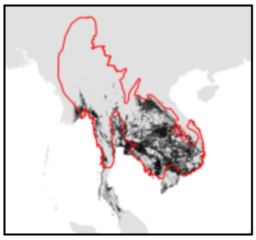
Summary: The Burmese hare's bioclimatic envelope is predicted to increase by 40% with a ~2° mean latitudinal polewards shift and a mean increase in elevation of ~180m driven by an increase in minimum and maximum elevation. 95% of the permutation importance of the model was contributed to by temperature seasonality (52.6%), minimum precipitation (32.9%), solar radiation (6.5%) and mean annual temperature (4.3%).



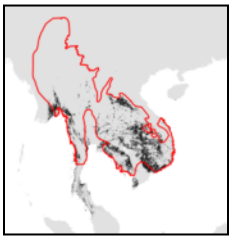
a) ~ 1930s (1900-1949)



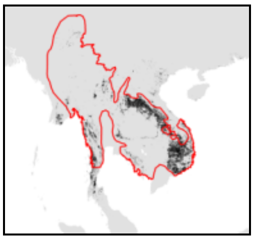
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



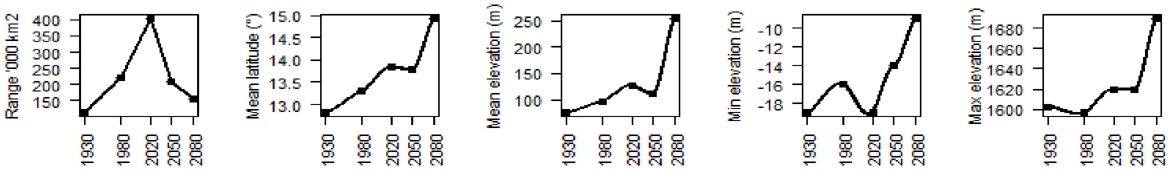
d) ~ 2050s (2040-2069)

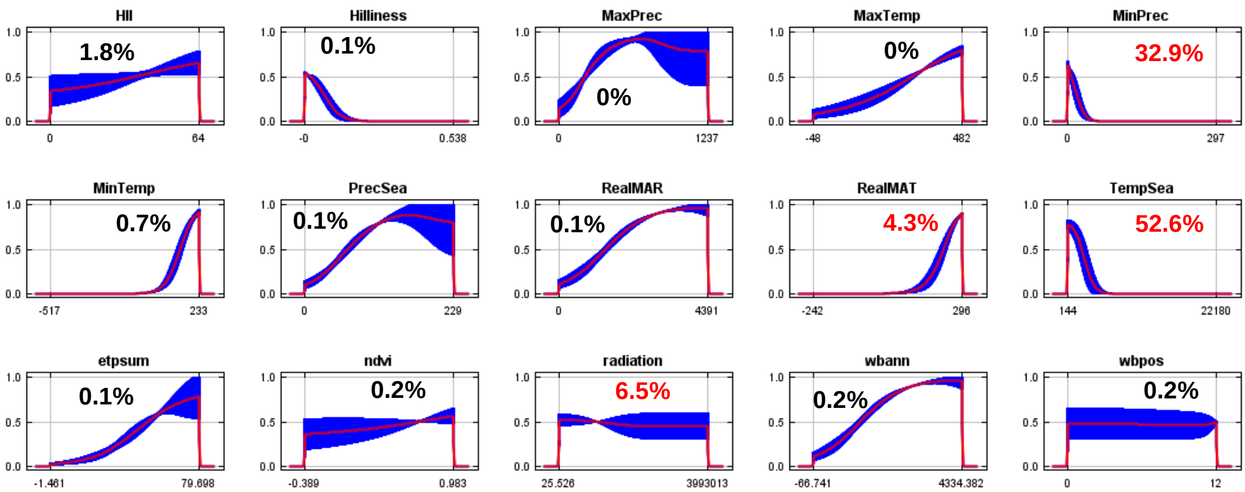


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Duckworth, J.W., *et al*. 2008)

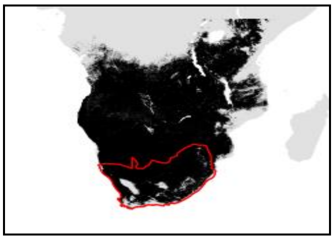




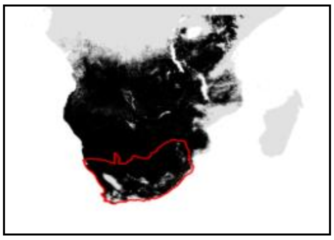
#28 – Scrub hare (*Lepus saxatilis*)
n = 39
Expert: Kai Collins, University of Pretoria
Expert evaluation: Poor
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 25km/year (African leporids, range 15-35)
Status: UNMODELLABLE; **Included in final analysis:** X

Model evaluation metric	
AUC	0.95
Omission rate	0.08
Sensitivity	0.92
Specificity	0.97
Proportion correct	0.97
Kappa	**0.18**
True Skill Statistic	0.89

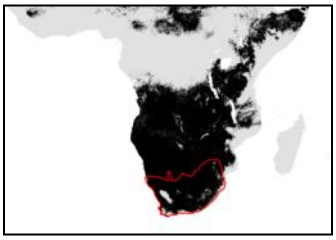
Summary: The Scrub hare's bioclimatic envelope is predicted to decrease by 15% with a ~2^{o} mean latitudinal shift towards the Equator and a mean increase in elevation of ~65m driven by an increase in maximum and minimum elevation. 95% of the permutation importance of the model was contributed to by annual evapotranspiration (52.8%), mean annual temperature (26.4%), precipitation seasonality (11.3%) and mean annual precipitation (5.0%).



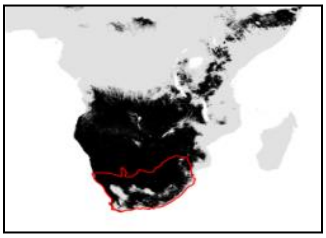
a) ~ 1930s (1900-1949)



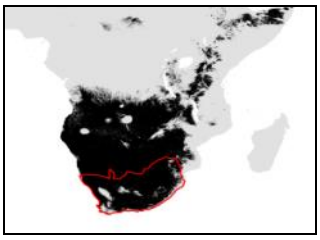
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



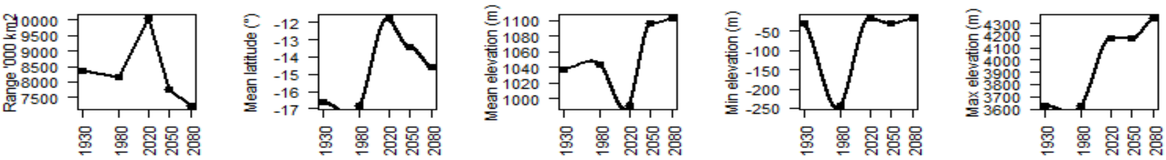
d) ~ 2050s (2040-2069)

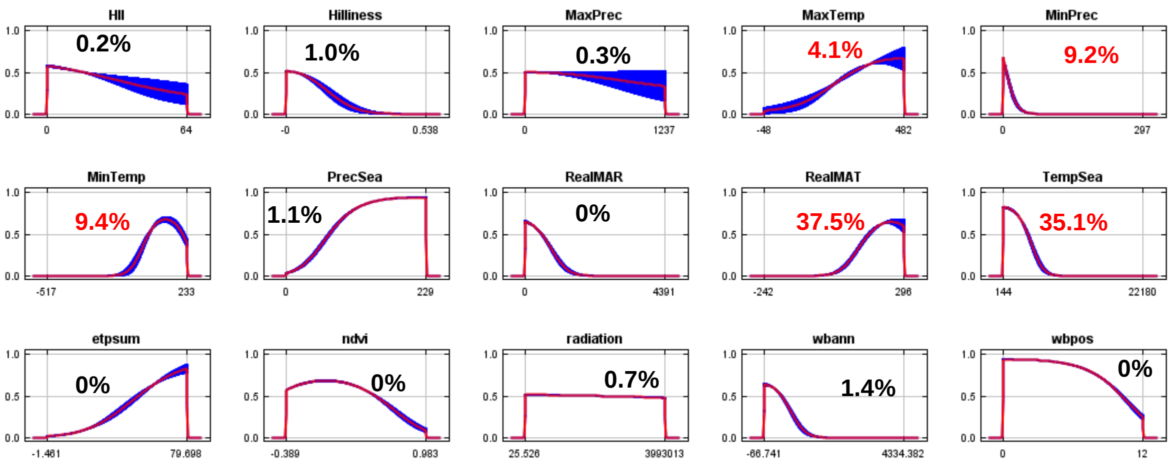


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Collins, K., *et al*, 2008)

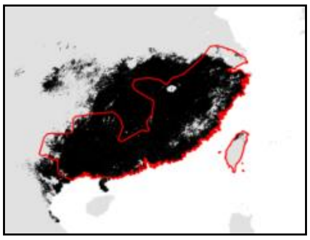


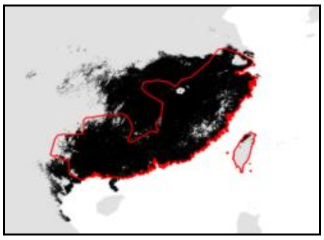


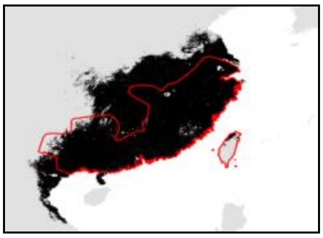
#29 – Chinese hare (*Lepus sinensis*)
n = 141
Expert: Weihe Yang, Institute of Zoology, Chinese Academy of Sciences
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 2.5km/year (Asian leporids, range 1-35)
Status: MODELLABLE; **Included in final analysis:** √

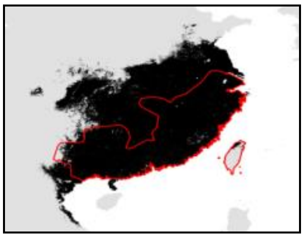
Model evaluation metric	
AUC	0.94
Omission rate	0.11
Sensitivity	0.89
Specificity	0.99
Proportion correct	0.99
Kappa	**0.81**
True Skill Statistic	0.89

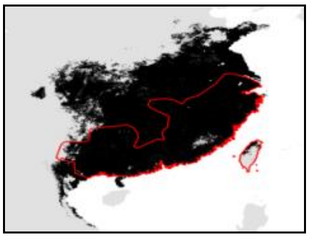
Summary: The Chinese hare's bioclimatic envelope is predicted to increase by 60% with a ~2^{o} mean latitudinal polewards shift and a mean increase in elevation of ~25m driven by an increase in maximum elevation. 95% of the permutation importance of the model was contributed to by mean annual temperature (56.5%), temperature seasonality (22.9%), precipitation seasonality (8.0%), mean annual precipitation (5.4%) and annual evapotranspiration (3.5%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

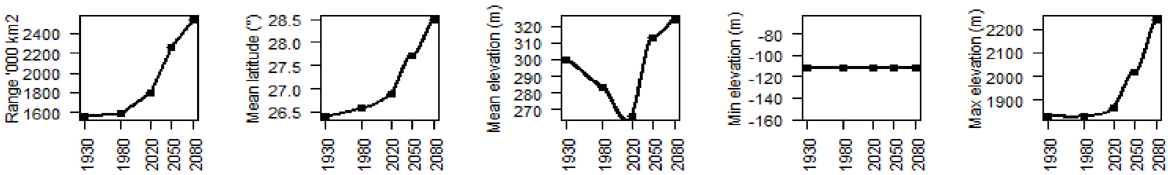

c) ~ 2020s (2010-2039)

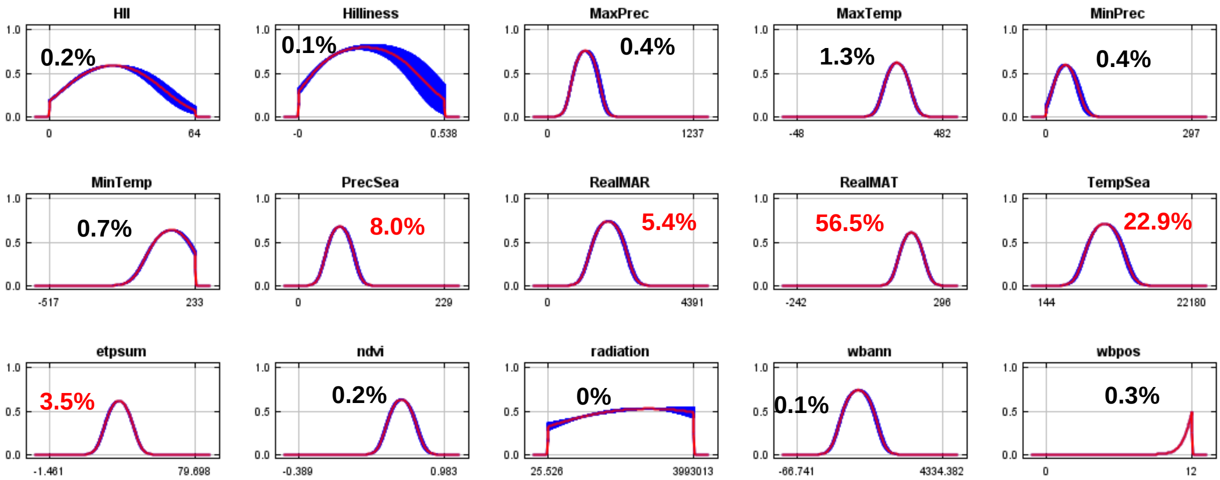

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

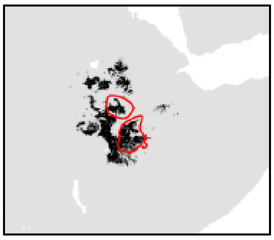


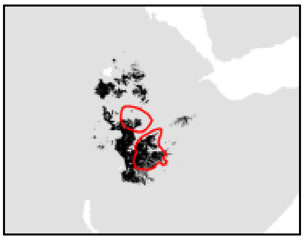


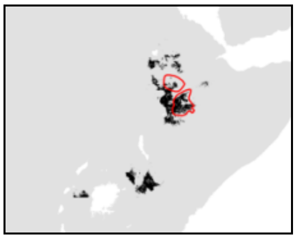
#30 – Ethiopian highland hare (*Lepus starcki*)
n = 13
Expert: Zelalem Tolesa, Addis Ababa University
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 25km/year (African leporids, range 15-35)
Status: MODELLABLE; **Included in final analysis:** √

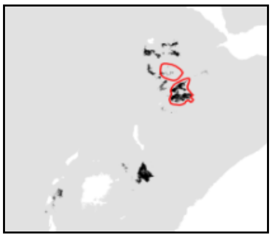
Model evaluation metric	
AUC	0.96
Omission rate	0.08
Sensitivity	0.92
Specificity	0.99
Proportion correct	0.99
Kappa	**0.86**
True Skill Statistic	0.92

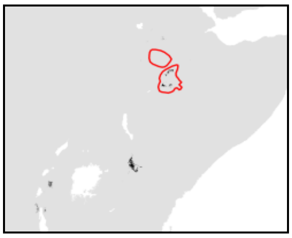
Summary: The Ethiopian highland hare's bioclimatic envelope is predicted to decrease by 90% with a ~7° mean latitudinal shift towards the Equator and a mean decrease in elevation of ~140m driven by a decrease in maximum elevation. 95% of the permutation importance of the model was contributed to by temperature seasonality (80.6%) and minimum temperature (18.5%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

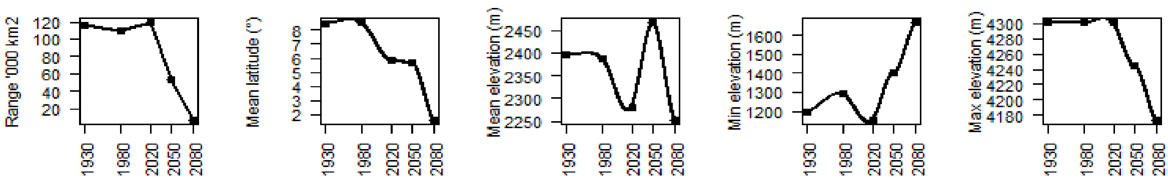

c) ~ 2020s (2010-2039)

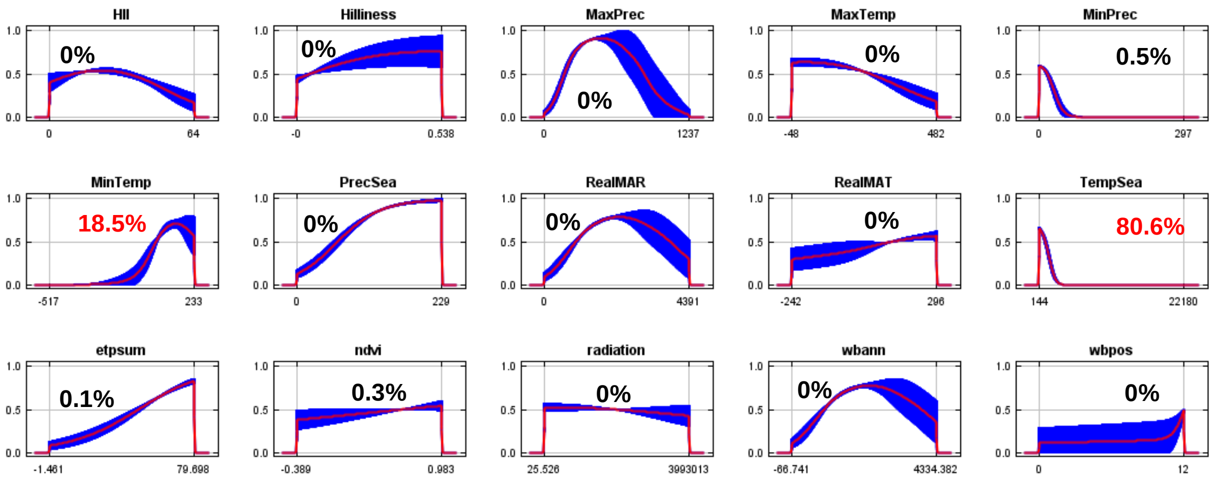

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

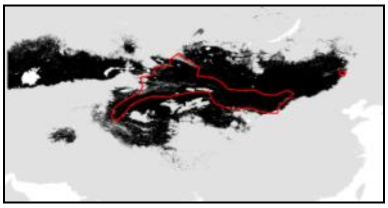




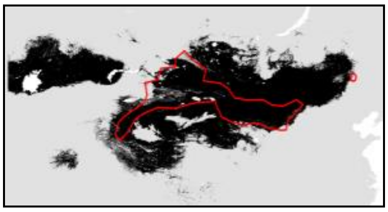
#31 – Desert hare (*Lepus tibetanus*)
n = 55
Expert: Chelmala Srinivasulu, Osmania University, India
Expert evaluation: Medium
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 2.5km/year (Asian leporids, range 1-35)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.92
Omission rate	0.15
Sensitivity	0.85
Specificity	0.99
Proportion correct	0.99
Kappa	**0.57**
True Skill Statistic	0.85

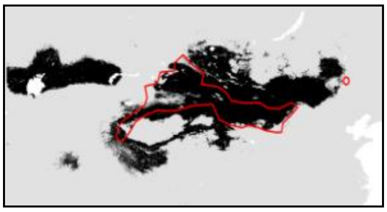
Summary: The Desert hare's bioclimatic envelope is predicted to decrease by 50% with no latitudinal shift towards the Equator, but a mean increase in elevation of ~320m driven by an increase in maximum elevation. 95% of the permutation importance of the model was contributed to by minimum precipitation (54.5%), minimum temperature (19.3%), maximum precipitation (17.3%), annual evapotranspiration (2.8%) and human influence index (1.7%).



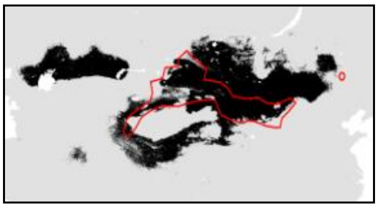
a) ~ 1930s (1900-1949)



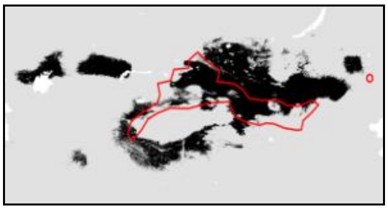
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



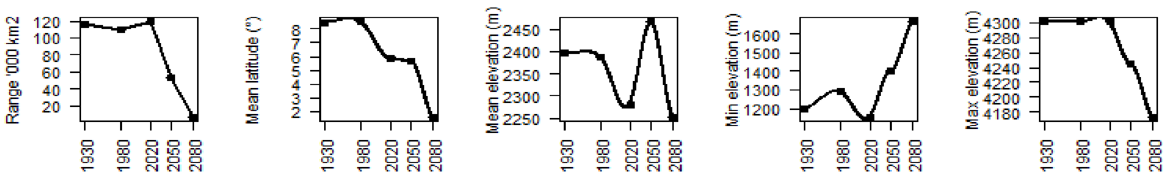
d) ~ 2050s (2040-2069)

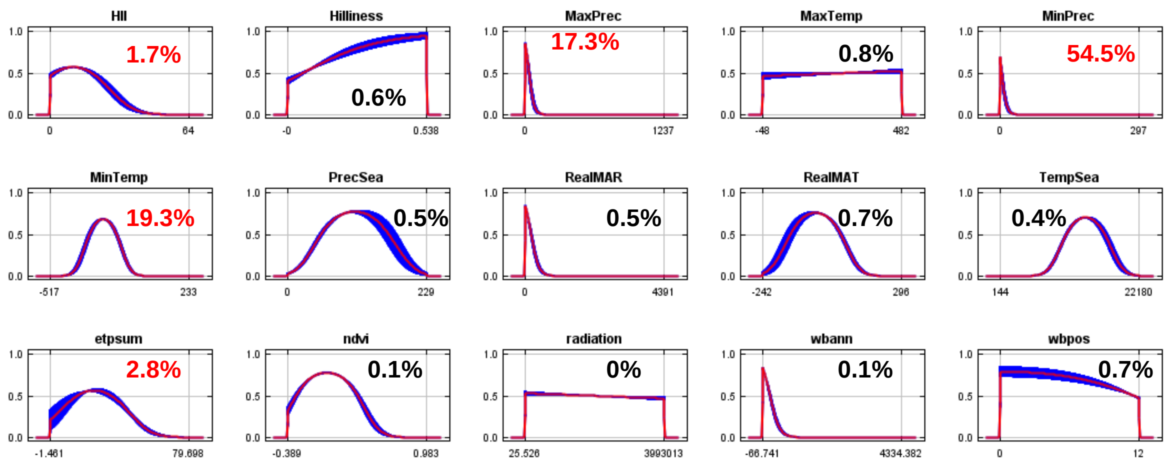


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (China Red List & Johnston, C.H. 2008)

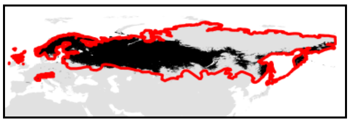




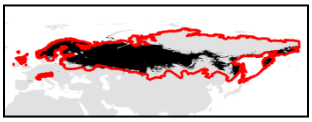
#32 – Mountain hare (*Lepus timidus*) – Eurasian populations
n = 2,460
Expert: Neil Reid, Queen's University Belfast
Expert evaluation: Medium
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 2km/year (Expert)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.91
Omission rate	0.08
Sensitivity	0.92
Specificity	0.90
Proportion correct	0.91
Kappa	**0.74**
True Skill Statistic	0.82

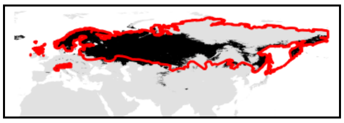
Summary: The Mountain hare's bioclimatic envelope is predicted to decrease by 10% with a ~4^{o} mean latitudinal polewards shift and a mean decrease in elevation of ~10m driven by a decrease in maximum elevation. 95% of the permutation importance of the model was contributed to by annual evapotranspiration (87.9%), temperature seasonality (3.9%), minimum precipitation (2.1%) and minimum temperature (1.6%).



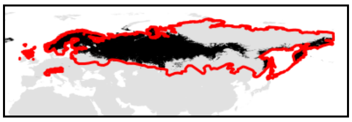
a) ~ 1930s (1900-1949)



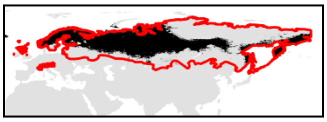
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



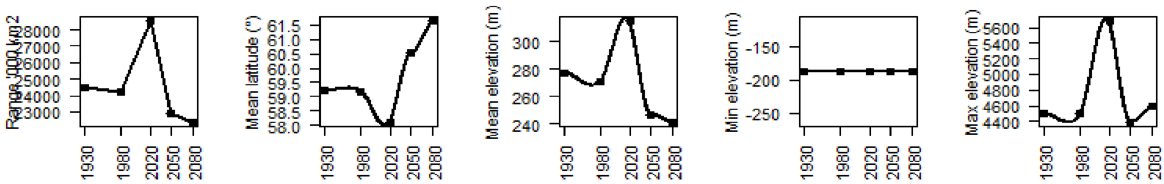
d) ~ 2050s (2040-2069)

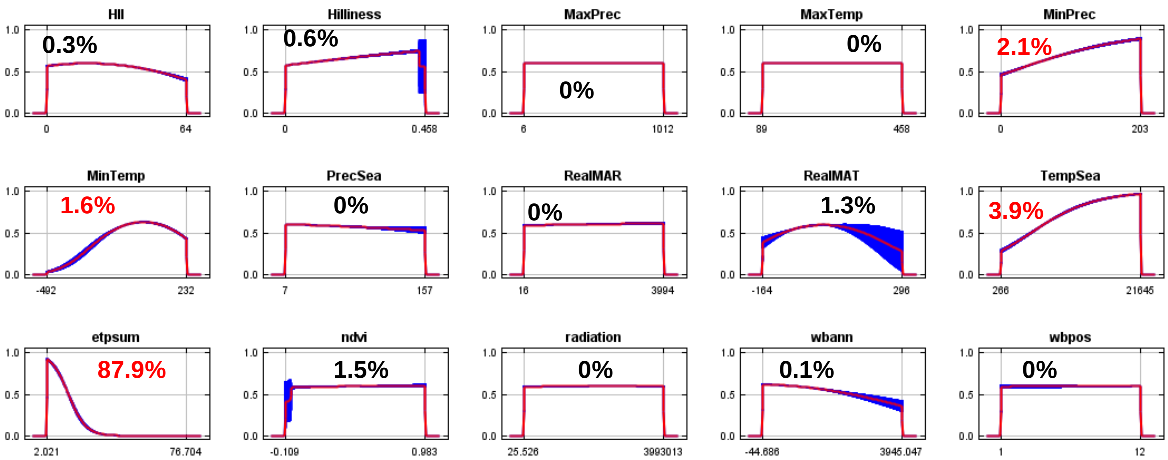


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

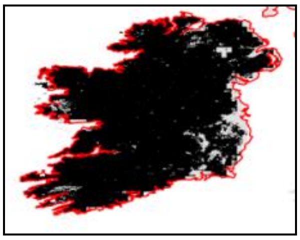




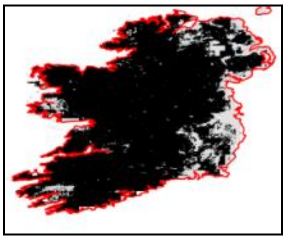
#33 – Irish hare (*Lepus timidus hibernicus*)
n = 706
Expert: Neil Reid, Queen's University Belfast
Expert evaluation: Medium
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 2km/year (Expert)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.94
Omission rate	0.08
Sensitivity	0.92
Specificity	0.97
Proportion correct	0.96
Kappa	**0.75**
True Skill Statistic	0.88

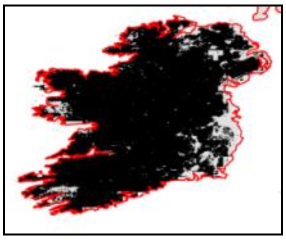
Summary: The Irish hare's bioclimatic envelope is predicted to decrease by 50% with a ~0.5° mean latitudinal polewards shift and a mean decrease in elevation of ~10m driven by a decrease in maximum elevation. 95% of the permutation importance of the model was contributed to by temperature seasonality (44.6%), annual evapotranspiration (41.5%), normalised difference vegetation index (6.4%), precipitation seasonality (3.6%) and maximum precipitation (2.5%).



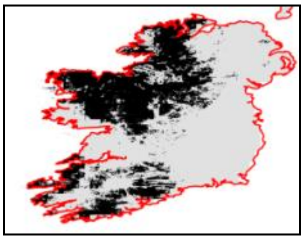
a) ~ 1930s (1900-1949)



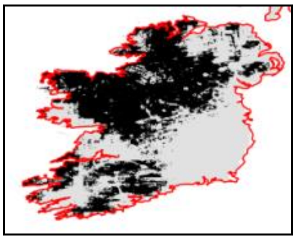
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



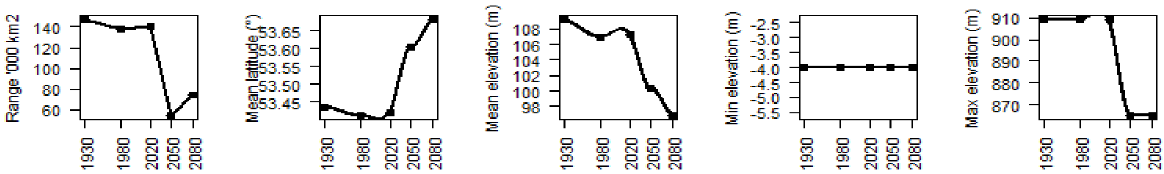
d) ~ 2050s (2040-2069)

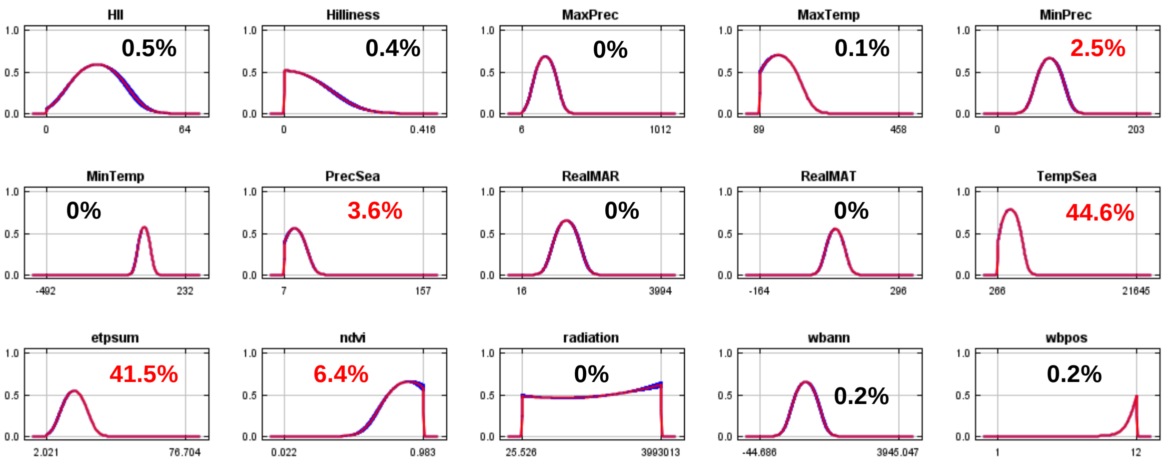


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

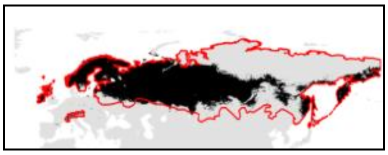




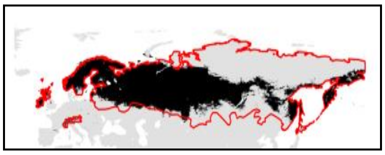
#34 – Mountain hare (*Lepus timidus*)
– Eurasian & Irish populations combined
n = 3,166
Expert: Neil Reid, Queen's University Belfast
Expert evaluation: Medium
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 2km/year (Expert)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.92
Omission rate	0.07
Sensitivity	0.93
Specificity	0.91
Proportion correct	0.91
Kappa	**0.78**
True Skill Statistic	0.84

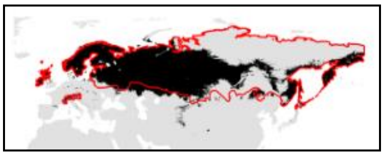
Summary: The Mountain hare's bioclimatic envelope is predicted to decrease by 10% with a ~2° mean latitudinal polewards shift and a mean decrease in elevation of ~40m driven by a decrease in maximum elevation. 95% of the permutation importance of the model was contributed to by annual evapotranspiration (87.6%), temperature seasonality (4.1%), minimum precipitation (2.1%) and minimum temperature (1.6%).



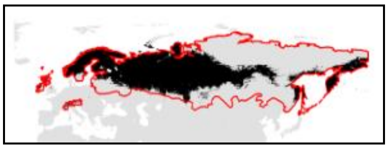
a) ~ 1930s (1900-1949)



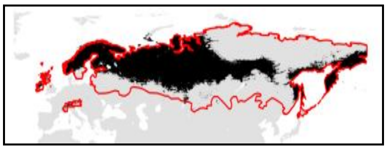
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



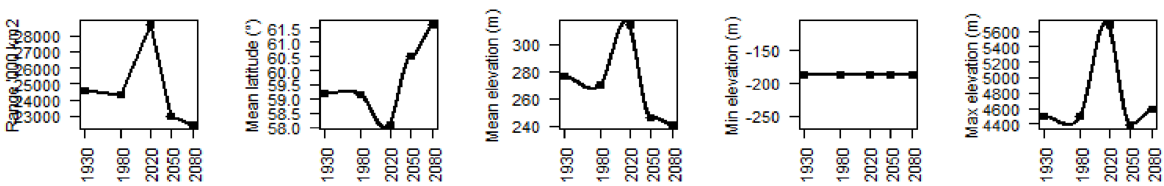
d) ~ 2050s (2040-2069)

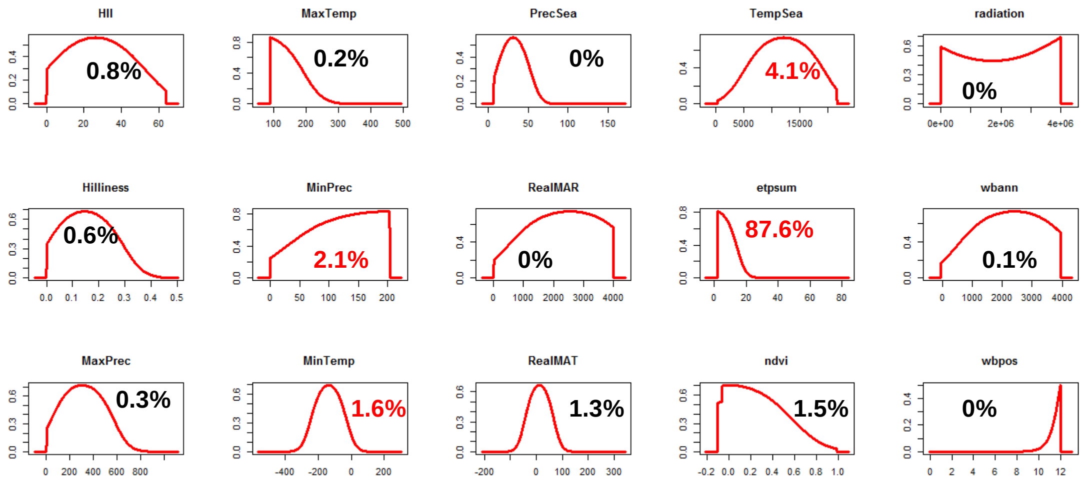


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

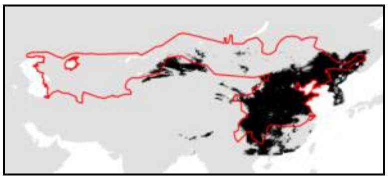




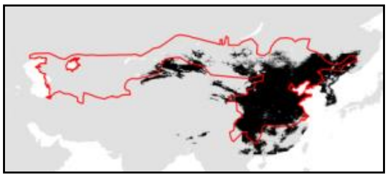
#35 – Tolai hare (*Lepus tolai*)
n = 316
Expert: Chelmala Srinivasulu, Osmania University, India
Expert evaluation: Medium
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 2.5km/year (Asian leporids, range 1-35)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.94
Omission rate	0.11
Sensitivity	0.89
Specificity	0.99
Proportion correct	0.98
Kappa	**0.76**
True Skill Statistic	0.88

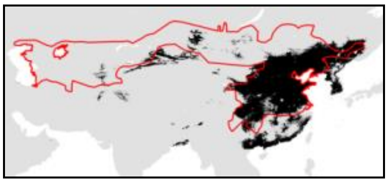
Summary: The Tolai hare's bioclimatic envelope is predicted to increase by 70% with a ~3^{o} mean latitudinal polewards shift and a mean increase in elevation of ~280m driven by an increase in maximum elevation. 95% of the permutation importance of the model was contributed to by temperature seasonality (43.5%), maximum temperature (17.3%), mean annual temperature (15.2%), precipitation seasonality (9.6%), annual evapotranspiration (4.6%), mean annual precipitation (3.7%) and minimum precipitation (1.8%).



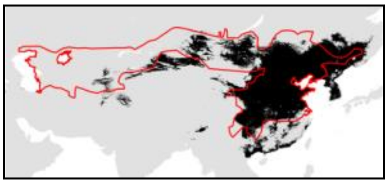
a) ~ 1930s (1900-1949)



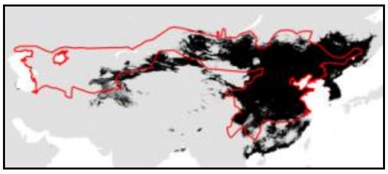
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



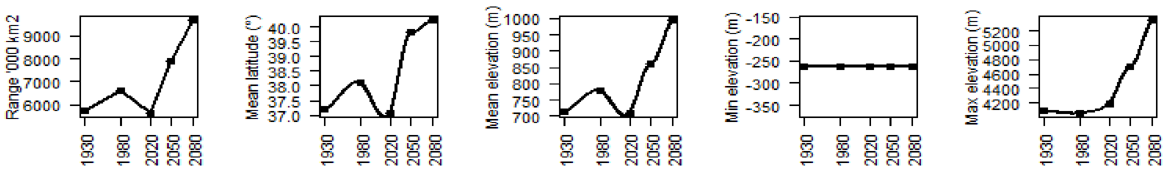
d) ~ 2050s (2040-2069)

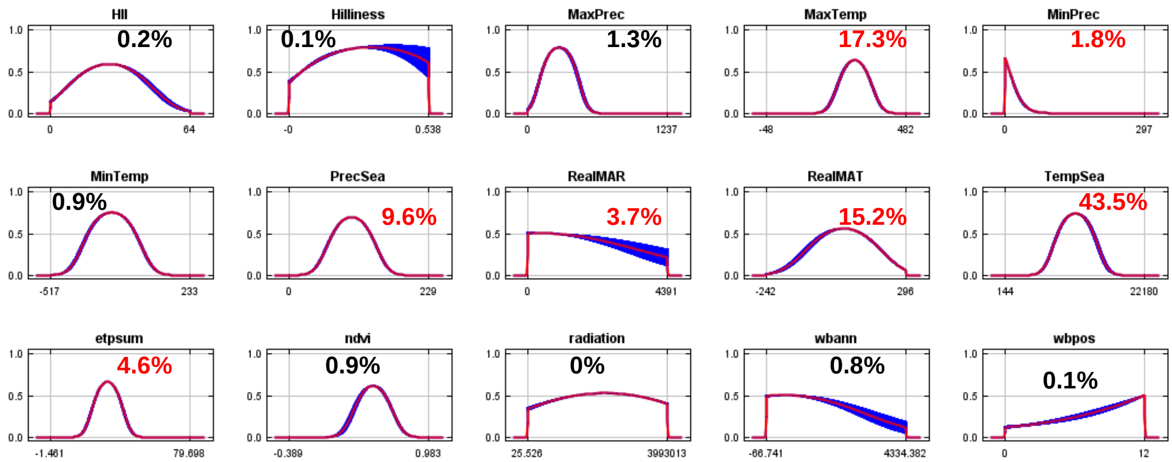


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (China Red List & Johnston, C.H. 2008)

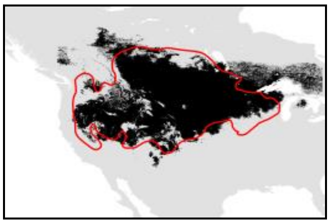




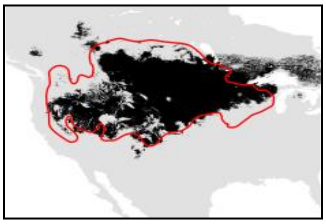
#36 – White-tailed jackrabbit (*Lepus townsendii*)
n = 275
Expert: Eric Waltari, City University of New York
Expert evaluation: Medium
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 18.9km/year (N.Am. leporids, range 2-25)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.94
Omission rate	0.10
Sensitivity	0.90
Specificity	0.99
Proportion correct	0.99
Kappa	**0.76**
True Skill Statistic	0.89

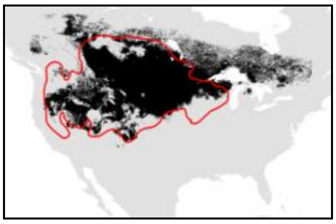
Summary: The White-tailed jackrabbit's bioclimatic envelope is predicted to decrease by 10% with a ~4° mean latitudinal polewards shift and a mean increase in elevation of ~200m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by mean annual temperature (62.5%), maximum temperature (28.5%), temperature seasonality (3.4%) and annual evapotranspiration (1.6%).



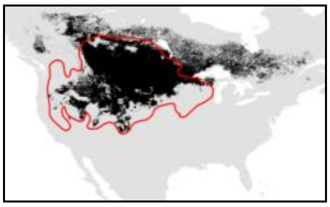
a) ~ 1930s (1900-1949)



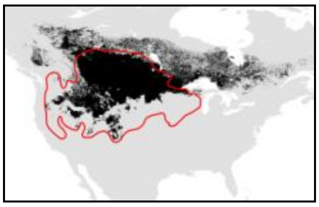
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



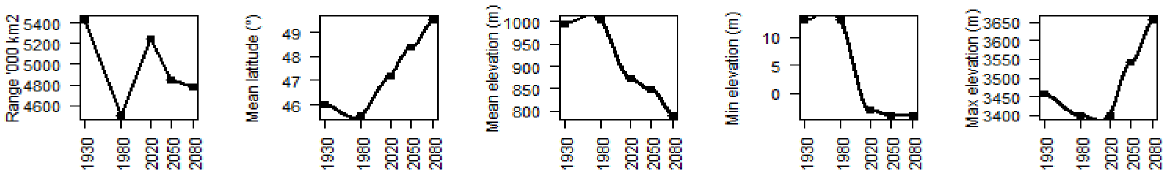
d) ~ 2050s (2040-2069)

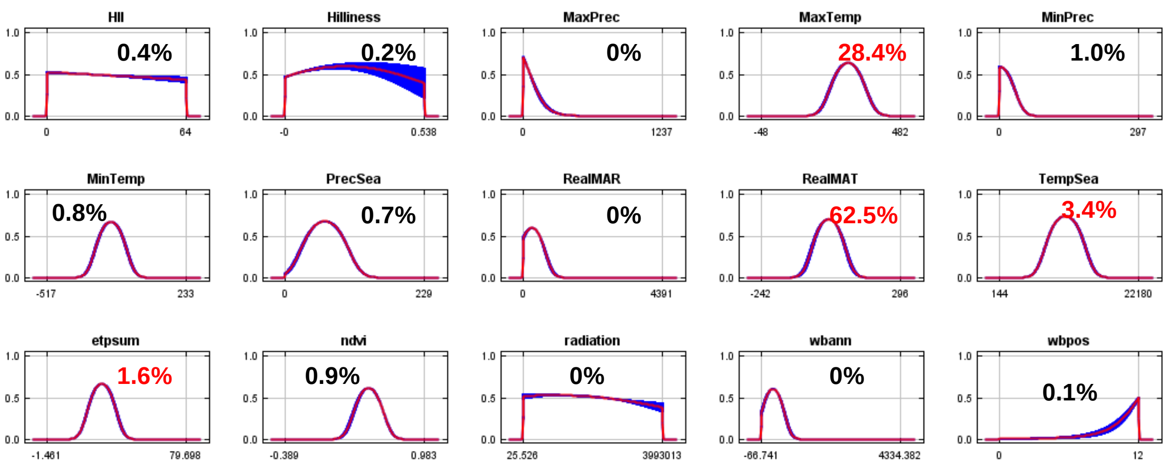


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

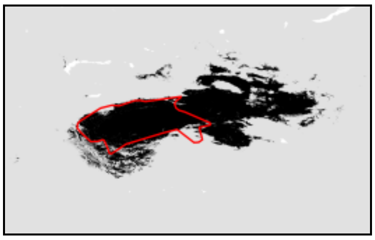




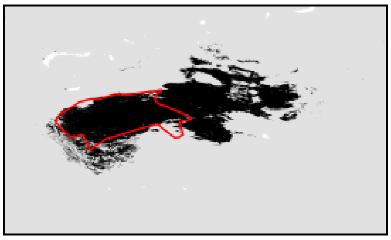
#37 – Yarkand hare (*Lepus yarkandensis*)
n = 49
Expert: Weihe Yang, Institute of Zoology, Chinese Academy of Sciences
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 2km/year (Smith & Xie, 2008)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.95
Omission rate	0.10
Sensitivity	0.90
Specificity	0.99
Proportion correct	0.99
Kappa	**0.74**
True Skill Statistic	0.90

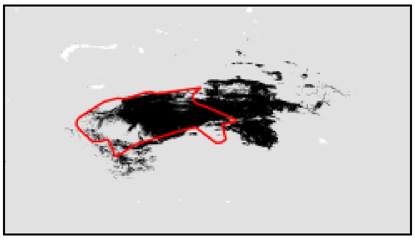
Summary: The Yarkand hare's bioclimatic envelope is predicted to decrease by 100% with a ~1^{o} mean latitudinal shift towards the Equator and a mean increase in elevation of ~1000m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by minimum precipitation (58.8%), maximum precipitation (16.3%), mean annual precipitation (11.9%) and minimum temperature (11.7%).



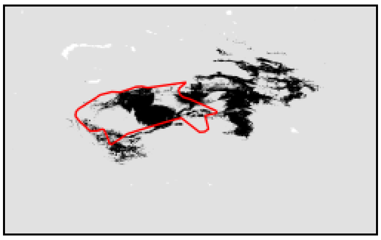
a) ~ 1930s (1900-1949)



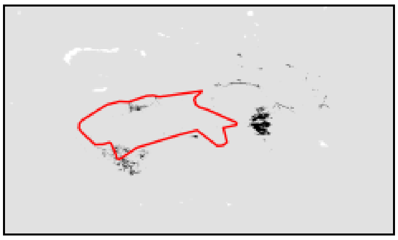
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



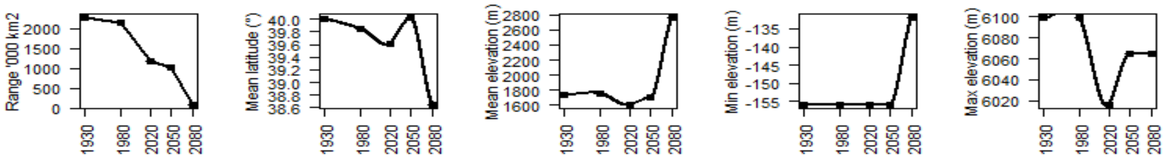
d) ~ 2050s (2040-2069)

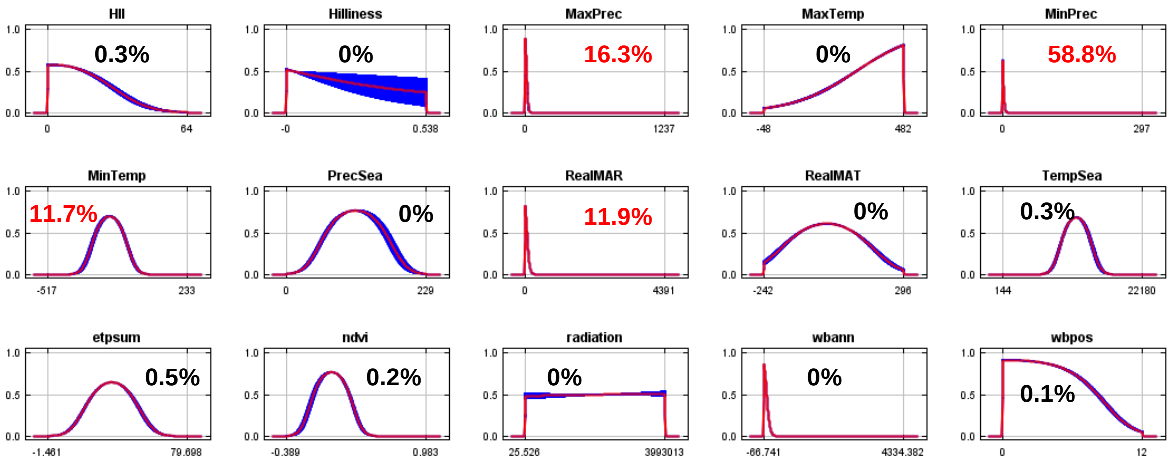


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

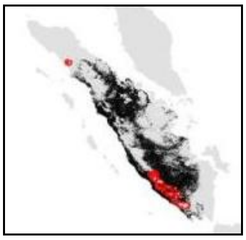




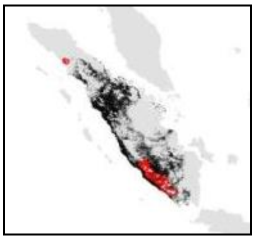
Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.95**
True Skill Statistic	0.99

#38 – Sumatran striped rabbit (*Nesolagus netscheri*)
n = 11
Expert: Hariyo Wibisono, Wildlife Conservation Society, Indonesia
Expert evaluation: Poor
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 0.01km/year (Expert)
Status: UNMODELLABLE; **Included in final analysis:** X

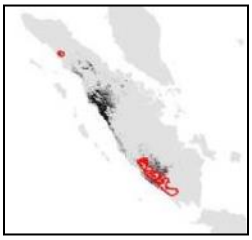
Summary: The Sumatran striped rabbit's bioclimatic envelope is predicted to decrease by 91% with a ~1° mean latitudinal shift towards the Equator and a mean increase in elevation of ~330m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by temperature seasonality (99.3%).



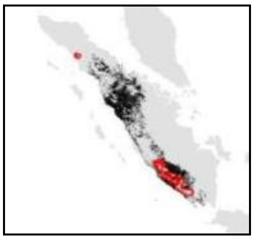
a) ~ 1930s (1900-1949)



b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)

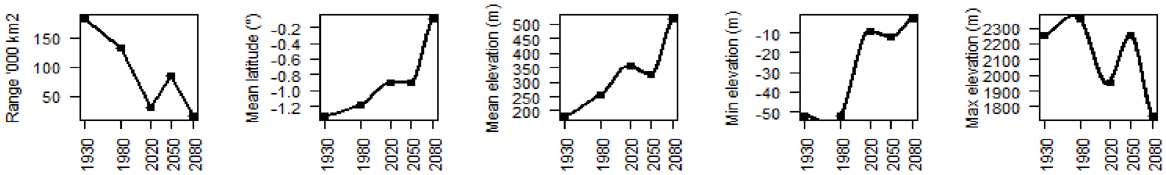


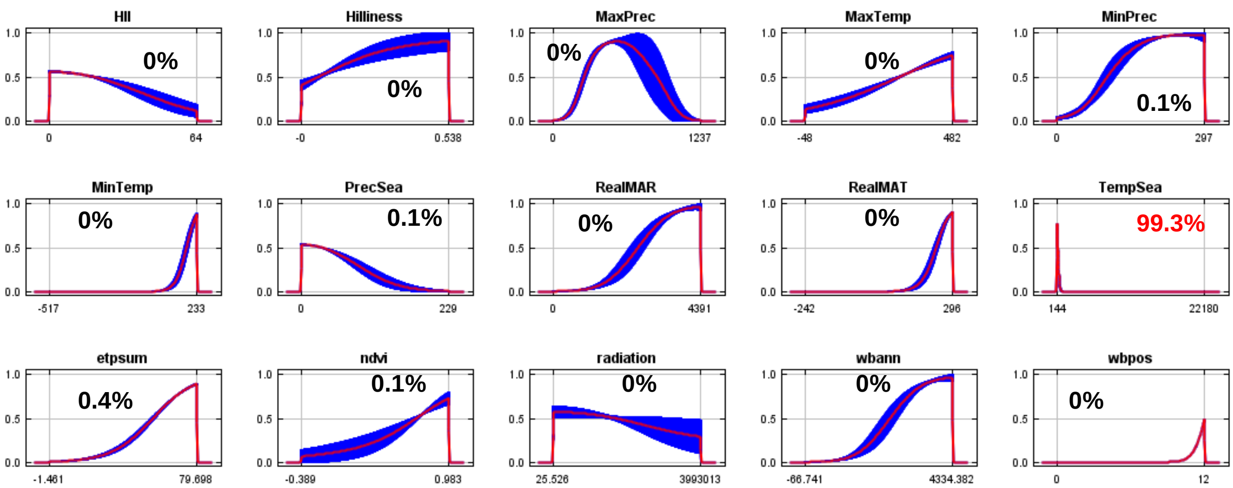
d) ~ 2050s (2040-2069)

e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Meijaard, E. & Sugardjito, J. 2008)

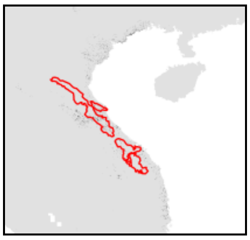


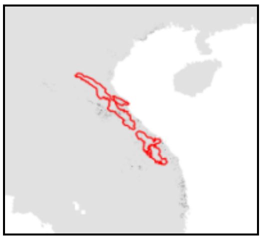


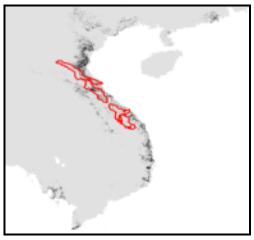
#39 – Annamite striped rabbit (*Nesolagus timminsi*)
n = 4
Expert: Thomas Gray, WWF Greater Mekong & Andrew Tilker, University of Texas Austin
Expert evaluation: Poor
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 10km/year (Expert)
Status: UNMODELLABLE; **Included in final analysis:** X

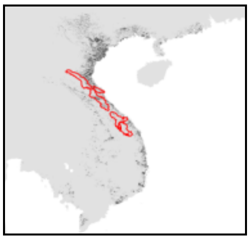
Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.50**
True Skill Statistic	0.99

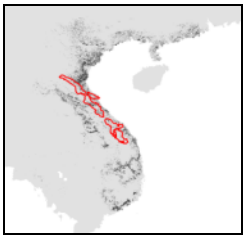
Summary: The Annamite striped rabbit's bioclimatic envelope is predicted to decrease by 1500% with a ~0.3° mean latitudinal shift towards the Equator and a mean decrease in elevation of ~20m driven by an decrease in minimum elevation. 95% of the permutation importance of the model was contributed to by solar radiation (43.3%), minimum temperature (30.0%), mean annual temperature (14.1%), human influence index (6.4%) and annual evapotranspiration (2.3%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

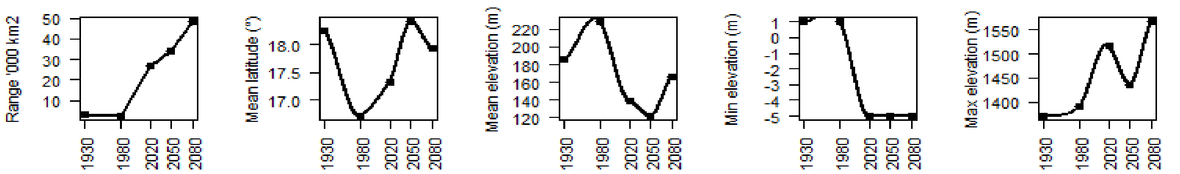

c) ~ 2020s (2010-2039)

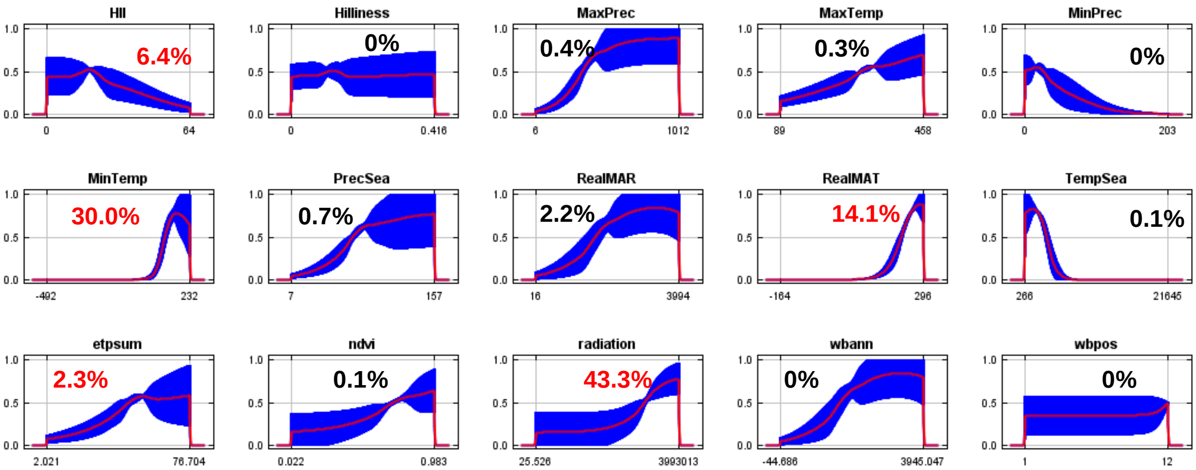

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Abramov, A., *et al*. 2008)

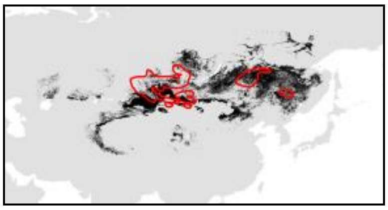




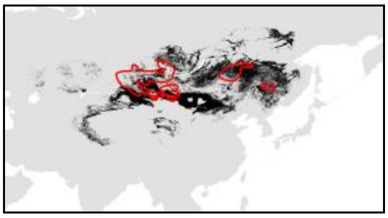
#40 – Alpine pika (*Ochotona alpina*)
n = 16
Expert: Sumiya Ganzorig, Hokkaido University
Expert evaluation: Poor
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 10km/year (Similar ecology to *O.pallasi*)
Status: UNMODELLABLE; **Included in final analysis:** X

Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.29**
True Skill Statistic	0.99

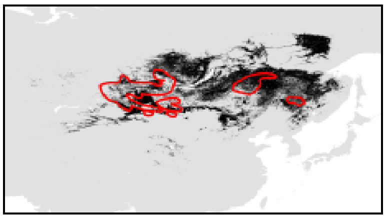
Summary: The Alpine pika's bioclimatic envelope is predicted to decrease by 10% with a ~4^{o} mean latitudinal polewards shift and a mean decrease in elevation of ~80m. 95% of the permutation importance of the model was contributed to by minimum precipitation (50.1%), mean annual temperature (31.1%), number of months with a positive water balance (10.9%), minimum temperature (2.3%) and annual evapotranspiration (1.3%).



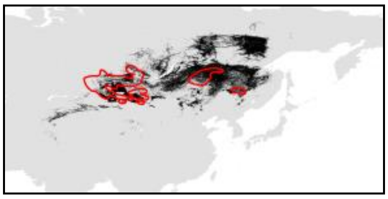
a) ~ 1930s (1900-1949)



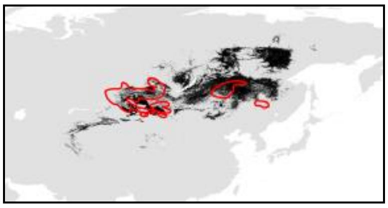
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



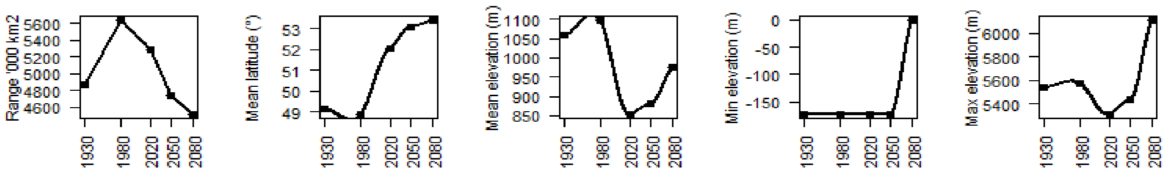
d) ~ 2050s (2040-2069)

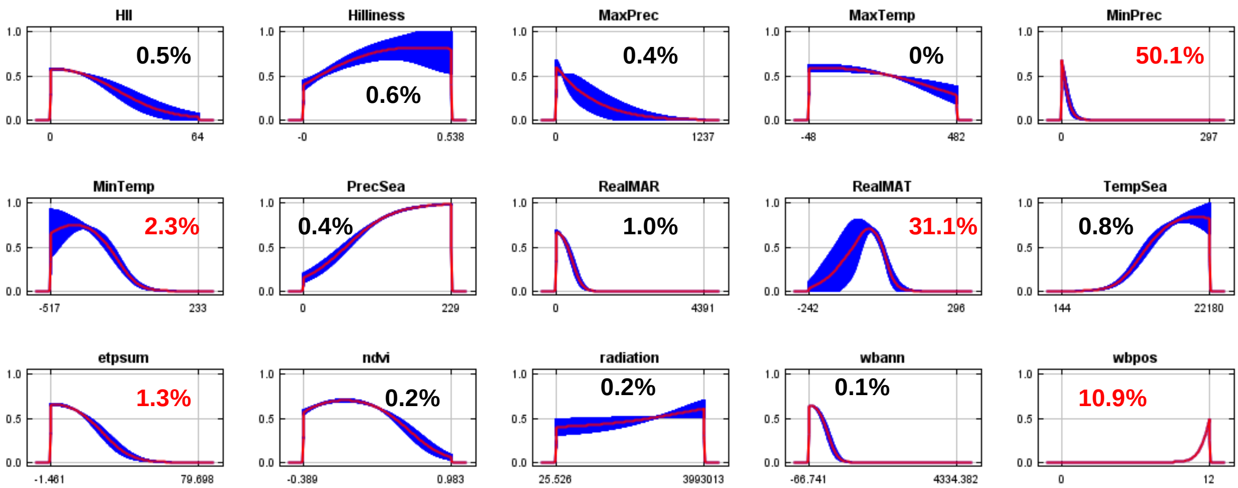


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

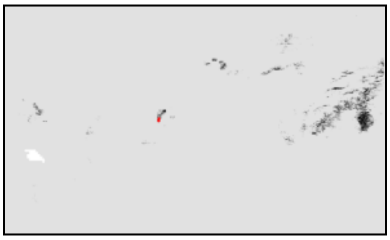




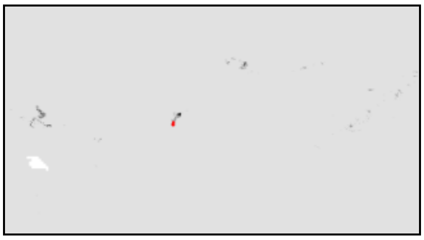
#41 – Silver pika (*Ochotona argentata*)
n = 4
Expert: Andrew Smith, Arizona State University
Expert evaluation: Poor
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 3km/year (Asian pikas, range 1-15)
Status: UNMODELLABLE; **Included in final analysis:** X

Model evaluation metric	
AUC	1.00
Omission rate	0.00
Sensitivity	1.00
Specificity	1.00
Proportion correct	1.00
Kappa	**1.00**
True Skill Statistic	1.00

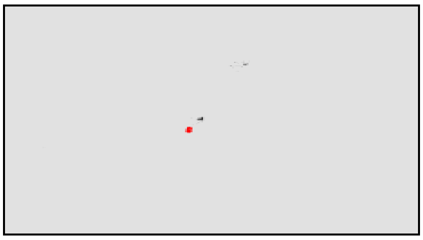
Summary: The Silver pika's bioclimatic envelope is predicted to decrease by 80% with a ~4° mean latitudinal polewards shift and a mean increase in elevation of ~360m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by minimum precipitation (62.7%), human influence index (17.1%), mean annual precipitation (8.6%), minimum temperature (5.4%) and annual evapotranspiration (1.8%).



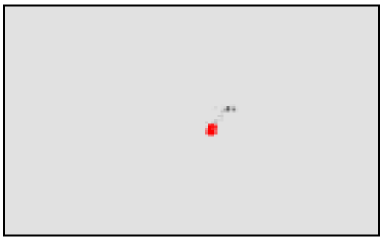
a) ~ 1930s (1900-1949)



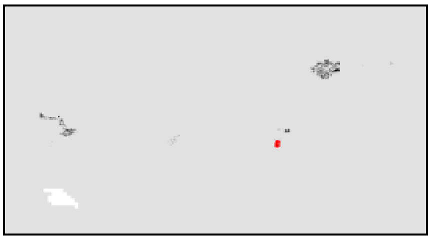
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



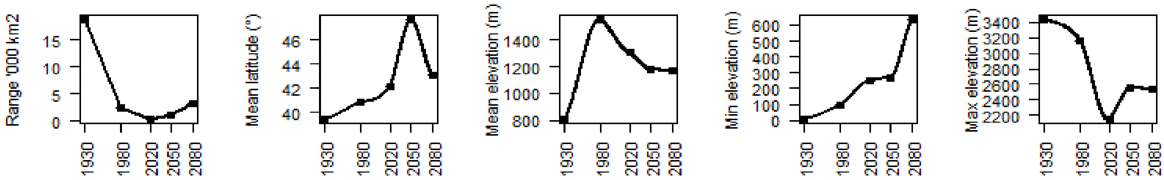
d) ~ 2050s (2040-2069)

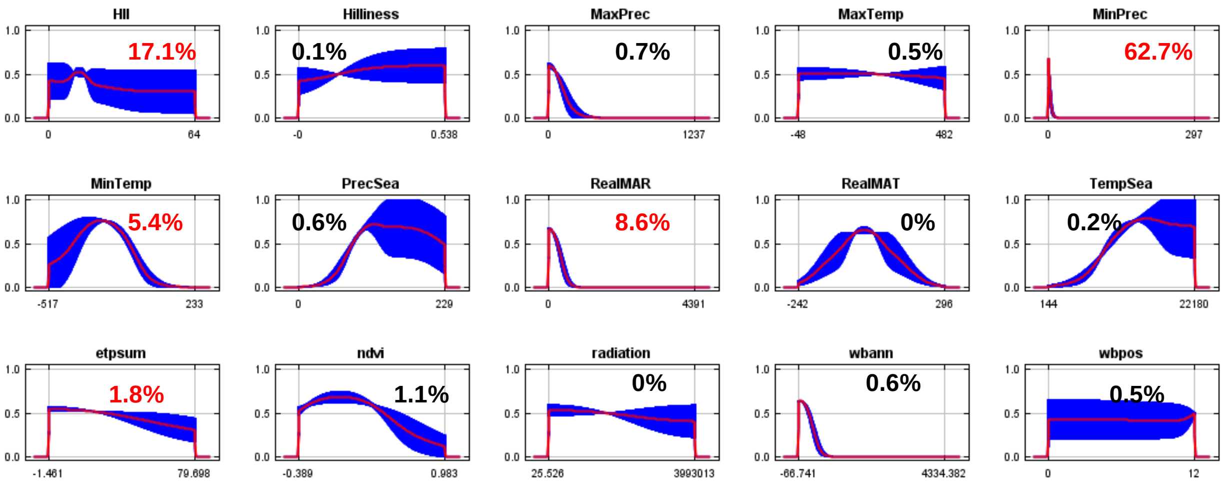


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

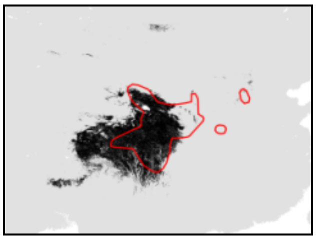


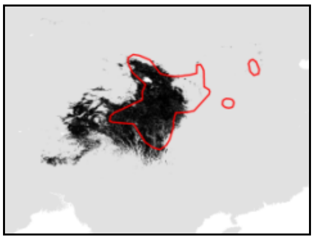


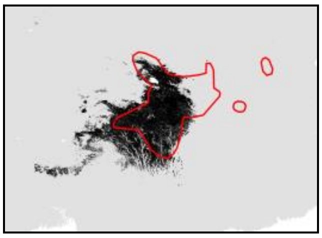
#42 – Gansu pika (*Ochotona cansus*)
n = 38
Expert: Andrew Smith, Arizona State University
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 1.5km/year (Similar ecology to *O.roylei*)
Status: MODELLABLE; **Included in final analysis:** √

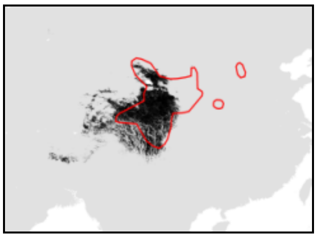
Model evaluation metric	
AUC	0.95
Omission rate	0.11
Sensitivity	0.89
Specificity	0.99
Proportion correct	0.99
Kappa	**0.61**
True Skill Statistic	0.89

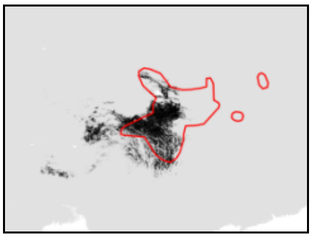
Summary: The Gansu pika's bioclimatic envelope is predicted to decrease by 60% with a ~0.4° mean latitudinal shift towards the Equator and a mean increase in elevation of ~230m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by minimum precipitation (89.8%) and minimum temperature (6.9%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

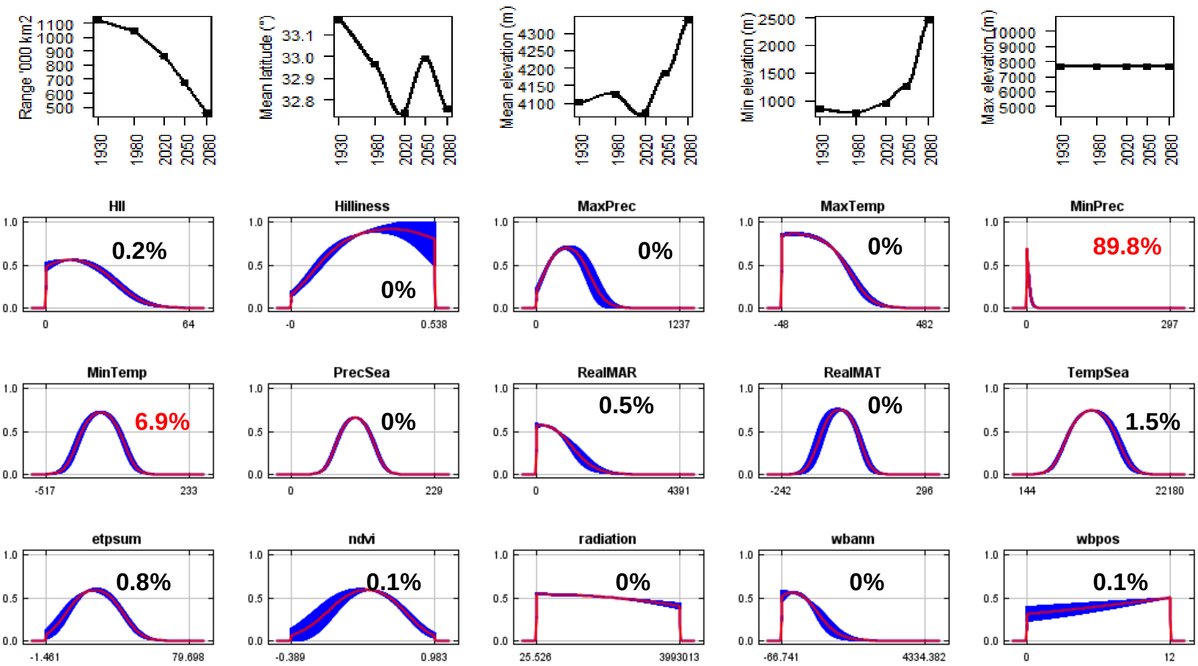

c) ~ 2020s (2010-2039)


d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

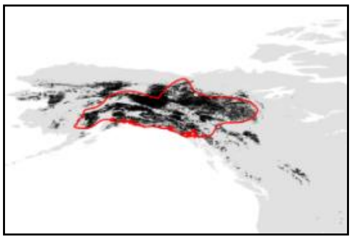
Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

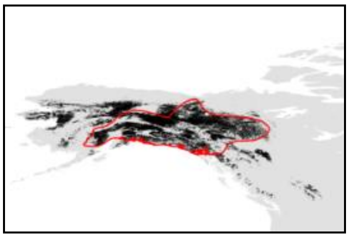


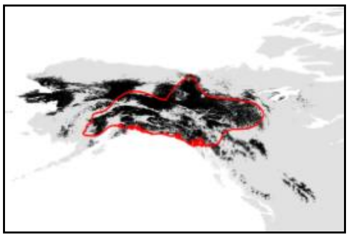
#43 – Collared pika (*Ochotona collaris*)
n = 193
Expert: Hayley Lanier, University of Michigan & David Hik, University of Alberta
Expert evaluation: Poor
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 1km/year (Expert)
Status: UNMODELLABLE; **Included in final analysis:** X

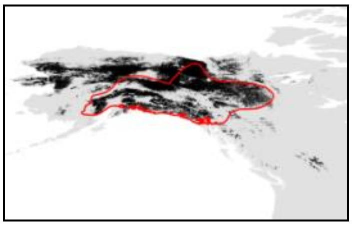
Model evaluation metric	
AUC	0.95
Omission rate	0.10
Sensitivity	0.90
Specificity	0.99
Proportion correct	0.99
Kappa	**0.86**
True Skill Statistic	0.90

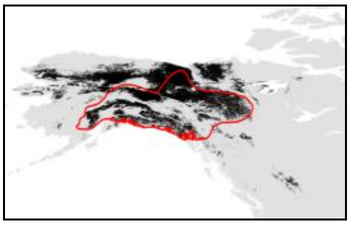
Summary: The Collared pika's bioclimatic envelope is predicted to increase by 20% with a ~2^{o} mean latitudinal polewards shift and a mean decrease in elevation of ~140m. 95% of the permutation importance of the model was contributed to by annual evapotranspiration (86.7%), mean annual temperature (3.3%), normalised difference vegetation index (3.2%) and maximum temperature (2.0%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

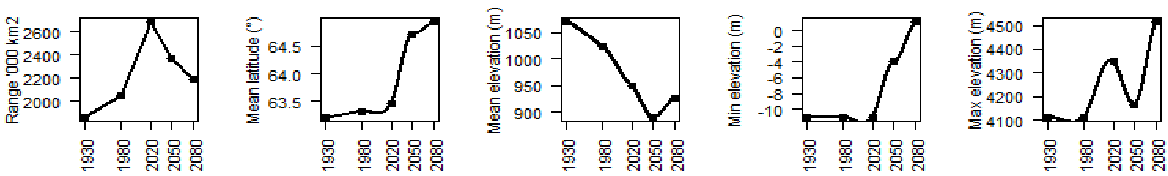

c) ~ 2020s (2010-2039)

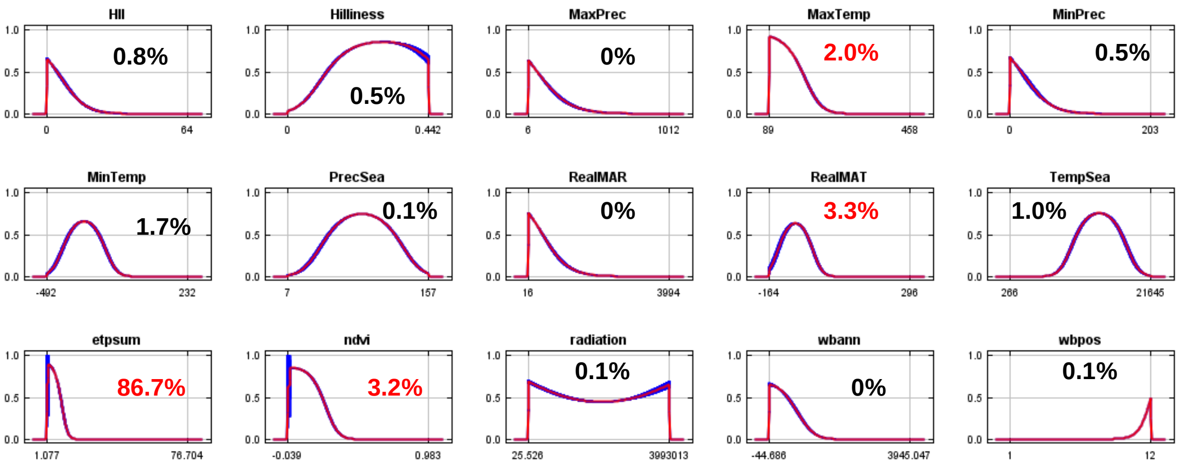

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

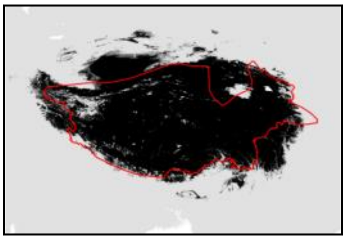




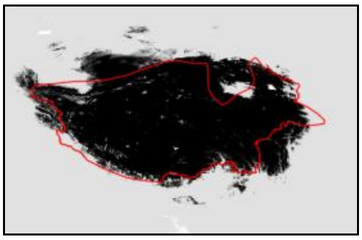
#44 – Plateau pika (*Ochotona curzoniae*)
n = 131
Expert: Andrew Smith, Arizona State University
Expert evaluation: Good
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 0.1km/year (Expert)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.94
Omission rate	0.11
Sensitivity	0.89
Specificity	0.99
Proportion correct	0.99
Kappa	**0.76**
True Skill Statistic	0.88

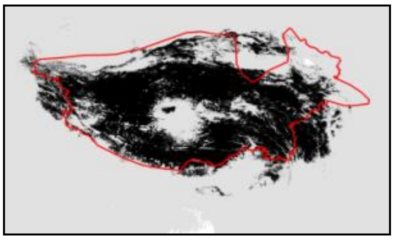
Summary: The Plateau pika's bioclimatic envelope is predicted to decrease by 30% with a ~1° mean latitudinal shift towards the Equator and a mean increase in elevation of ~700m driven by an increase in minimum and maximum elevation. 95% of the permutation importance of the model was contributed to by minimum precipitation (48.0%), maximum temperature (42.0%) and annual evapotranspiration (6.8%).



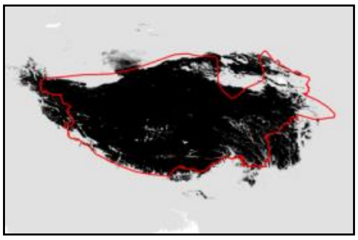
a) ~ 1930s (1900-1949)



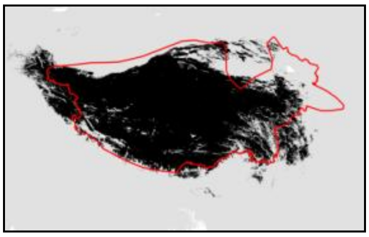
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



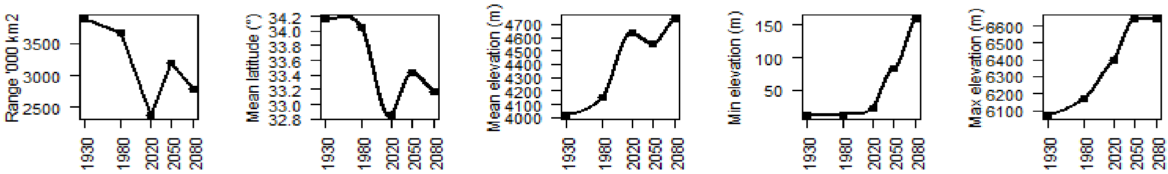
d) ~ 2050s (2040-2069)

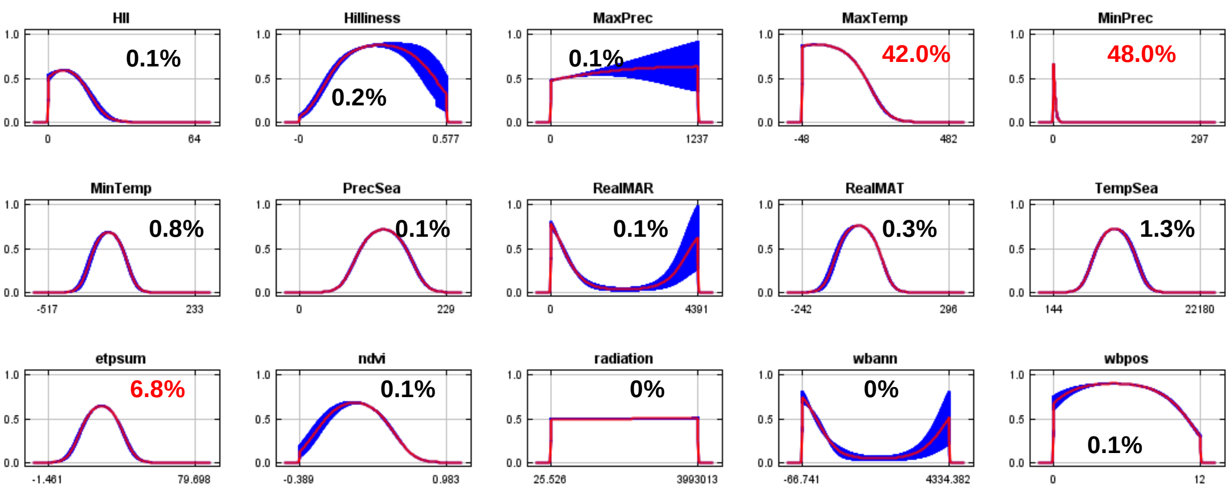


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

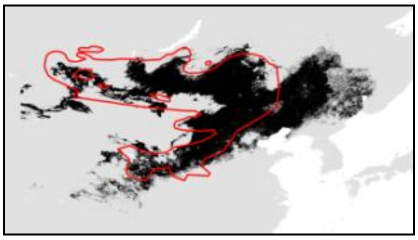


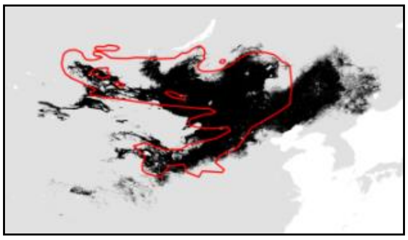


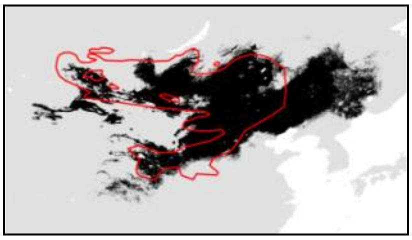
#45 – Daurian pika (*Ochotona dauurica*)
n = 131
Expert: Andrew Smith, Arizona State University
Expert evaluation: Medium
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 0.1km/year (Similar ecology to *O.curzoniae*)
Status: MODELLABLE; **Included in final analysis:** √

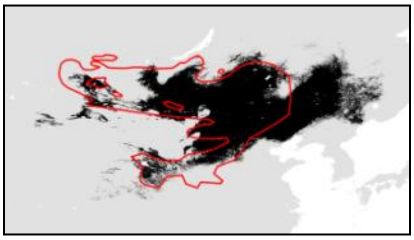
Model evaluation metric	
AUC	0.95
Omission rate	0.10
Sensitivity	0.90
Specificity	0.99
Proportion correct	0.99
Kappa	**0.66**
True Skill Statistic	0.89

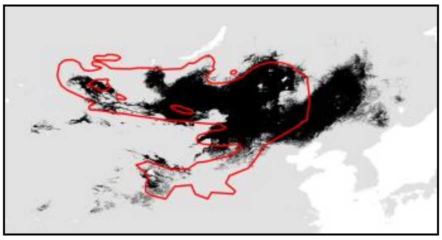
Summary: The Daurian pika's bioclimatic envelope is predicted to decrease by 25% with a ~1° mean latitudinal polewards shift and a mean decrease in elevation of ~60m. 95% of the permutation importance of the model was contributed to by minimum precipitation (92.3%) and number of months with a positive water balance (2.7%).


a) ~ **1930s** (1900-1949)


b) ~ **1980s** (1950-2000)

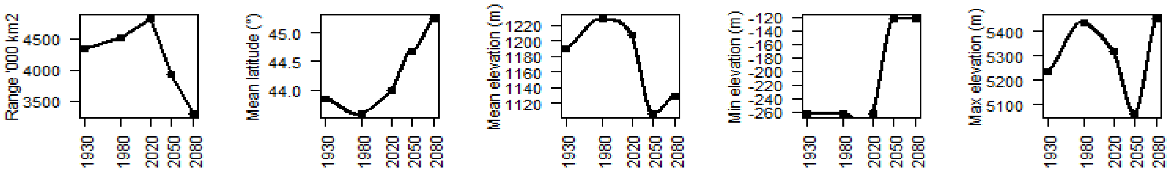

c) ~ **2020s** (2010-2039)

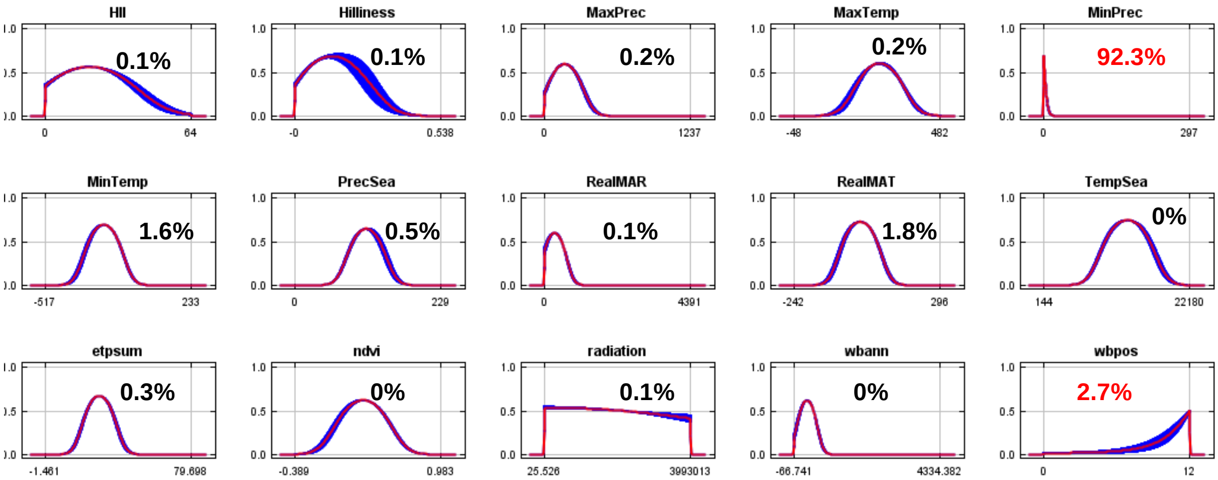

d) ~ **2050s** (2040-2069)


e) ~ **2080s** (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

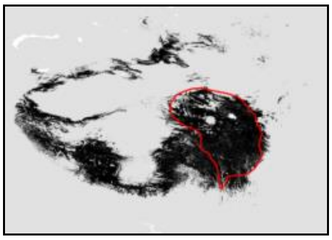


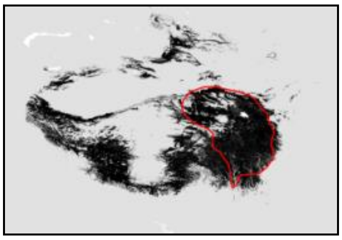


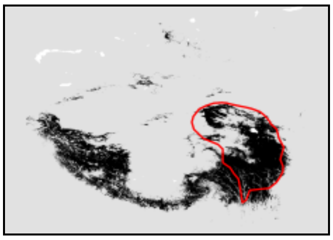
#46 – Chinese red pika (*Ochotona erythrotis*)
n = 39
Expert: Andrew Smith, Arizona State University
Expert evaluation: Poor
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 3km/year (Asian pikas, range 1-15)
Status: UNMODELLABLE; **Included in final analysis:** X

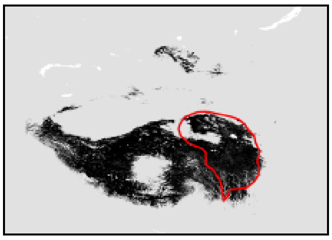
Model evaluation metric	
AUC	0.95
Omission rate	0.10
Sensitivity	0.90
Specificity	0.99
Proportion correct	0.99
Kappa	**0.53**
True Skill Statistic	0.89

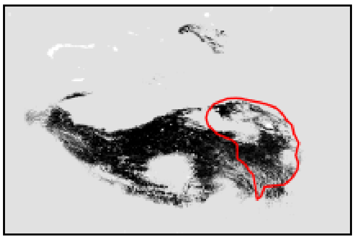
Summary: The Chinese red pika's bioclimatic envelope is predicted to decrease by 20% with a ~3° mean latitudinal polewards shift and a mean decrease in elevation of ~2400m driven by a decrease in minimum elevation. 95% of the permutation importance of the model was contributed to by minimum precipitation (87.2%), minimum temperature (7.2%) and mean annual temperature (2.9%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

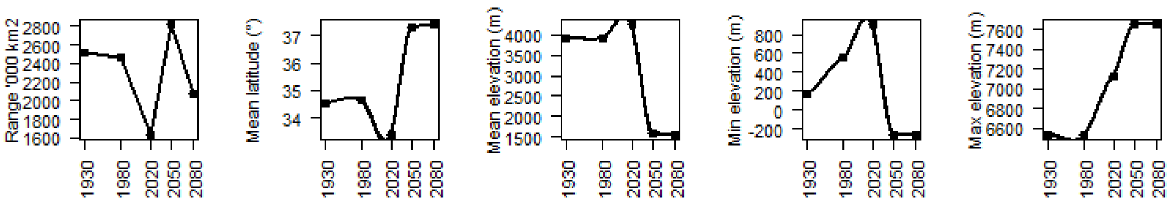

c) ~ 2020s (2010-2039)

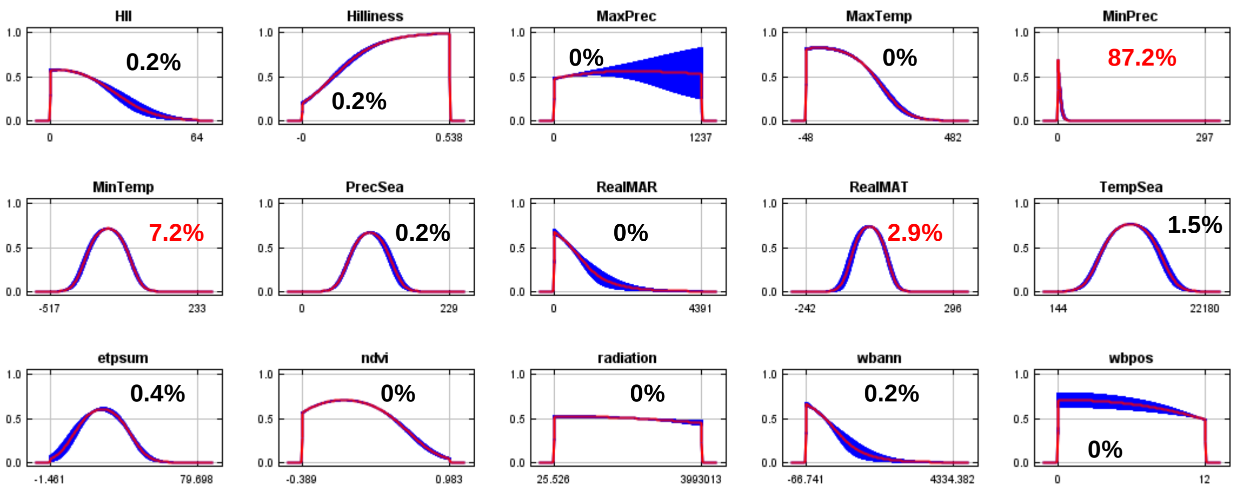

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

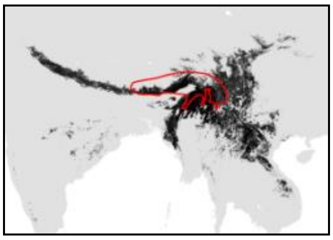


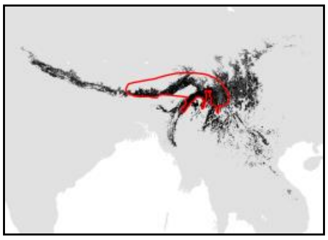


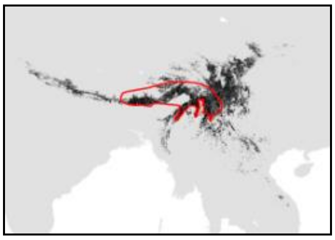
#47 – Forrest's pika (*Ochotona forresti*)
n = 9
Expert: Andrew Smith, Arizona State University
Expert evaluation: Poor
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 3km/year (Asian pikas, range 1-15)
Status: UNMODELLABLE; **Included in final analysis:** X

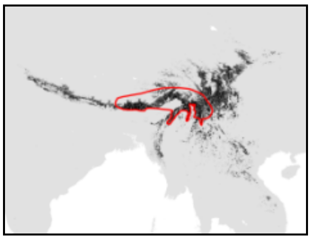
Model evaluation metric	
AUC	0.95
Omission rate	0.10
Sensitivity	0.90
Specificity	0.99
Proportion correct	0.99
Kappa	**0.53**
True Skill Statistic	0.89

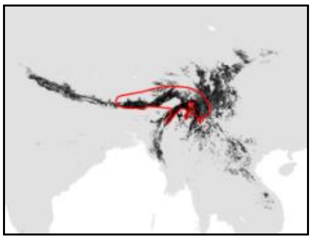
Summary: The Forrest's pika's bioclimatic envelope is predicted to decrease by 40% with a ~1^{o} mean latitudinal polewards shift and a mean increase in elevation of ~600m driven by an increase in maximum elevation. 95% of the permutation importance of the model was contributed to by minimum precipitation (36.8%), temperature seasonality (20.6%), normalised difference vegetation index (12.1%), maximum temperature (9.3%), precipitation seasonality (7.6%), human influence index (6.2%) and surface roughness index (4.2%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

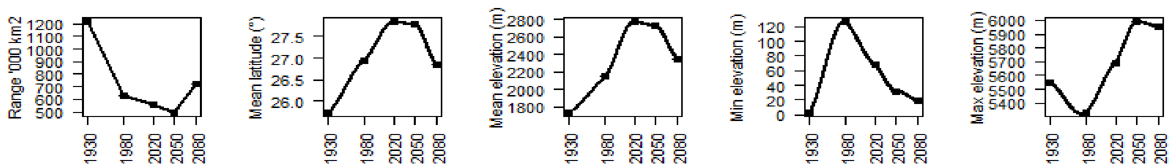

c) ~ 2020s (2010-2039)

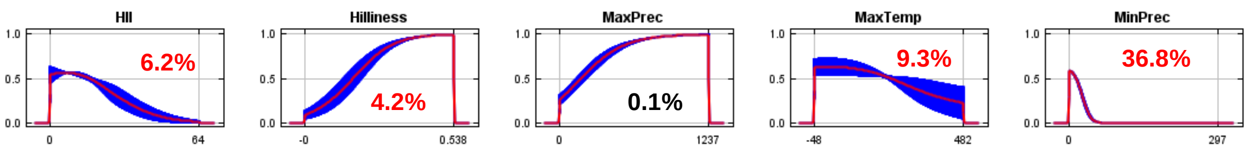

d) ~ 2050s (2040-2069)

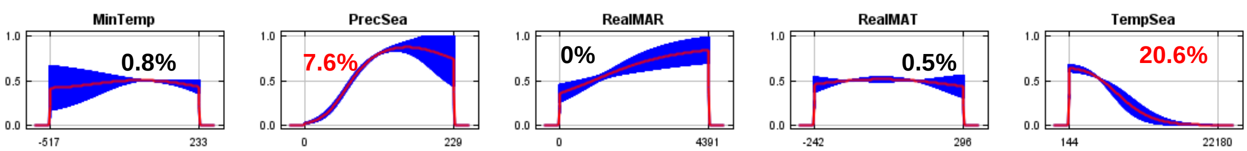

e) ~ 2080s (2070-2099)

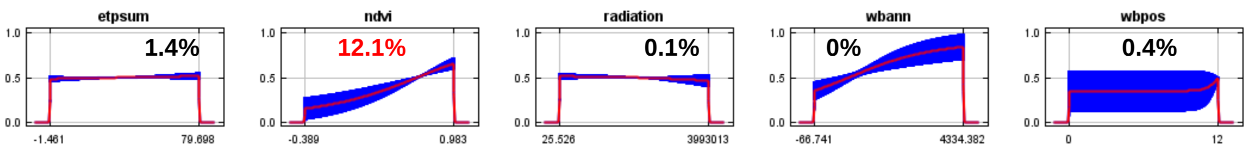
Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)





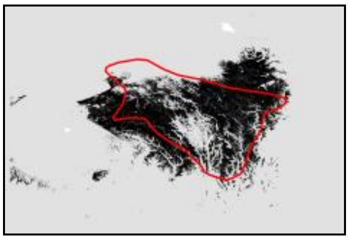


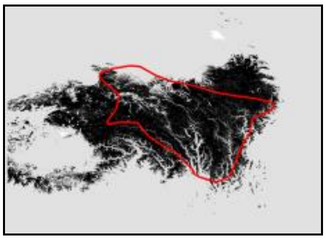


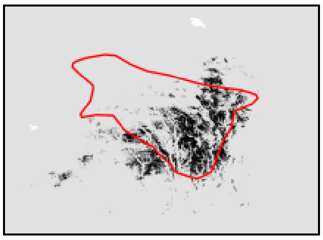
#48 – Glover's pika (*Ochotona gloveri*)
n = 22
Expert: Andrew Smith, Arizona State University
Expert evaluation: Medium
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 3km/year (Asian pikas, range 1-15)
Status: MODELLABLE; **Included in final analysis:** √

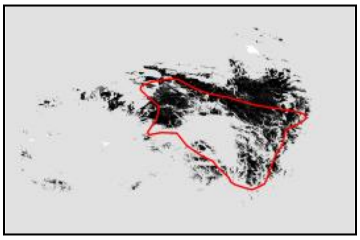
Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.65**
True Skill Statistic	0.99

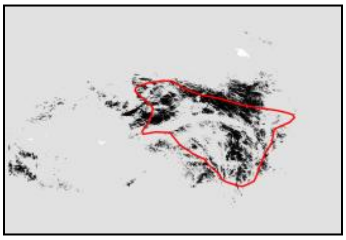
Summary: The Glover's pika's bioclimatic envelope is predicted to decrease by 50% with a ~0.5° mean latitudinal polewards shift and a mean increase in elevation of ~270m driven by an increase in minimum and maximum elevation. 95% of the permutation importance of the model was contributed to by minimum precipitation (46.3%), minimum temperature (28.8%), mean annual temperature (12.7%), human influence index (3.8%), temperature seasonality (3.1%) and precipitation seasonality (1.8%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

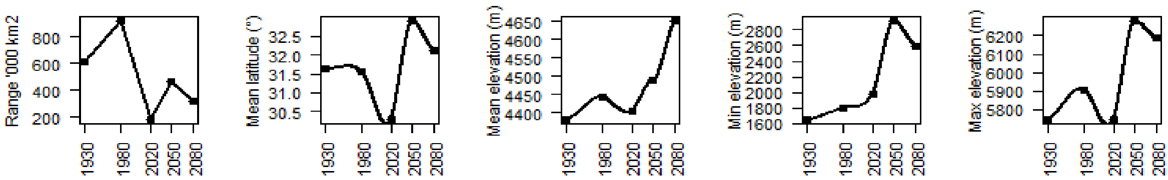

c) ~ 2020s (2010-2039)

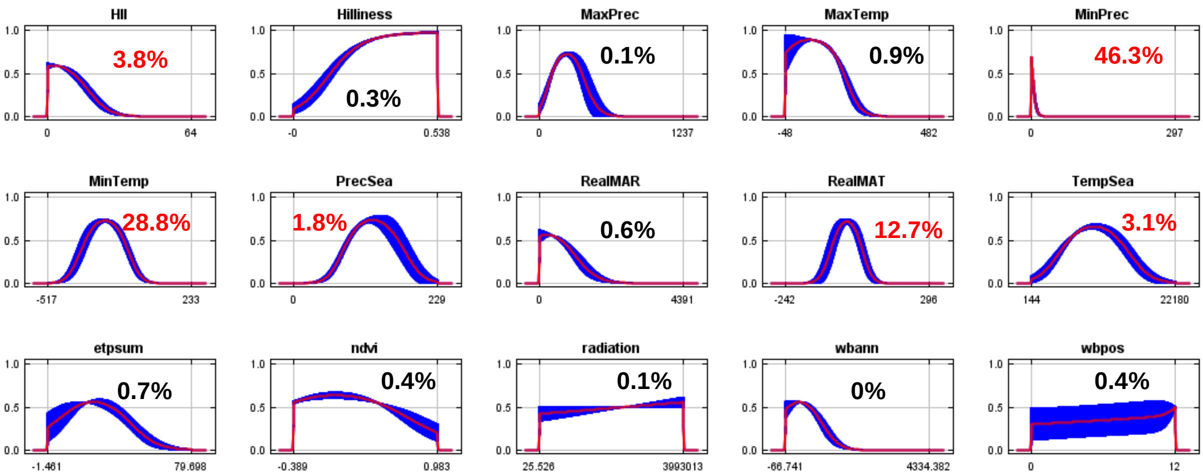

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

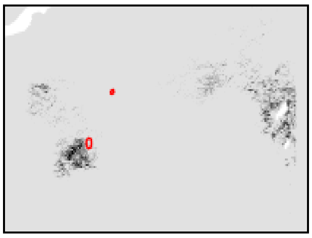




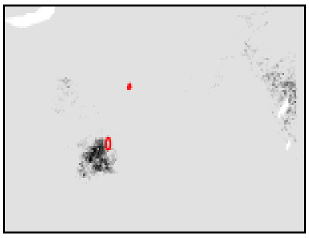
#49 – Hoffmann's pika (*Ochotona hoffmanni*)
n = 5
Expert: Andrey Lissovsky, Zoological Museum of Moscow State University
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 3km/year (Asian pikas, range 1-15)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.91**
True Skill Statistic	0.99

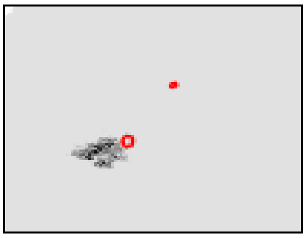
Summary: The Hoffmann's pika's bioclimatic envelope is predicted to decrease by 90% with a ~1° mean latitudinal shift towards the Equator and a mean increase in elevation of ~470m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by precipitation seasonality (73.2%), mean annual temperature (12.6%), minimum temperature (6.5%) and minimum precipitation (5.3%).



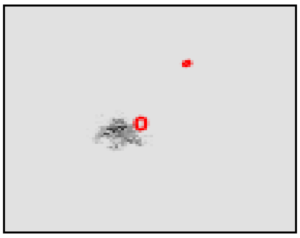
a) ~ 1930s (1900-1949)



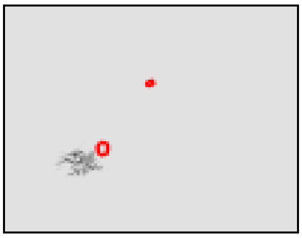
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



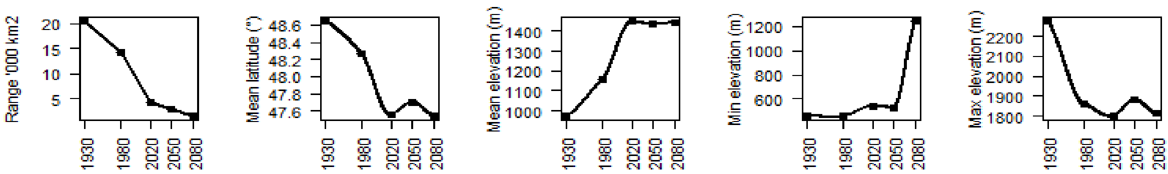
d) ~ 2050s (2040-2069)

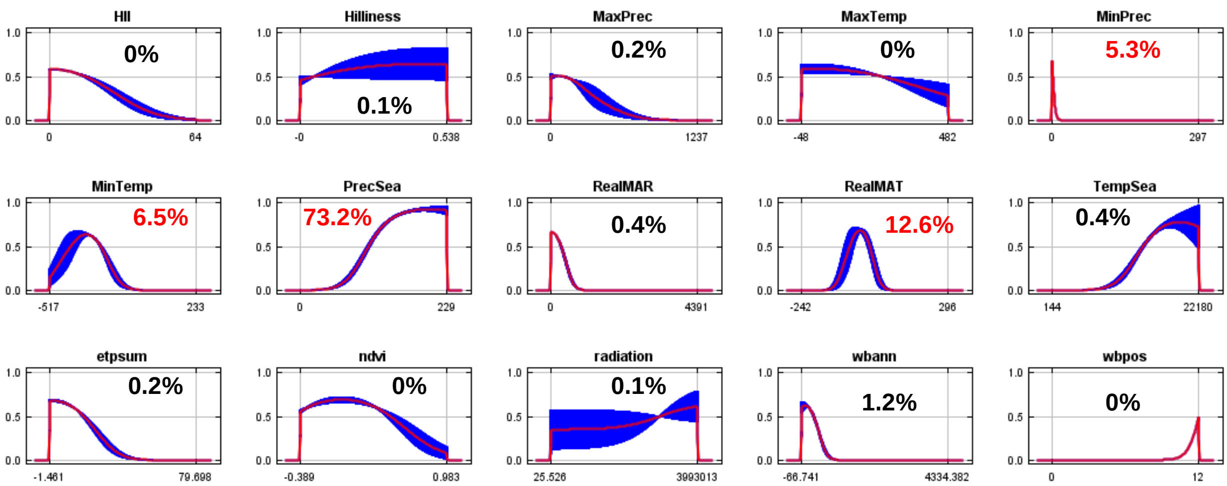


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)



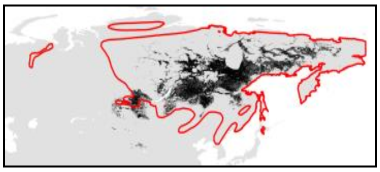


Model evaluation metric

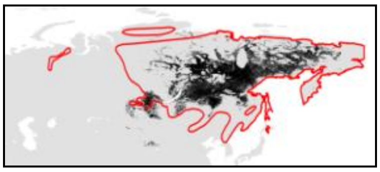
Model evaluation metric	
AUC	0.97
Omission rate	0.06
Sensitivity	0.94
Specificity	0.99
Proportion correct	0.99
Kappa	**0.40**
True Skill Statistic	0.93

#50 – Siberian pika (*Ochotona hyperborea*)
n = 16
Expert: Julia Witczuk, Warsaw Agricultural University, Poland
Expert evaluation: Poor
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 10km/year (Similar ecology to *O.alpina*)
Status: UNMODELLABLE; **Included in final analysis:** X

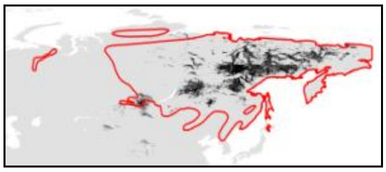
Summary: The Siberian pika's bioclimatic envelope is predicted to decrease by 100% with a ~5° mean latitudinal polewards shift and a mean increase in elevation of ~200m driven by an increase in minimum and maximum elevation. 95% of the permutation importance of the model was contributed to by mean annual temperature (72.5%), annual evapotranspiration (10.4%), minimum precipitation (6.4%), human influence index (2.8%), normalised difference vegetation index (2.6%) and annual water balance (1.8%).



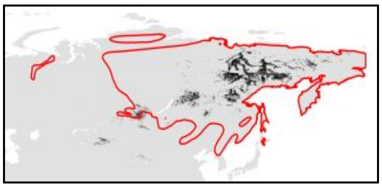
a) ~ 1930s (1900-1949)



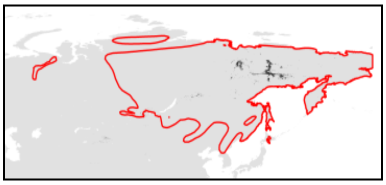
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



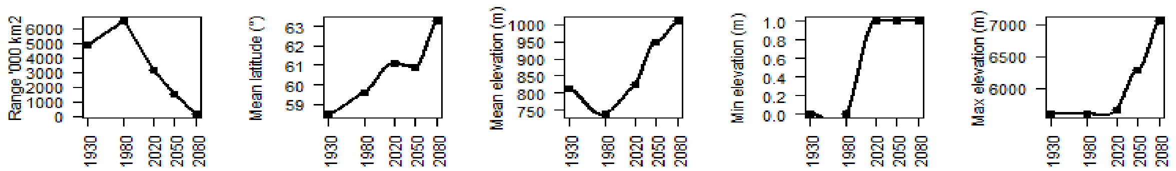
d) ~ 2050s (2040-2069)

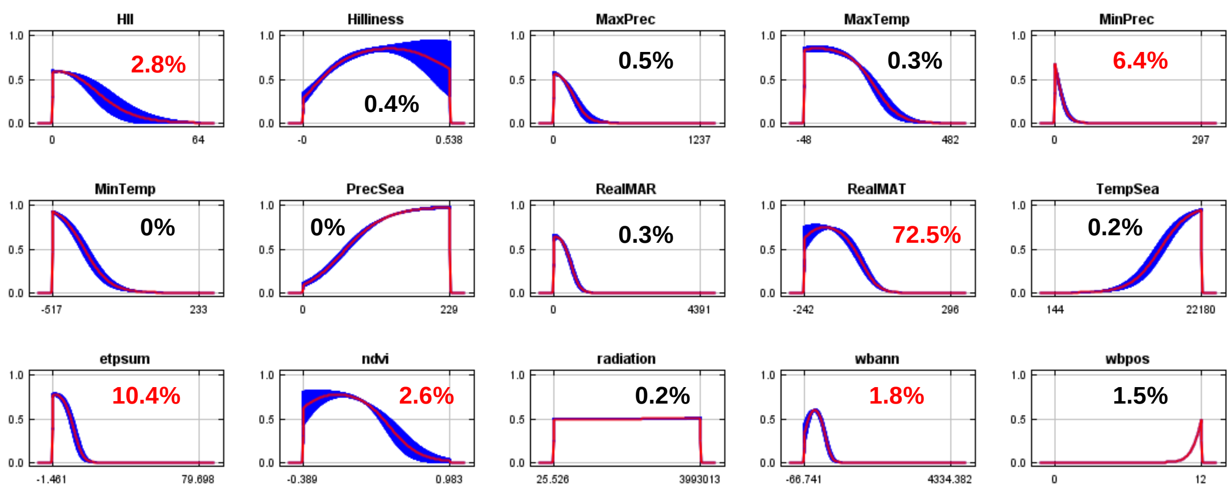


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

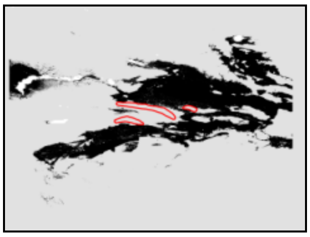




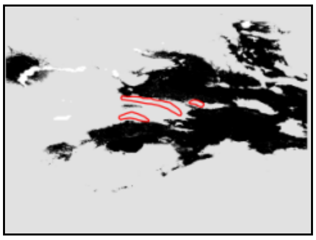
#51– Ili pika (*Ochotona iliensis*)
n = 11
Expert: Andrew Smith, Arizona State University
Expert evaluation: Poor
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 1km/year (Similar ecology to *O.koslowi*)
Status: UNMODELLABLE; **Included in final analysis:** X

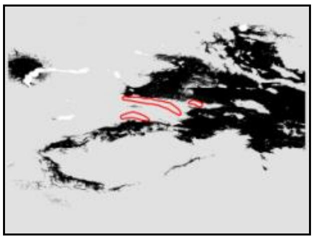
Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.55**
True Skill Statistic	0.99

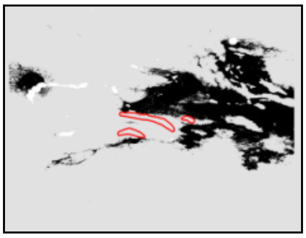
Summary: The Ili pika's bioclimatic envelope is predicted to decrease by 20% with a ~1° mean latitudinal polewards shift and a mean increase in elevation of ~80m. 95% of the permutation importance of the model was contributed to by minimum precipitation (52.7%), minimum temperature (22.2%), mean annual temperature (8.8%), maximum precipitation (6.5%), temperature seasonality (3.0%) and human influence index (2.2%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

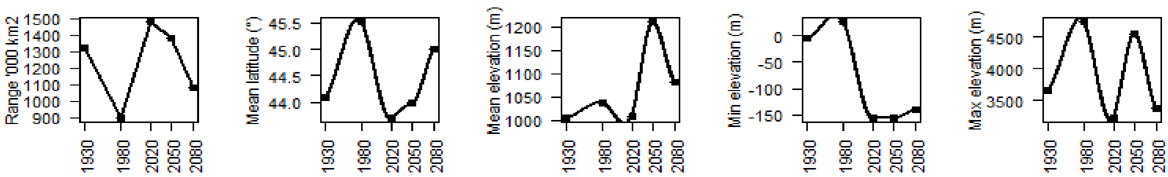

c) ~ 2020s (2010-2039)

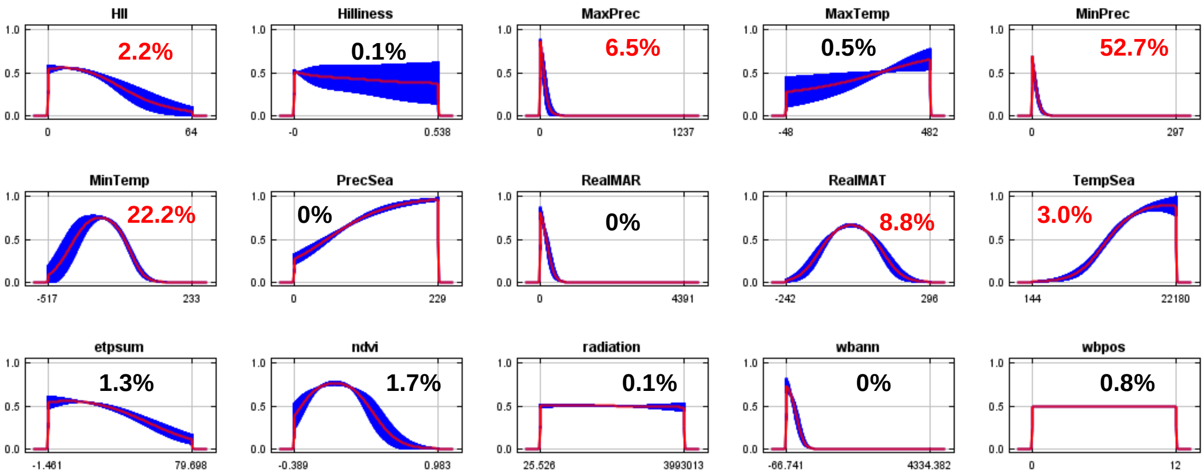

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

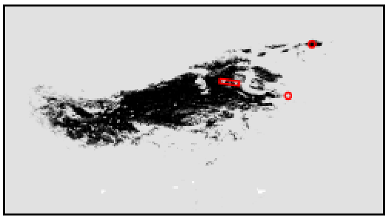


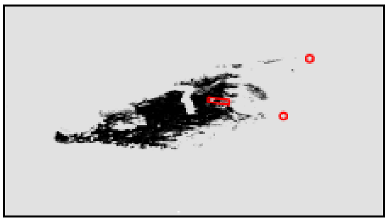


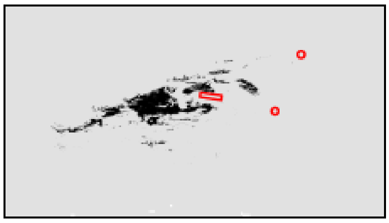
#52 – Kozlov's pika (*Ochotona koslowi*)
n = 5
Expert: Andrew Smith, Arizona State University
Expert evaluation: Medium
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 1km/year (Expert)
Status: MODELLABLE; **Included in final analysis:** √

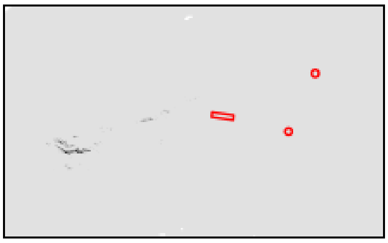
Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.86**
True Skill Statistic	0.99

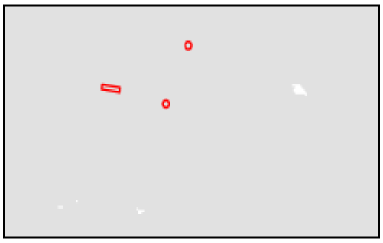
Summary: The Kozlov's pika's bioclimatic envelope is predicted to decrease by 100% (total extinction). 95% of the permutation importance of the model was contributed to by mean annual precipitation (66.8%), minimum precipitation (24.2%) and human influence index (5.8%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

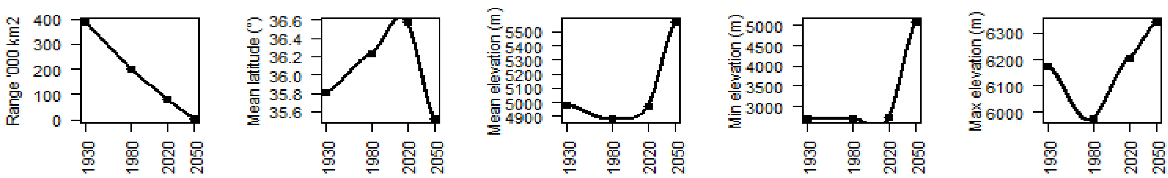

c) ~ 2020s (2010-2039)

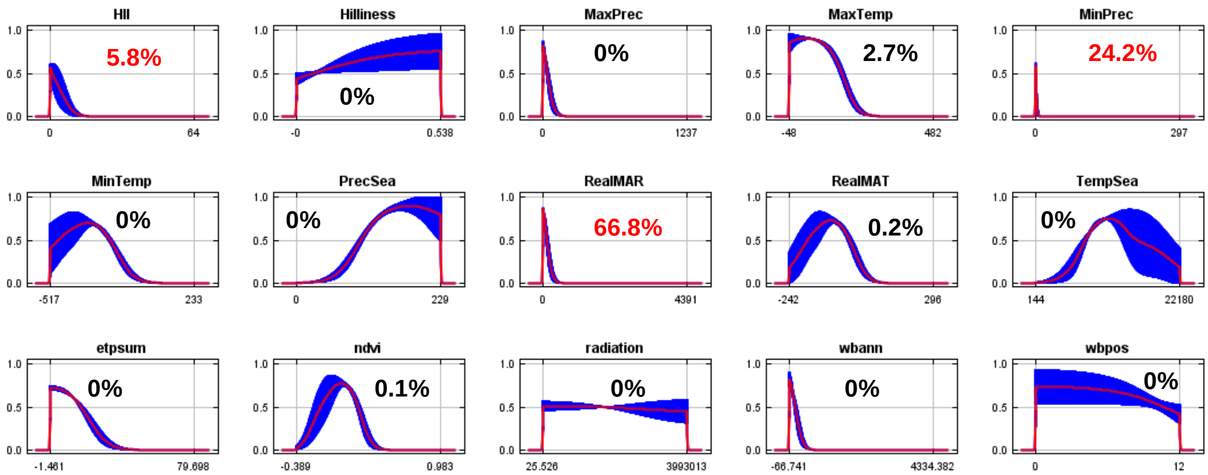

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

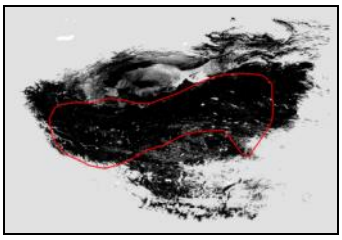


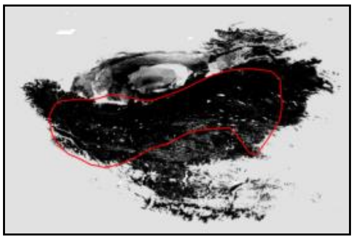


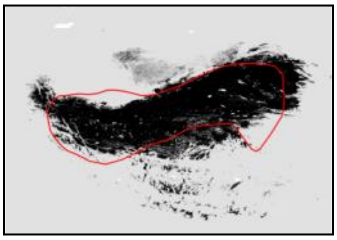
#53 – Ladak pika (*Ochotona ladacensis*)
n = 18
Expert: Andrew Smith, Arizona State University
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 0.05km/year (Similar ecology to *O.curzoniae*)
Status: MODELLABLE; **Included in final analysis:** √

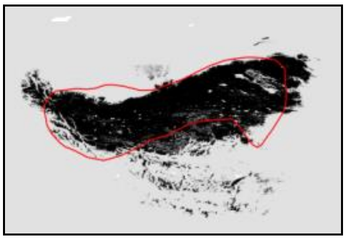
Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.63**
True Skill Statistic	0.99

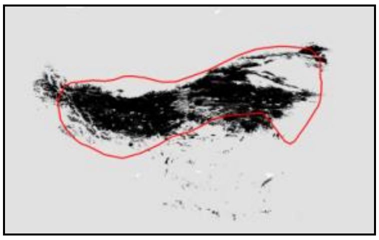
Summary: The Ladak pika's bioclimatic envelope is predicted to decrease by 70% with a ~1° mean latitudinal shift towards the Equator and a mean increase in elevation of ~1400m driven by an increase in minimum and maximum elevation. 95% of the permutation importance of the model was contributed to by mean annual precipitation (47.9%), minimum precipitation (41.7%) and minimum temperature (5.7%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

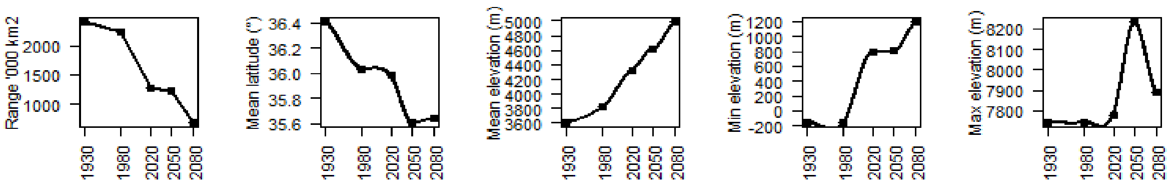

c) ~ 2020s (2010-2039)

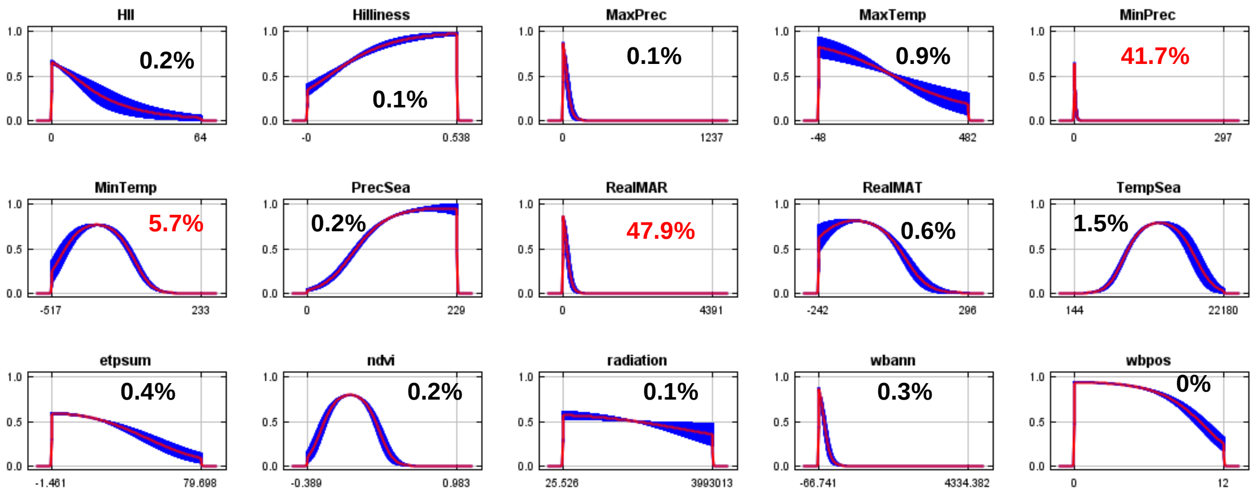

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

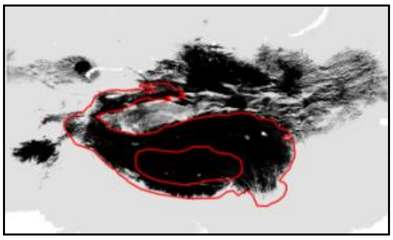


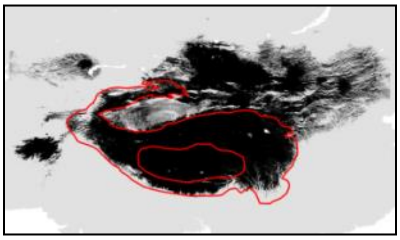


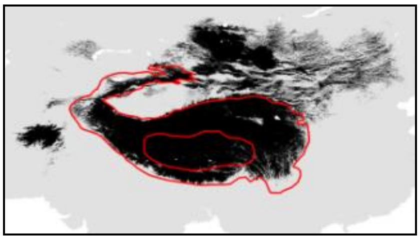
#54 – Large-eared pika (*Ochotona macrotis*)
n = 49
Expert: Nishma Dahal, National Centre for Biological Sciences, India
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 1km/year (Similar ecology to *O.roylei*)
Status: MODELLABLE; **Included in final analysis:** √

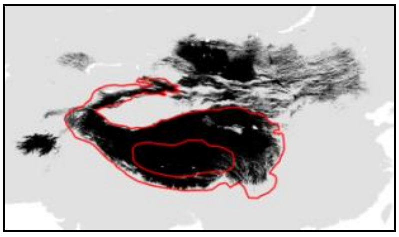
Model evaluation metric	
AUC	0.94
Omission rate	0.10
Sensitivity	0.90
Specificity	0.99
Proportion correct	0.99
Kappa	**0.43**
True Skill Statistic	0.89

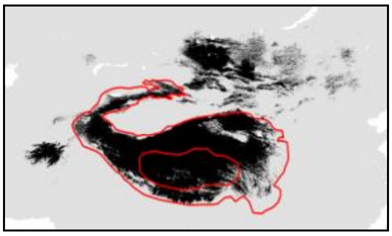
Summary: The Large-eared pika's bioclimatic envelope is predicted to decrease by 40% with a ~1° mean latitudinal shift towards the Equator and a mean increase in elevation of ~880m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by minimum precipitation (87.3%), minimum temperature (5.8%) and mean annual temperature (2.1%).


a) ~ **1930s** (1900-1949)


b) ~ **1980s** (1950-2000)

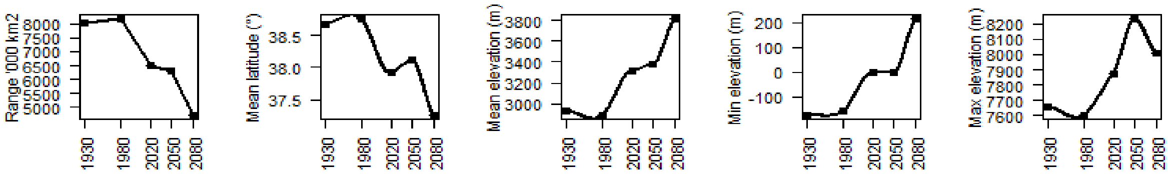

c) ~ **2020s** (2010-2039)

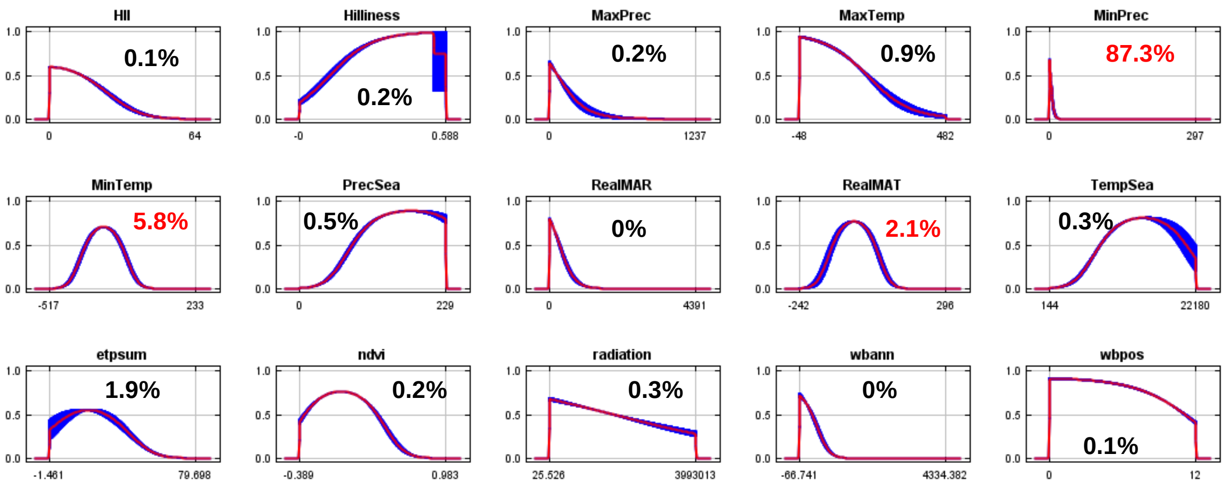

d) ~ **2050s** (2040-2069)


e) ~ **2080s** (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

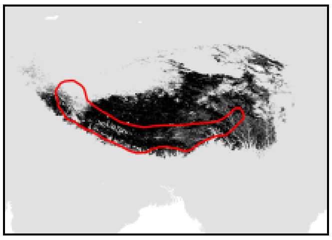


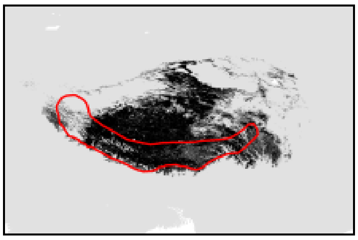


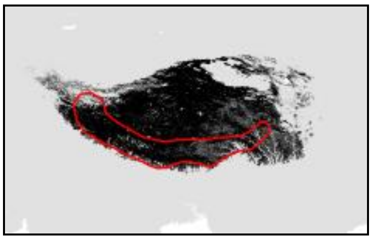
#55 – Nubra's pika (*Ochotona nubrica*)
n = 13
Expert: Nishma Dahal, National Centre for Biological Sciences, India
Expert evaluation: Medium
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 0.05km/year (Similar ecology to *O.curzoniae*)
Status: UNMODELLABLE; **Included in final analysis:** X

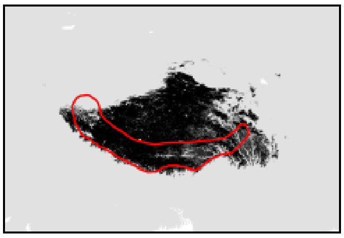
Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.35**
True Skill Statistic	0.99

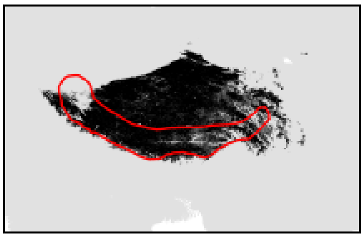
Summary: The Nubra's pika's bioclimatic envelope is predicted to increase by 1% with no latitudinal polewards shift, but a mean increase in elevation of ~200m driven by an increase in minimum and maximum elevation. 95% of the permutation importance of the model was contributed to by minimum precipitation (76.1%) and mean annual temperature (20.9%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

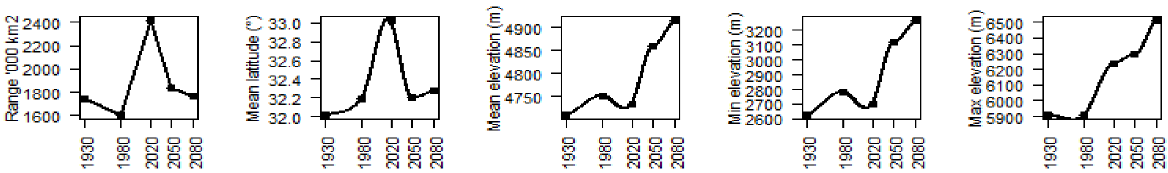

c) ~ 2020s (2010-2039)

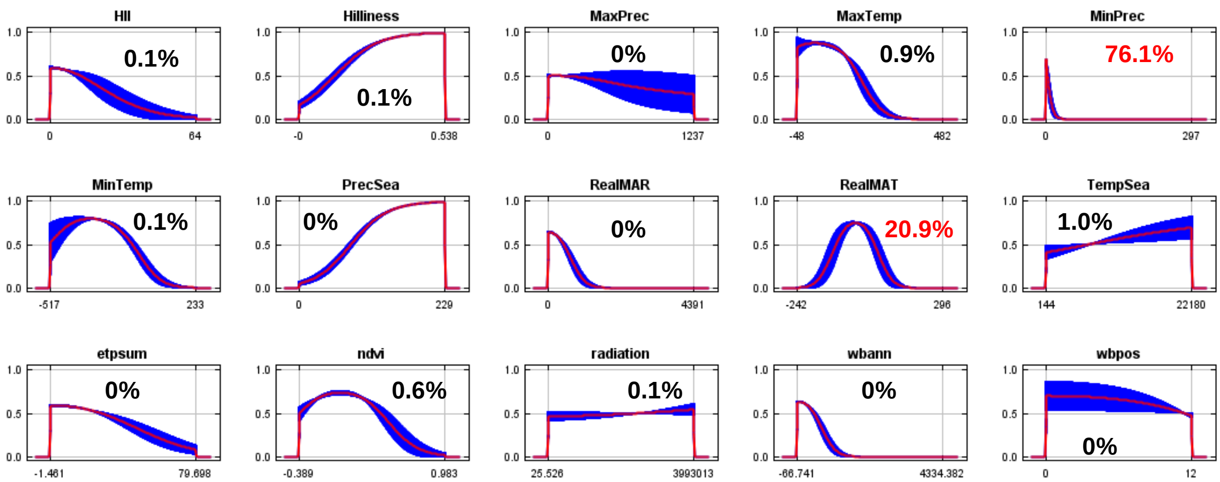

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Boyer, A. F. 2008)

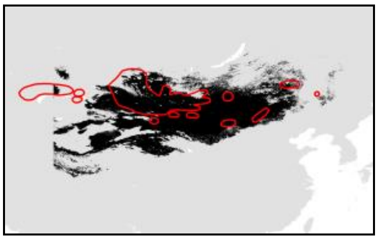




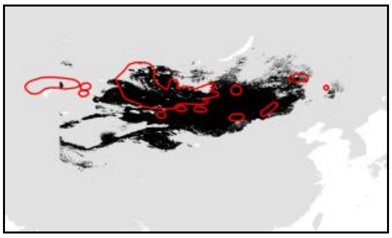
#56 – Pallas's pika (*Ochotona pallasi*)
n = 19
Expert: Andrew Smith, Arizona State University
Expert evaluation: Medium
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 10km/year (Sokolov, V.E. *et al*., 2009)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.46**
True Skill Statistic	0.99

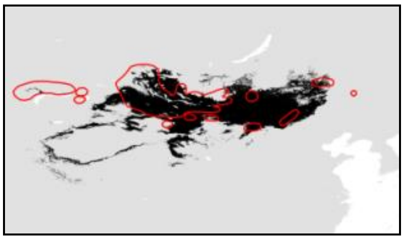
Summary: The Pallas's pika's bioclimatic envelope is predicted to decrease by 60% with a ~2° mean latitudinal polewards shift and a mean increase in elevation of ~40m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by minimum precipitation (46.1%), mean annual precipitation (35.5%), mean annual temperature (9.4%) and minimum temperature (6.7%).



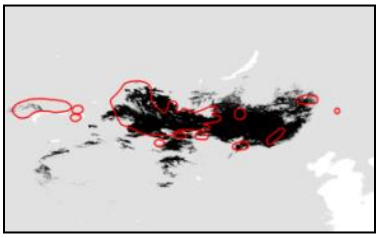
a) ~ 1930s (1900-1949)



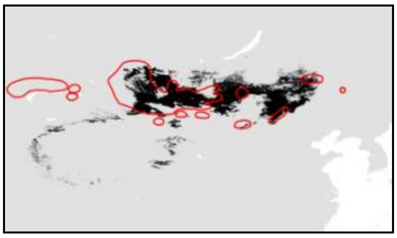
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



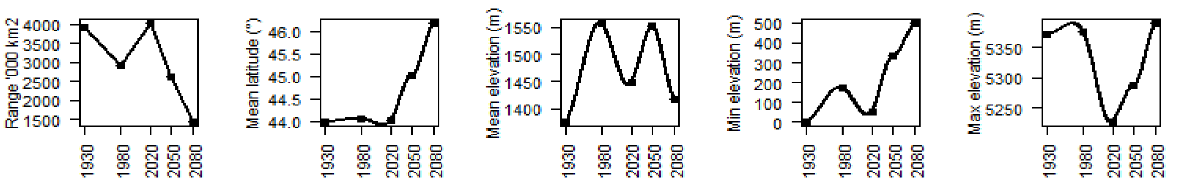
d) ~ 2050s (2040-2069)

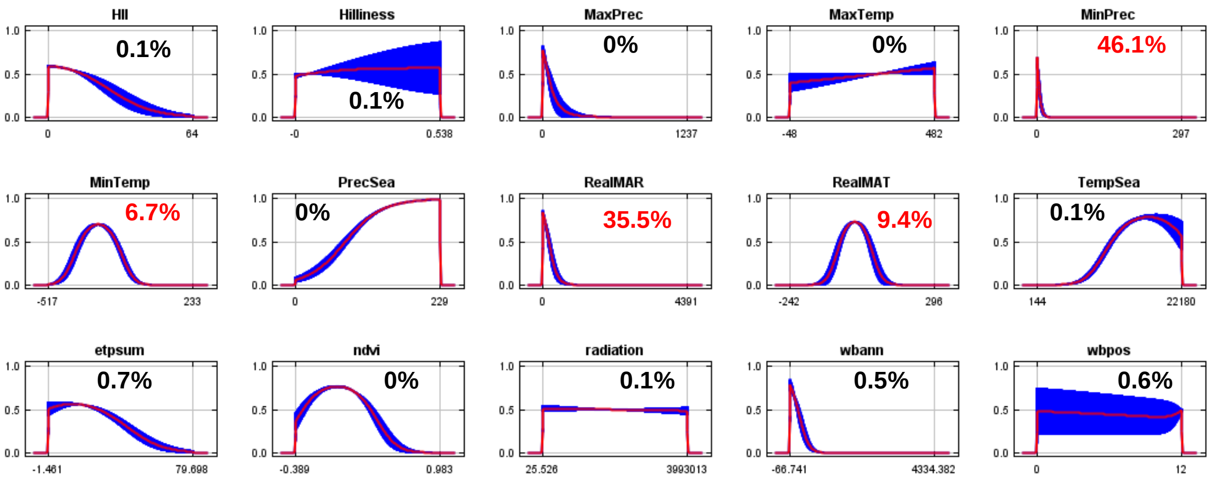


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

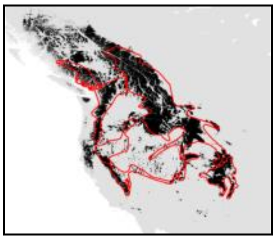


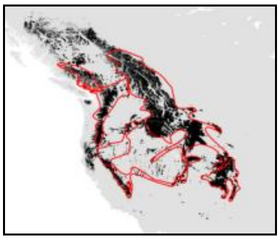


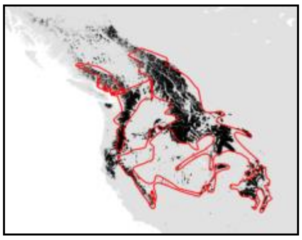
#57 – American pika (*Ochotona princeps*)
n = 670
Expert: Andrew Smith, Arizona State University
Expert evaluation: Medium
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 16.1km/year (Expert)
Status: MODELLABLE; **Included in final analysis:** √

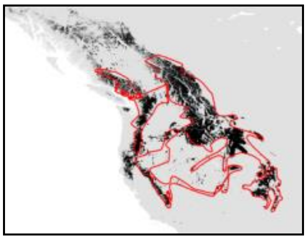
Model evaluation metric	
AUC	0.95
Omission rate	0.10
Sensitivity	0.9
Specificity	0.99
Proportion correct	0.98
Kappa	**0.87**
True Skill Statistic	0.89

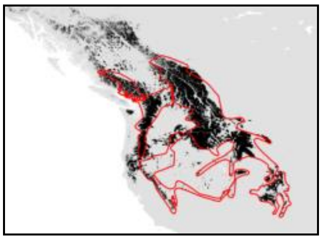
Summary: The American pika's bioclimatic envelope is predicted to decrease by 25% with a ~1° mean latitudinal polewards shift and a mean decrease in elevation of ~10m driven by an decrease in minimum elevation. 95% of the permutation importance of the model was contributed to by mean annual temperature (88.1%), annual evapotranspiration (5.0%) and maximum temperature (2.8%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

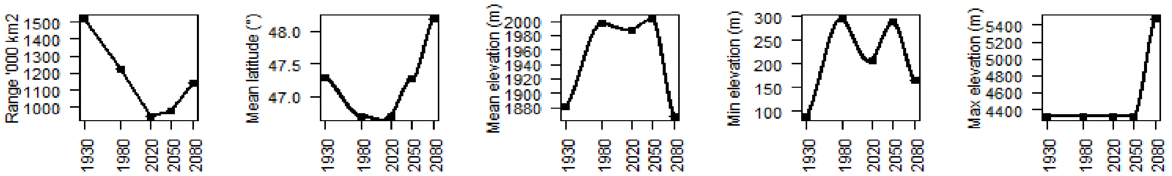

c) ~ 2020s (2010-2039)

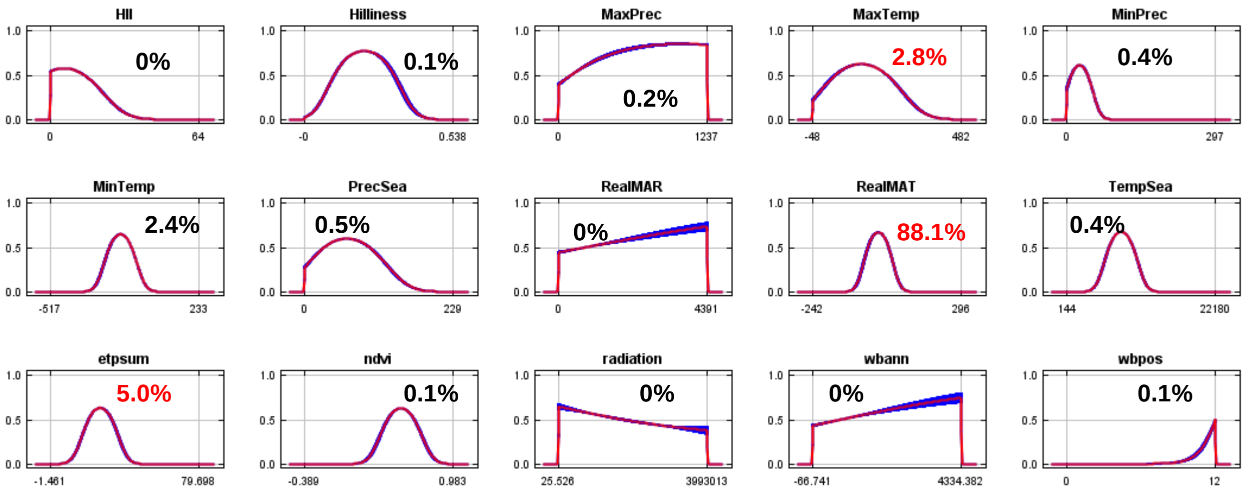

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Beever, E. & Smith, A.T. 2011)

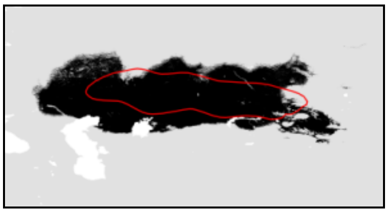




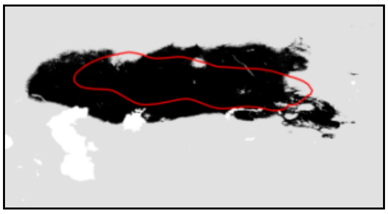
#58 – Little pika (*Ochotona pusilla*)
n = 30
Expert: Andrew Smith, Arizona State University
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 4km/year (Sokolov, V.E. *et al*., 2009)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.93
Omission rate	0.13
Sensitivity	0.87
Specificity	0.99
Proportion correct	0.99
Kappa	**0.58**
True Skill Statistic	0.86

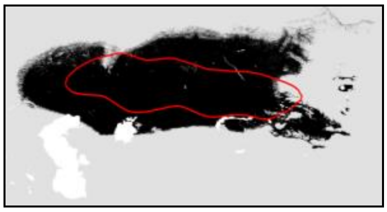
Summary: The Little pika's bioclimatic envelope is predicted to increase by 20% with a ~1° mean latitudinal polewards shift and a mean increase in elevation of ~70m driven by an increase in maximum elevation. 95% of the permutation importance of the model was contributed to by temperature seasonality (70.2%), annual water balance (13.3%), mean annual temperature (10.2%) and minimum temperature (4.5%).



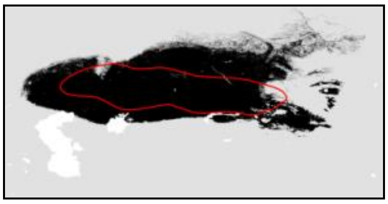
a) ~ 1930s (1900-1949)



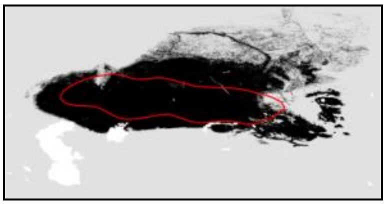
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



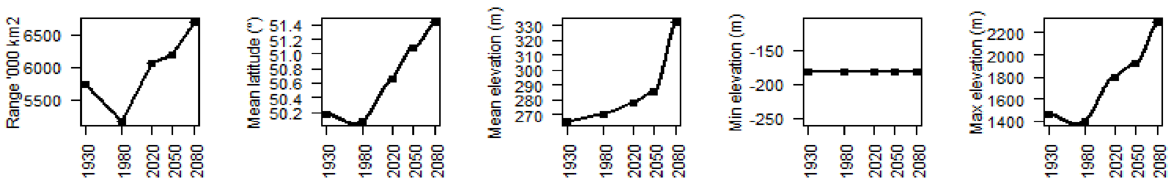
d) ~ 2050s (2040-2069)

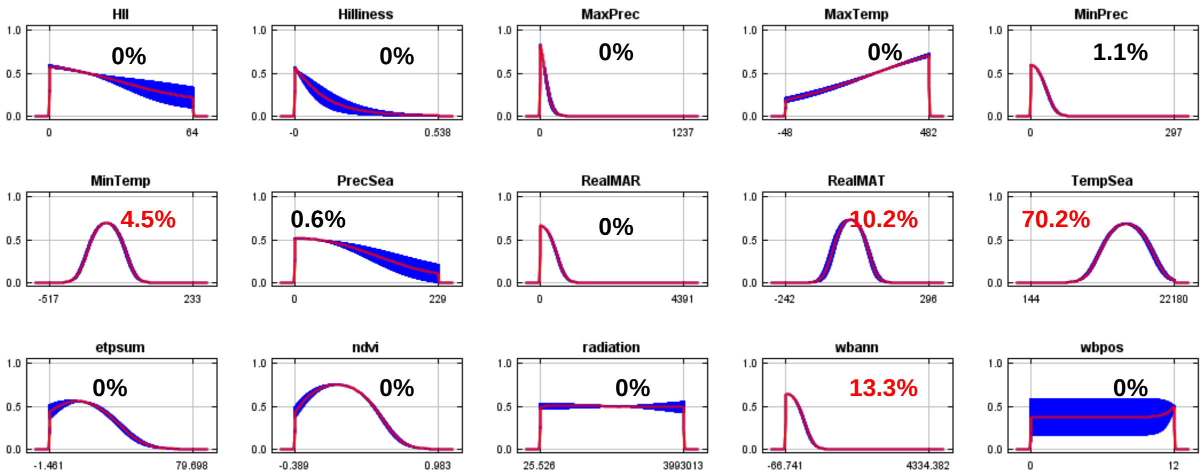


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

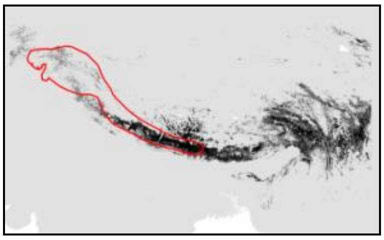


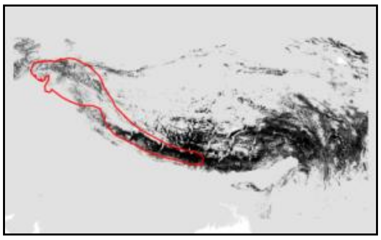


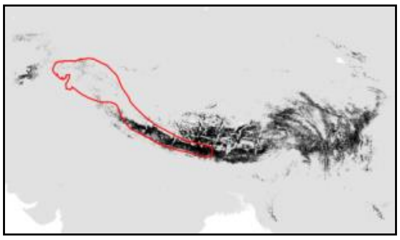
#59 – Royle's pika (*Ochotona roylei*)
n = 22
Expert: Sabuj Bhattacharya, Wildlife Institute of India
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 1km/year (Expert)
Status: MODELLABLE; **Included in final analysis:** √

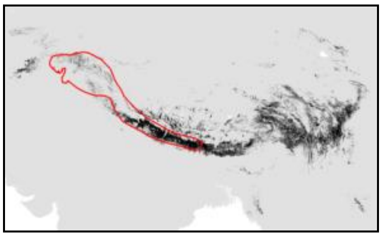
Model evaluation metric	
AUC	0.98
Omission rate	0.05
Sensitivity	0.95
Specificity	0.99
Proportion correct	0.99
Kappa	**0.76**
True Skill Statistic	0.95

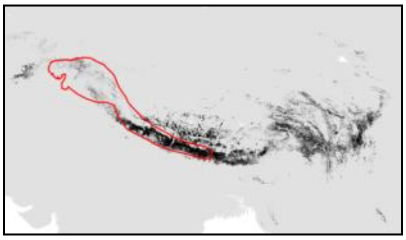
Summary: The Royle's pika's bioclimatic envelope is predicted to decrease by 20% with no latitudinal polewards shift and a mean increase in elevation of ~340m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by minimum precipitation (53.2%), maximum temperature (20.4%), temperature seasonality (10.2%), human influence index (5.5%), surface roughness index (4.2%) and precipitation seasonality (3.2%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

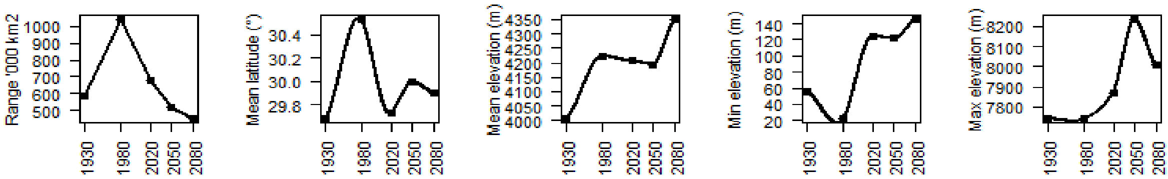

c) ~ 2020s (2010-2039)

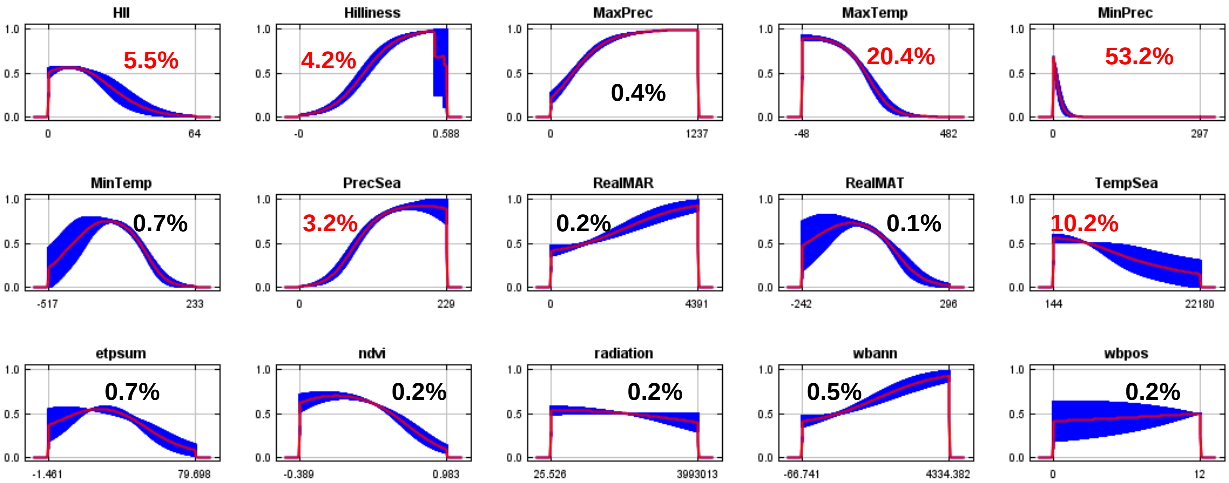

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Boyer, A.F. 2008)

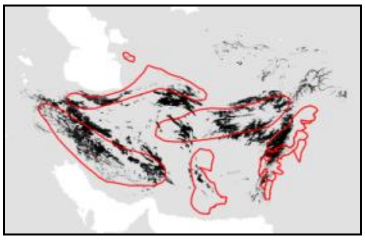




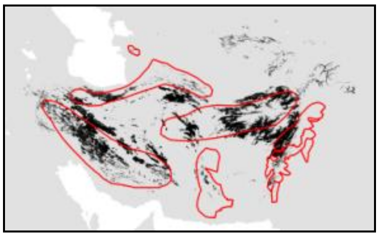
#60 – Afghan pika (*Ochotona rufescens*)
n = 17
Expert: Chelmala Srinivasulu, Osmania University, India
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 3km/year (Asian pikas, range 1-15)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.74**
True Skill Statistic	0.99

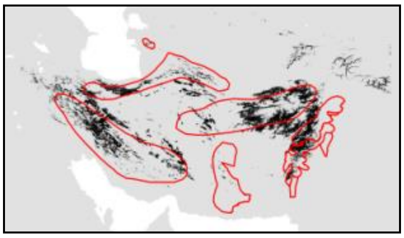
Summary: The Afghan pika's bioclimatic envelope is predicted to increase by 5% with a ~1° mean latitudinal polewards shift and a mean increase in elevation of ~380m driven by an increase in maximum elevation. 95% of the permutation importance of the model was contributed to by minimum precipitation (89.2%), minimum temperature (5.5%) and normalised difference vegetation index (2.3%).



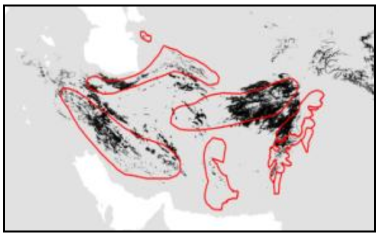
a) ~ 1930s (1900-1949)



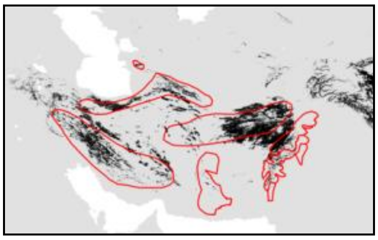
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



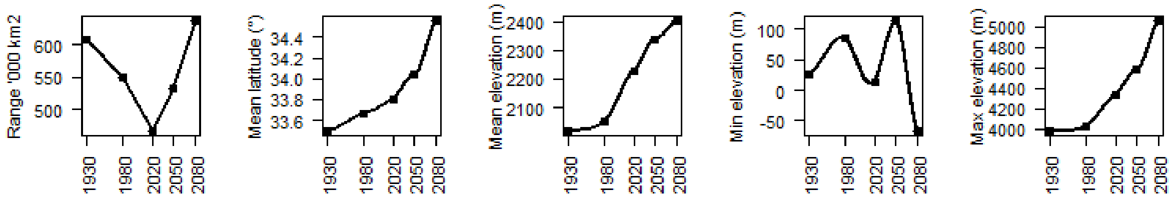
d) ~ 2050s (2040-2069)

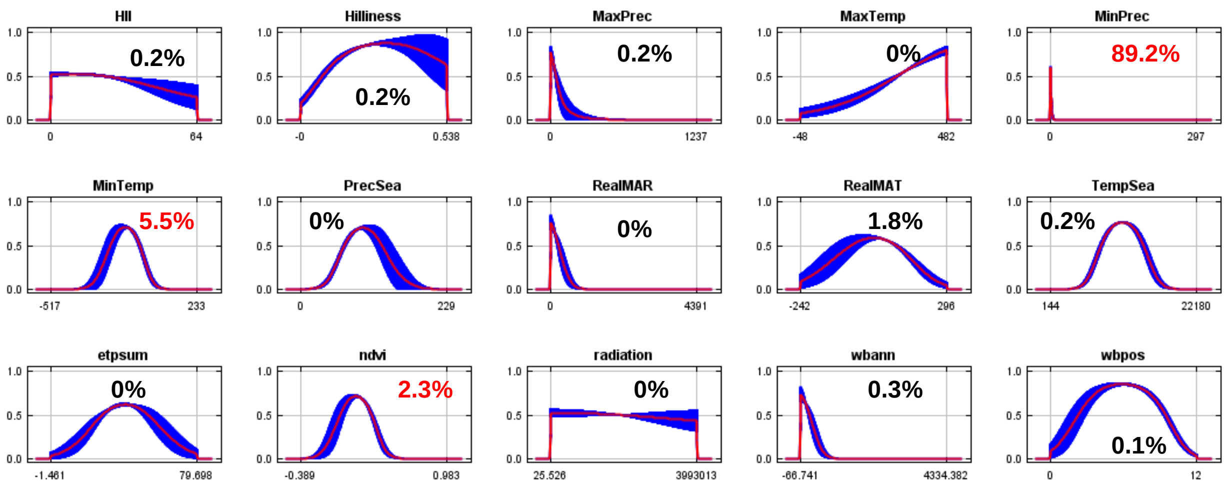


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Boyer, A.F. 2008)

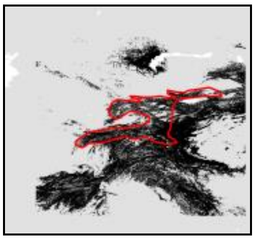


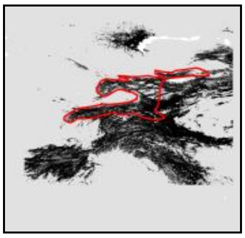


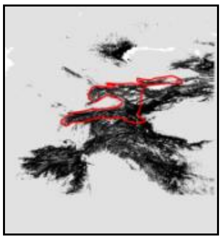
#61 – Turkestan red pika (*Ochotona rutila*)
n = 13
Expert: Andrey Lissovsky, Zoological Museum of Moscow State University
Expert evaluation: Poor
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 3km/year (Asian pikas, range 1-15)
Status: UNMODELLABLE; **Included in final analysis:** X

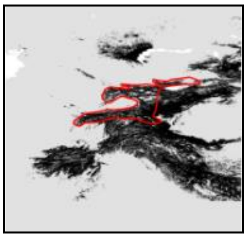
Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.25**
True Skill Statistic	0.99

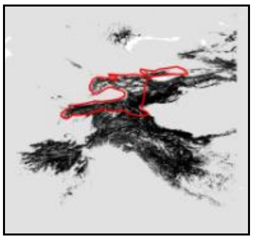
Summary: The Turkestan red pika's bioclimatic envelope is predicted to decrease by 10% with a ~1° mean latitudinal shift towards the Equator and a mean increase in elevation of ~630m driven by an increase in maximum elevation. 95% of the permutation importance of the model was contributed to by minimum precipitation (82.5%), minimum temperature (5.9%), human influence index (3.0%), precipitation seasonality (2.5%) and surface roughness index (1.7%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

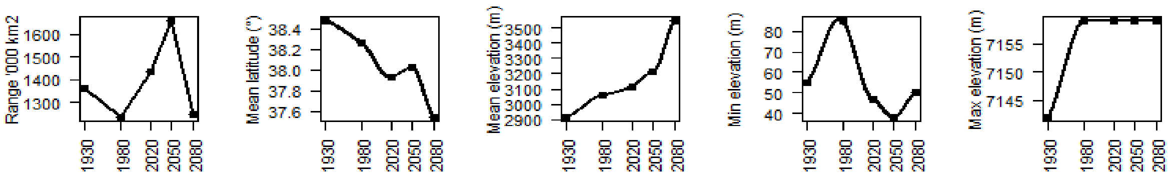

c) ~ 2020s (2010-2039)

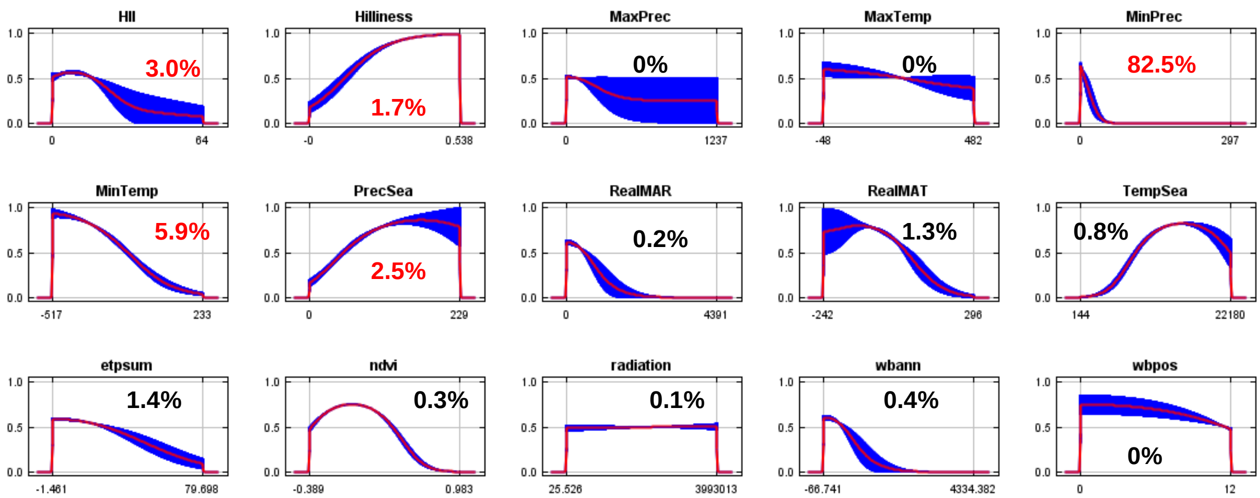

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Boyer, A.F. 2008)



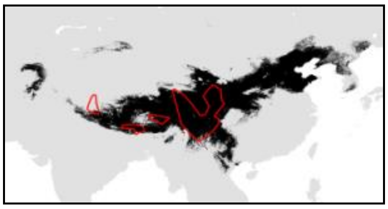


#62 – Moupin pika (*Ochotona thibetana*)
n = 95
Expert: Deyan Ge, Institute of Zoology, Chinese Academy of Sciences
Expert evaluation: Poor
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 2km/year (Similar ecology to *O.roylei*)
Status: UNMODELLABLE; **Included in final analysis:** X

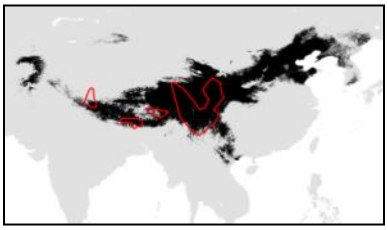
Model evaluation metric	
AUC	0.93
Omission rate	0.13
Sensitivity	0.87
Specificity	0.99
Proportion correct	0.99
Kappa	**0.52**
True Skill Statistic	0.86

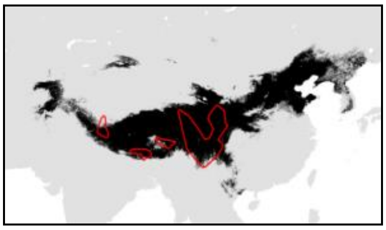
Summary: The Moupin pika's bioclimatic envelope is predicted to increase by 10% with a ~2° mean latitudinal polewards shift and a mean increase in elevation of ~370m driven by an increase in maximum elevation. 95% of the permutation importance of the model was contributed to by minimum precipitation (43.5%), maximum temperature (38.5%), temperature seasonality (7.7%), annual evapotranspiration (3.7%) and mean annual precipitation (3.1%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

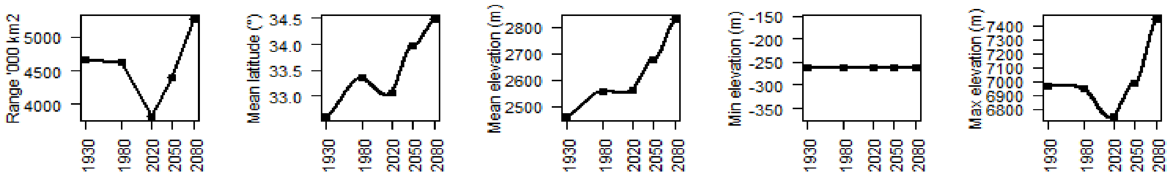

c) ~ 2020s (2010-2039)

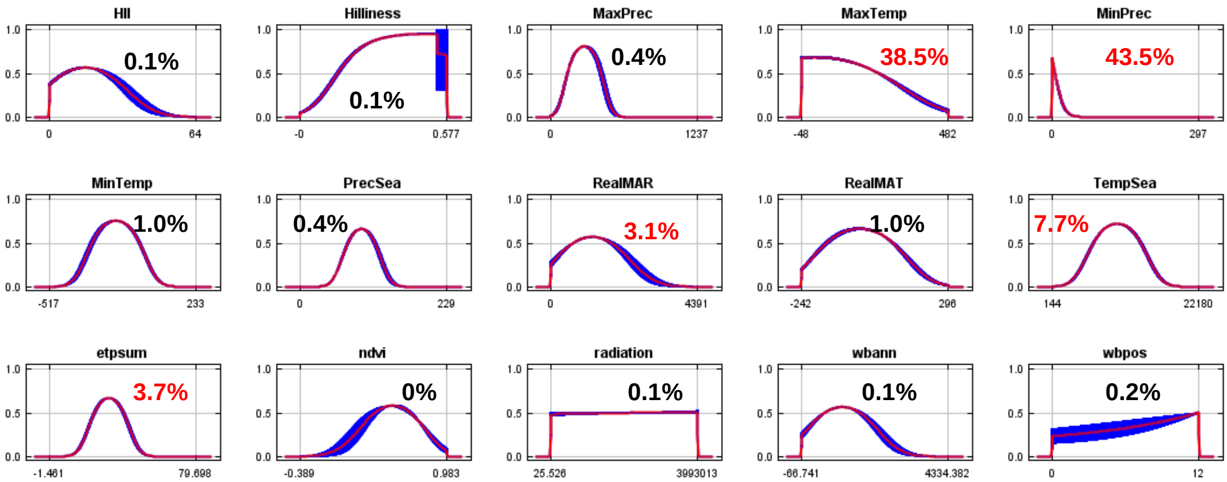

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Boyer, A.F. 2008)

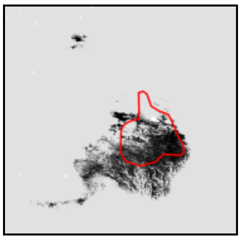


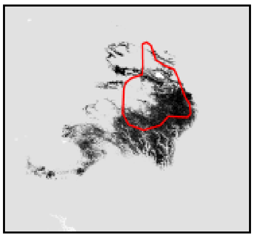


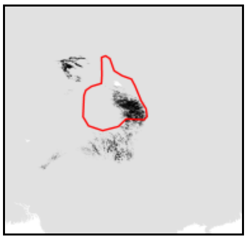
#63 – Thomas's pika (*Ochotona thomasi*)
n = 16
Expert: Andrew Smith, Arizona State University
Expert evaluation: Good
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 1km/year (Similar ecology to *O.koslowi*)
Status: MODELLABLE; **Included in final analysis:** √

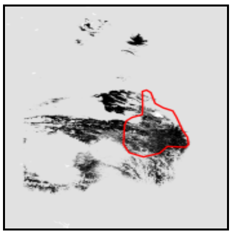
Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.58**
True Skill Statistic	0.99

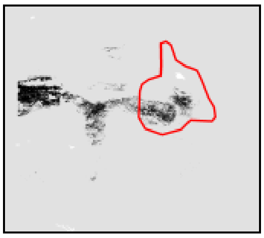
Summary: The Thomas's pika's bioclimatic envelope is predicted to decrease by 70% with a ~1.5° mean latitudinal polewards shift and a mean increase in elevation of ~590m driven by an increase in maximum and minimum elevation. 95% of the permutation importance of the model was contributed to by minimum precipitation (56.6%), mean annual temperature (23.4%), minimum temperature (14.2%) and evapotranspiration (2.8%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

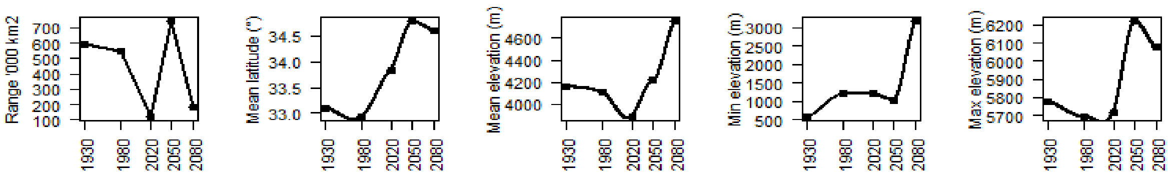

c) ~ 2020s (2010-2039)

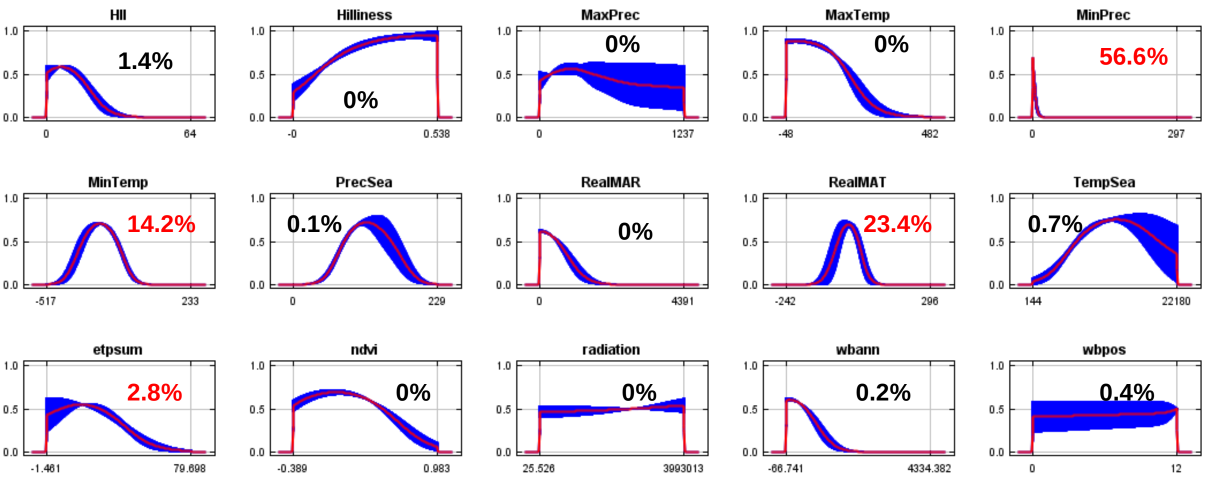

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Boyer, A.F. 2008)

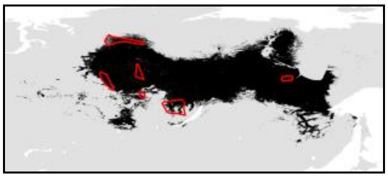




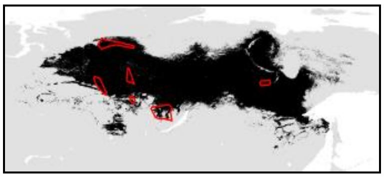
#64 – Turuchan pika (*Ochotona turuchanensis*)
n = 30
Expert: Andrey Lissovsky, Zoological Museum of Moscow State University
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 15km/year (Expert)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.93
Omission rate	0.13
Sensitivity	0.87
Specificity	0.99
Proportion correct	0.99
Kappa	**0.50**
True Skill Statistic	0.86

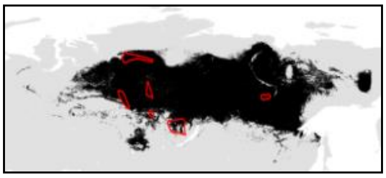
Summary: The Turuchan pika's bioclimatic envelope is predicted to increase by 50% with a ~2° mean latitudinal polewards shift and a mean increase in elevation of ~70m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by minimum temperature (21.6%), minimum precipitation (19.9%), human influence index (15.2%), annual evapotranspiration (10.9%).



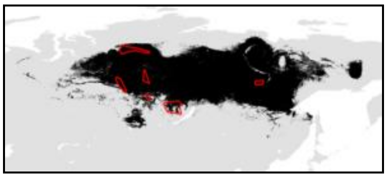
a) ~ **1930s** (1900-1949)



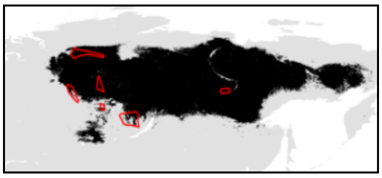
b) ~ **1980s** (1950-2000)



c) ~ **2020s** (2010-2039)



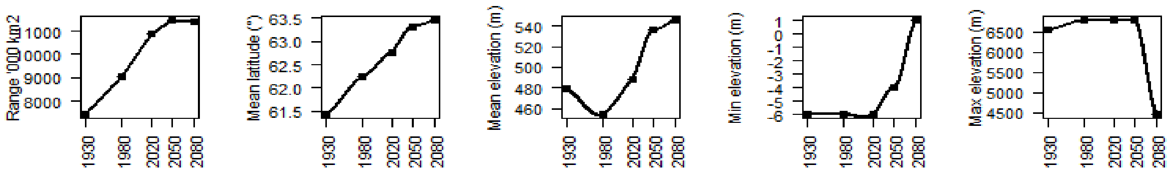
d) ~ **2050s** (2040-2069)

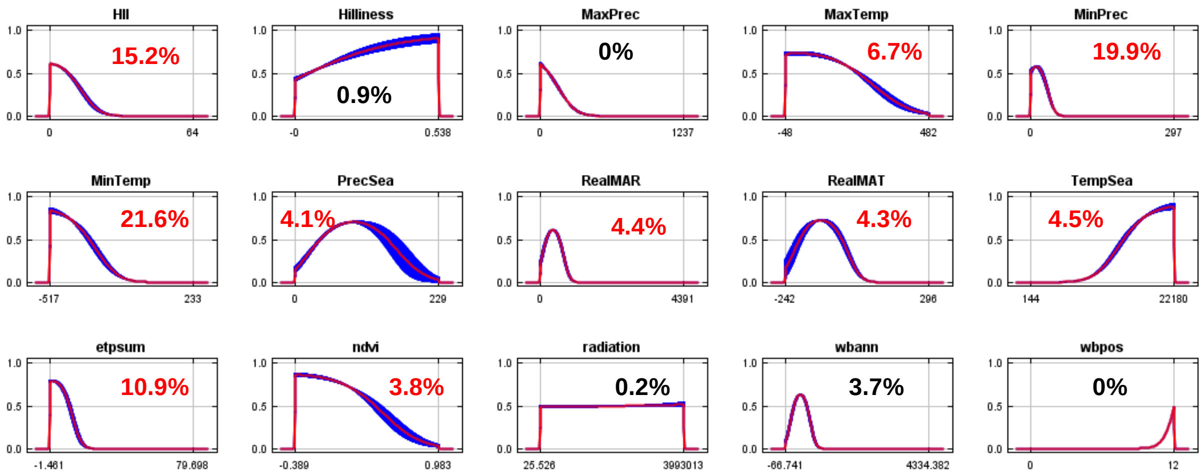


e) ~ **2080s** (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

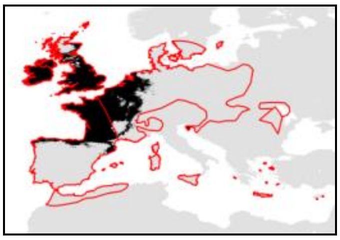




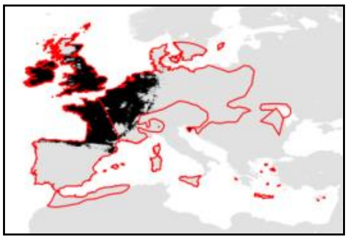
#65 – European rabbit (*Oryctolagus cunciculus*)
n = 22,712
Expert: Neil Reid, Queen's University Belfast
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 1km/year (Expert)
Status: UNMODELLABLE; **Included in final analysis:** X

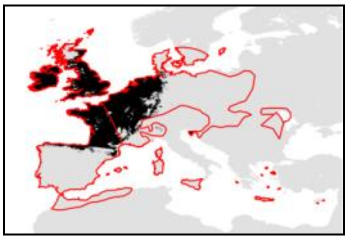
Model evaluation metric	
AUC	0.62
Omission rate	0.16
Sensitivity	0.84
Specificity	0.39
Proportion correct	0.62
Kappa	**0.23**
True Skill Statistic	0.23

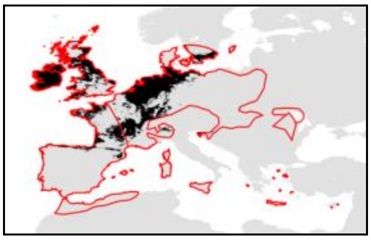
Summary: The European rabbit's bioclimatic envelope is predicted to increase by 30% with a ~2° mean latitudinal polewards shift and a mean decrease in elevation of ~10m. 95% of the permutation importance of the model was contributed to by annual evapotranspiration (21.1%), mean annual temperature (19.0%), minimum temperature (13.9%), annual water balance (12.3%), mean annual precipitation (11.2%), human influence index (9.8%), precipitation seasonality (7.6%) and normalised difference vegetation index (2.9%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

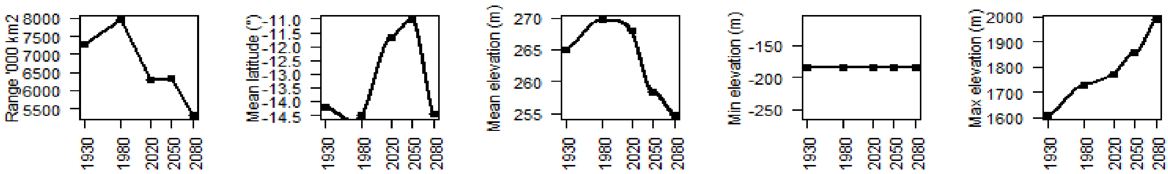

c) ~ 2020s (2010-2039)

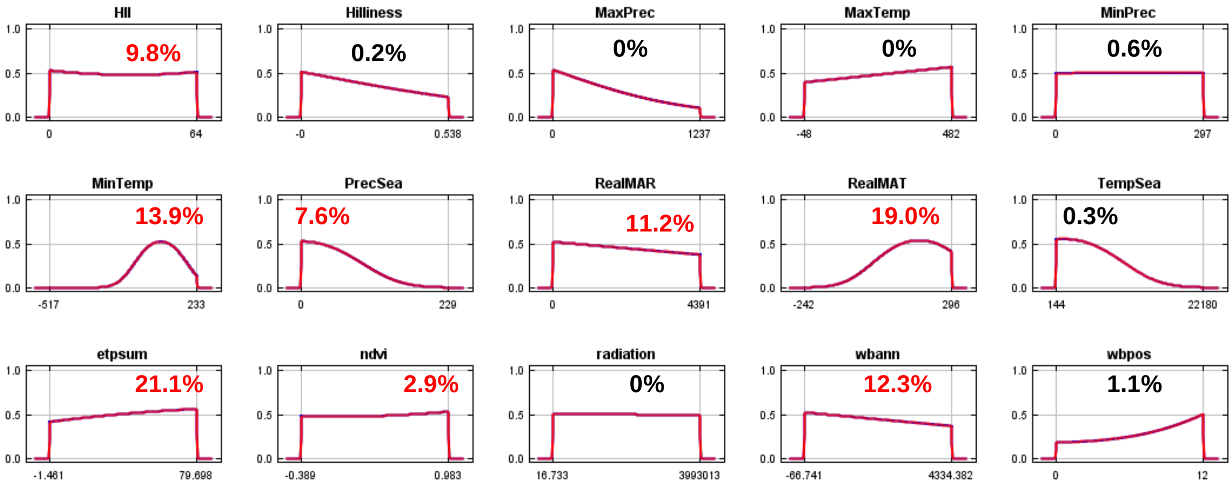

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Boyer, A.F. 2008)

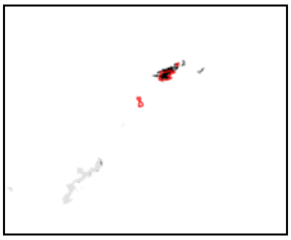


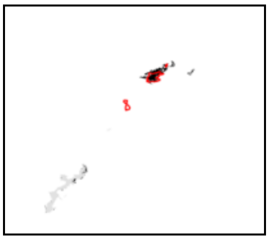


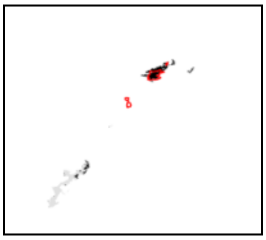
#66 – Amami rabbit (*Pentalagus furnessi*)
n = 9
Expert: Fumio Yamada, Forestry and Forest Products Research Institute, Japan
Expert evaluation: Good
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 0.01km/year (Expert)
Status: MODELLABLE; **Included in final analysis:** √

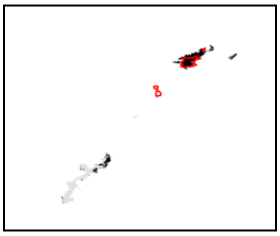
Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	0.99
Specificity	0.99
Proportion correct	0.99
Kappa	**0.95**
True Skill Statistic	0.99

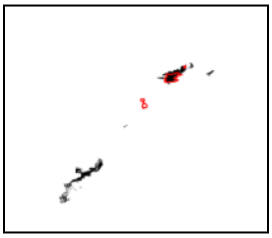
Summary: The Amami rabbit's bioclimatic envelope is predicted to increase by 150% with a ~1° mean latitudinal shift towards the Equator and a mean decrease in elevation of ~25m. 95% of the permutation importance of the model was contributed to by minimum temperature (97.3%), temperature seasonality (1.7%) and annual evapotranspiration (0.8%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

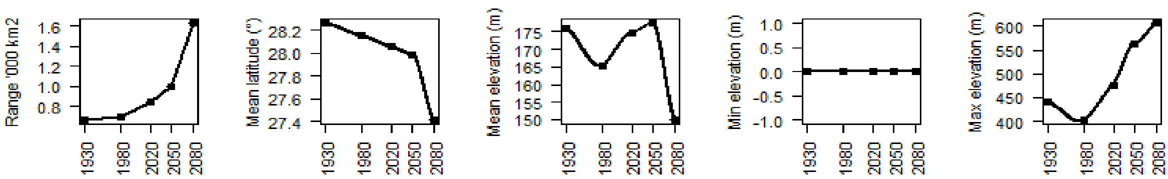

c) ~ 2020s (2010-2039)

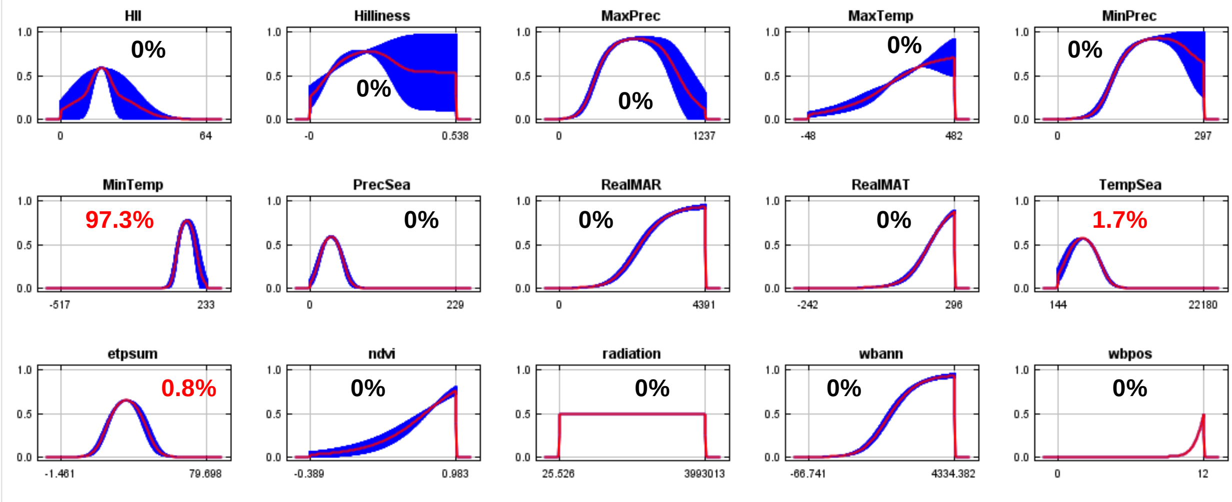

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Yamada, F & Sugimura, K. 2008)

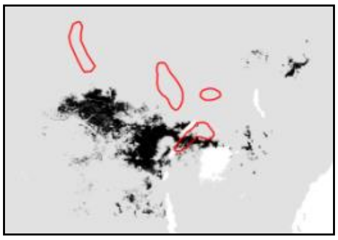


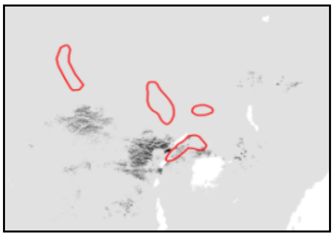


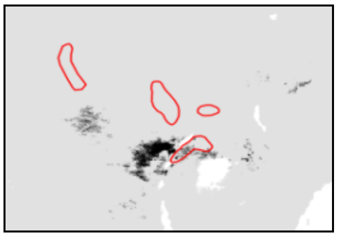
#67 – Bunyoro rabbit (*Poelagus marjorita*)
n = 8
Expert: David Happold, Australian National University
Expert evaluation: Poor
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 2km/year (Similar ecology to Pronolagus sp.)
Status: UNMODELLABLE; **Included in final analysis:** X

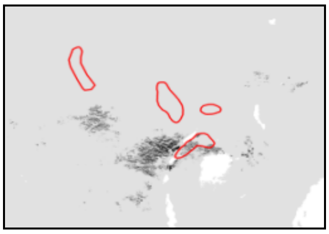
Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.89**
True Skill Statistic	0.99

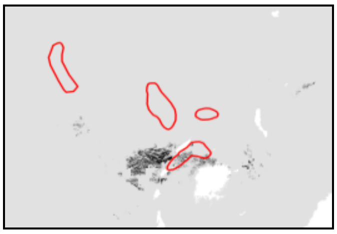
Summary: The Bunyoro rabbit's bioclimatic envelope is predicted to decrease by 90% with a ~1^{o} mean latitudinal shift towards the Equator and a mean increase in elevation of ~200m driven by an increase in minimum elevation.. 95% of the permutation importance of the model was contributed to by annual evapotranspiration (61.7%), temperature seasonality (31.4%) and number of months with a positive water balance (6.3%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

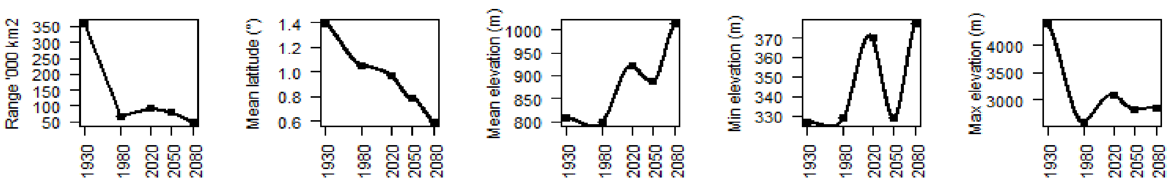

c) ~ 2020s (2010-2039)

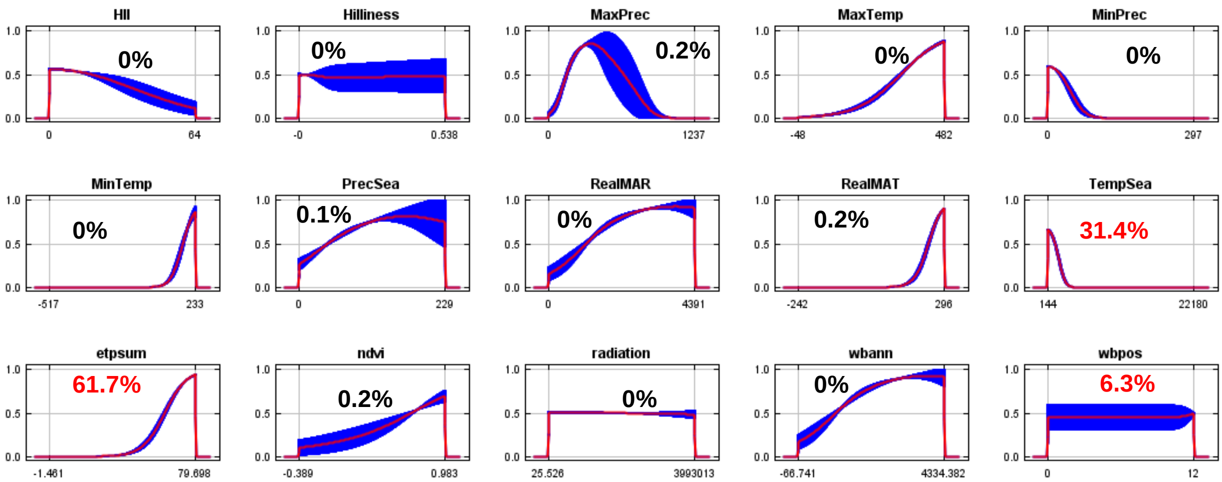

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Collins, K. & Smith, A.T. 2008)



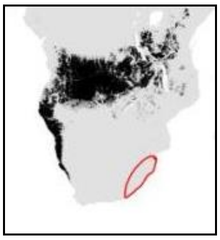


#68 – Greater red rock hare (*Pronolagus crassicaudatus*)
n = 7
Expert: Kai Collins, University of Pretoria
Expert evaluation: Poor
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 2km/year (Similar ecology to *P.randensis*)
Status: UNMODELLABLE; **Included in final analysis:** X

Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.98
Proportion correct	0.98
Kappa	**0.06**
True Skill Statistic	0.98

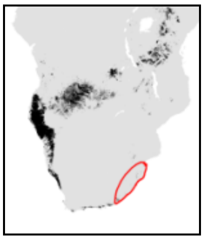
Summary: The Greater red rock hare's bioclimatic envelope is predicted to decrease by 65% with a ~3° mean latitudinal polewards shift and a mean decrease in elevation of ~20m driven by a decrease in maximum elevation. 95% of the permutation importance of the model was contributed to by human influence index (31.7%), temperature seasonality (29.3%) solar radiation (16.9%) and minimum precipitation (18.3%).

a) ~ 1930s (1900-1949)

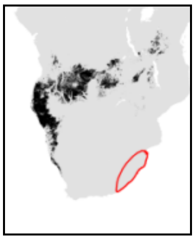


b) ~ 1980s (1950-2000)

c) ~ 2020s (2010-2039)



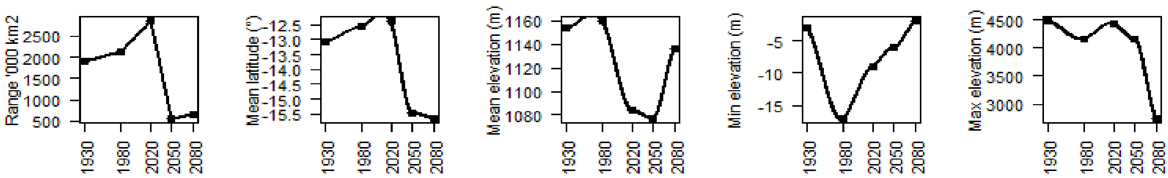
d) ~ 2050s (2040-2069)

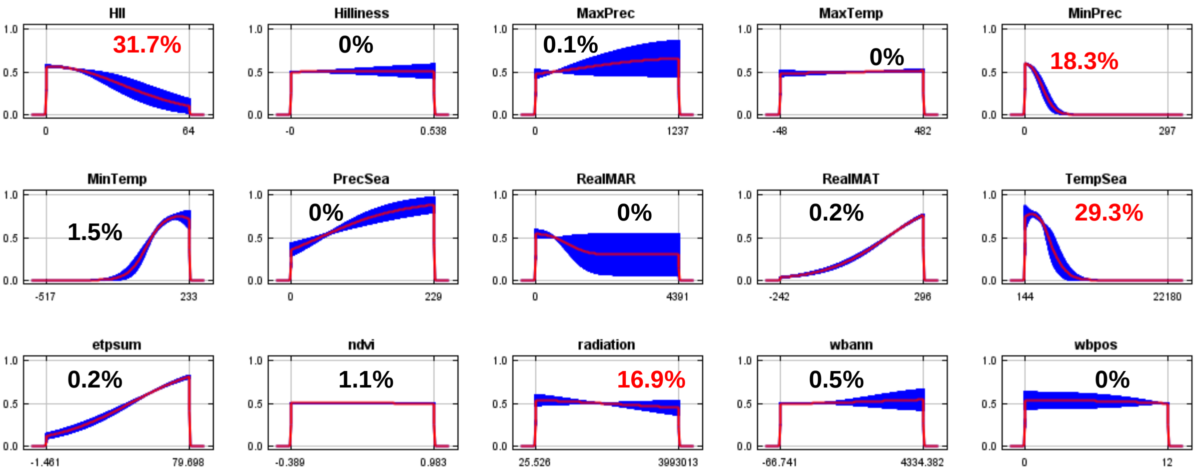


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Matthee, C., *et al*. 2008)

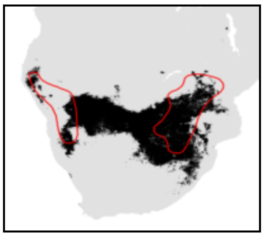




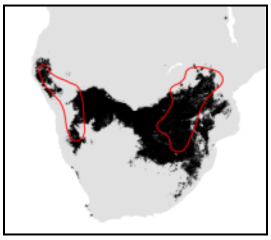
#69 – Jameson’s red rock hare (*Pronolagus randensis*)
n = 27
Expert: Kai Collins, University of Pretoria
Expert evaluation: Poor
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 2km/year (Expert)
Status: UNMODELLABLE; **Included in final analysis:** X

Model evaluation metric	
AUC	0.98
Omission rate	0.04
Sensitivity	0.96
Specificity	0.99
Proportion correct	0.99
Kappa	**0.55**
True Skill Statistic	0.96

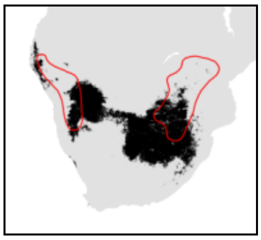
Summary: The Jameson’s red rock hare’s bioclimatic envelope is predicted to decrease by 70% with a ~5° mean latitudinal polewards shift and a mean increase in elevation of ~325m driven by an increase in maximum and minimum elevation. 95% of the permutation importance of the model was contributed to by mean annual temperature (46.2%), maximum temperature (23.3%), minimum precipitation (16.3%), minimum temperature (7.0%) and temperature seasonality (1.4%).



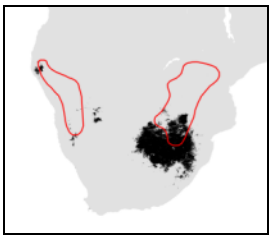
a) ~ 1930s (1900-1949)



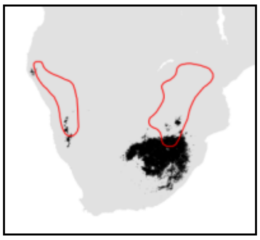
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



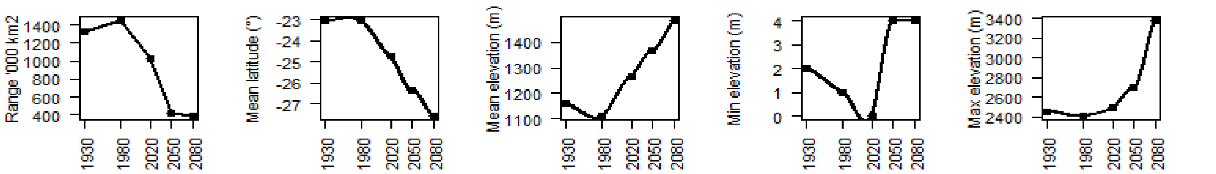
d) ~ 2050s (2040-2069)

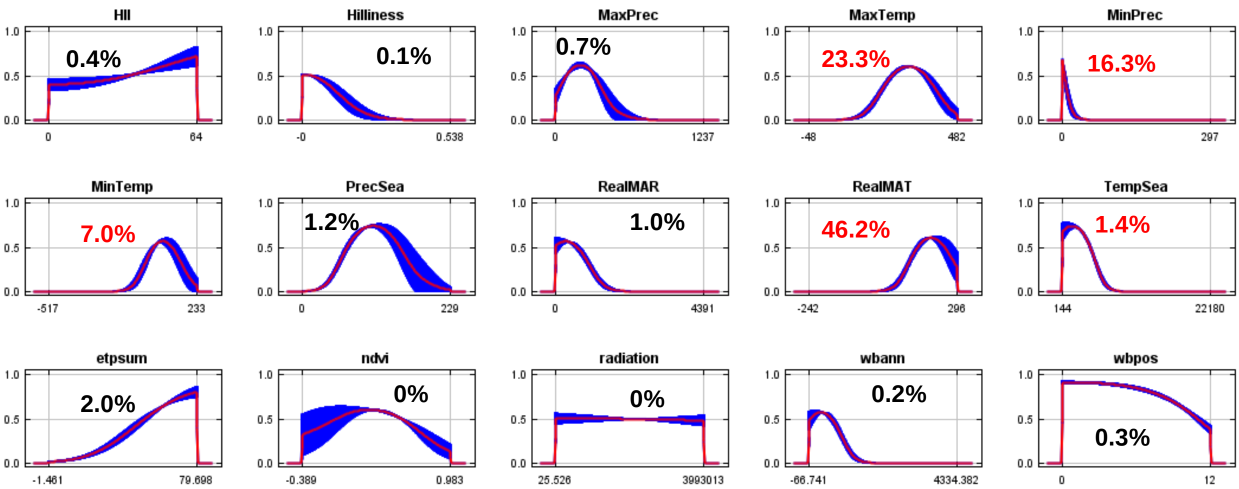


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Matthee, C., *et al*. 2008)

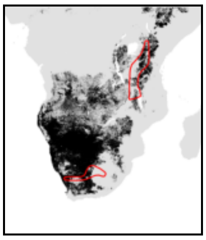


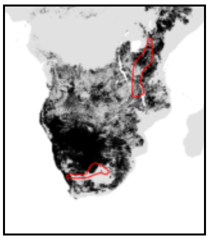


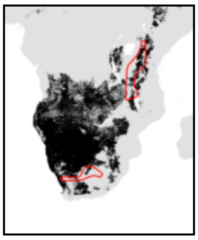
#70 – Smith's red rock hare (*Pronolagus rupestris*)
n = 9
Expert: Kai Collins, University of Pretoria
Expert evaluation: Poor
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 2km/year (Similar ecology to *P.randensis*)
Status: UNMODELLABLE; **Included in final analysis:** X

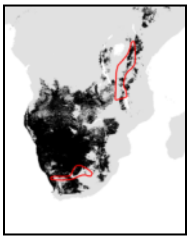
Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.98
Proportion correct	0.98
Kappa	**0.07**
True Skill Statistic	0.98

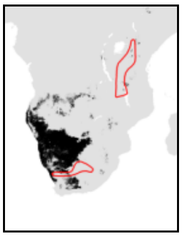
Summary: The Smith's red rock hare's bioclimatic envelope is predicted to decrease by 60% with a ~5° mean latitudinal polewards shift and a mean decrease in elevation of ~60m. 95% of the permutation importance of the model was contributed to by temperature seasonality (44.0%), minimum precipitation (18.5%), mean annual precipitation (18.3%), normalised difference vegetation index (6.3%), human influence index (5.2%) and minimum temperature (3.4%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

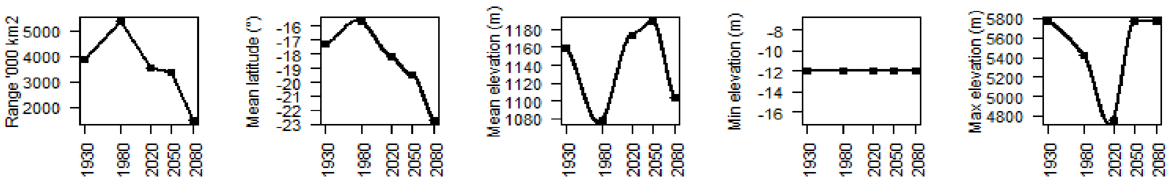

c) ~ 2020s (2010-2039)

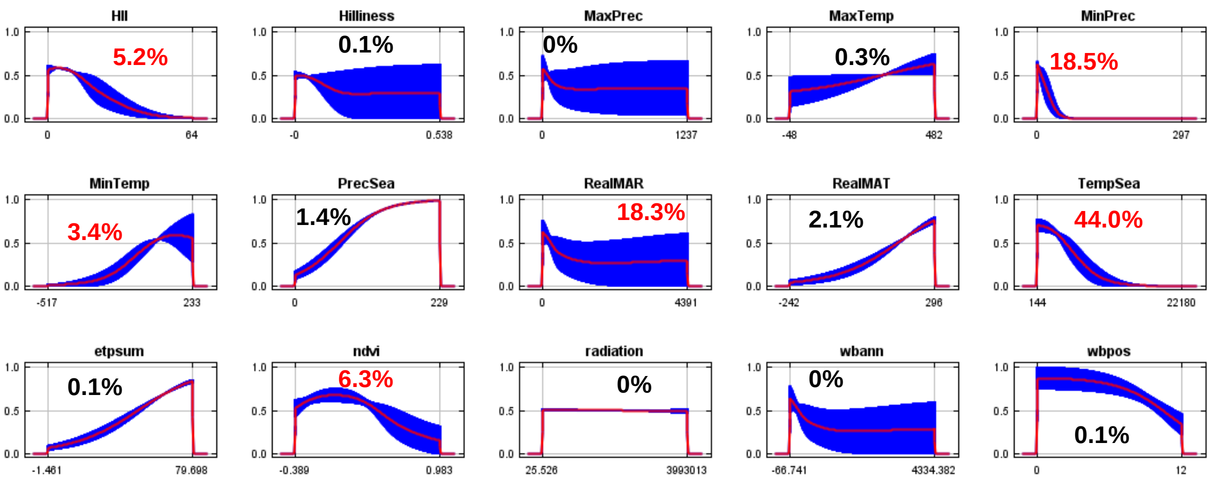

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Boyer, A.F. 2008)



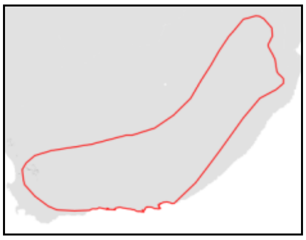


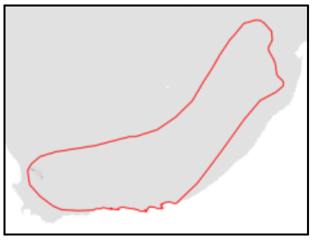
#71 – Hewitt's red rock hare (*Pronolagus saundersiae*)
n = 9
Expert: Kai Collins, University of Pretoria
Expert evaluation: Poor
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 2km/year (Similar ecology to *P.randensis*)
Status: UNMODELLABLE; **Included in final analysis:** X

Model evaluation metric	
AUC	1.00
Omission rate	0.00
Sensitivity	1.00
Specificity	1.00
Proportion correct	1.00
Kappa	**1.00**
True Skill Statistic	1.00

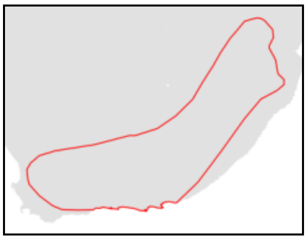
Summary: The Hewitt's red rock hare's bioclimatic envelope is predicted to decrease by 100% with a ~1° mean latitudinal polewards shift and a mean increase in elevation of ~15m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by temperature seasonality (28.7%), precipitation seasonality (24.3%), maximum temperature (18.0%), annual evapotranspiration (16.0%), human influence index (5.6%), minimum temperature (1.9%) and minimum precipitation (1.6%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

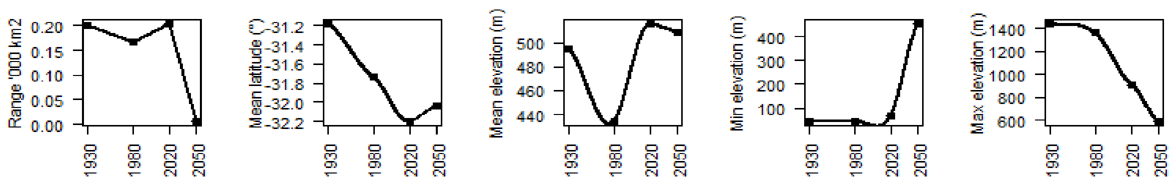

c) ~ 2020s (2010-2039)

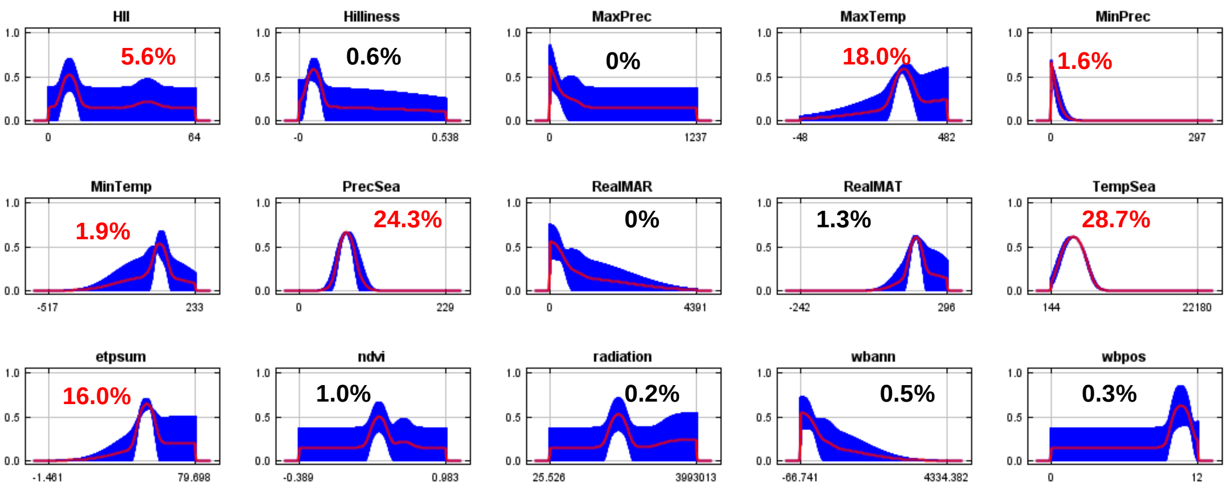

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Johnston, C.H. 2008)

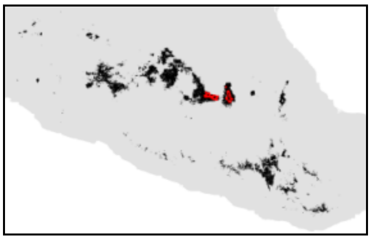


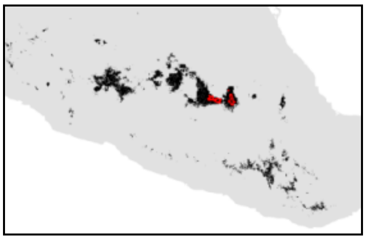


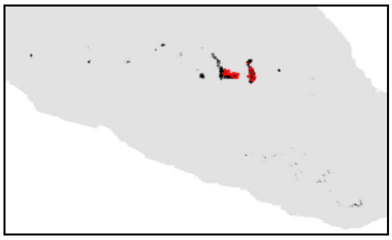
#72 – Volcano rabbit (*Romerolagus diazi*)
n = 31
Expert: Jose Antonio Martinez-Garcia, Universidad Autónoma Metropolitana, Mexico
Expert evaluation: Poor
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 0.01km/year (Island species, range 0.01-0.01)
Status: UNMODELLABLE; **Included in final analysis:** X

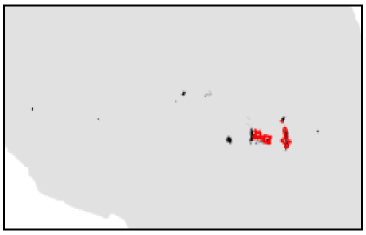
Model evaluation metric	
AUC	0.95
Omission rate	0.10
Sensitivity	0.90
Specificity	0.99
Proportion correct	0.99
Kappa	**0.79**
True Skill Statistic	0.90

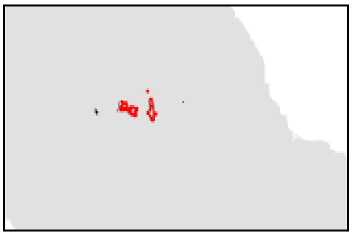
Summary: The Volcano rabbit's bioclimatic envelope is predicted to decrease by 100% with a ~0.2° mean latitudinal polewards shift and a mean increase in elevation of ~1500m driven by increases in minimum and maximum elevation. 95% of the permutation importance of the model was contributed to by temperature seasonality (75.2%), precipitation seasonality (16.2%) and minimum temperature (6.8%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

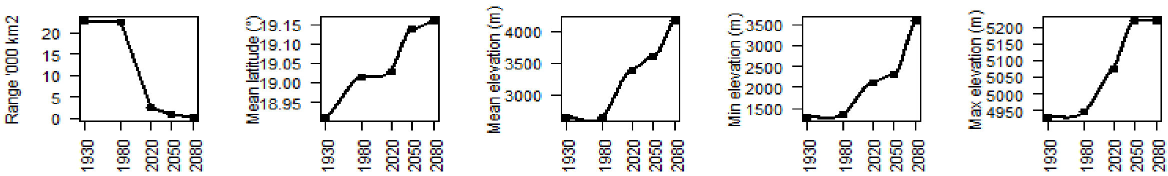

c) ~ 2020s (2010-2039)

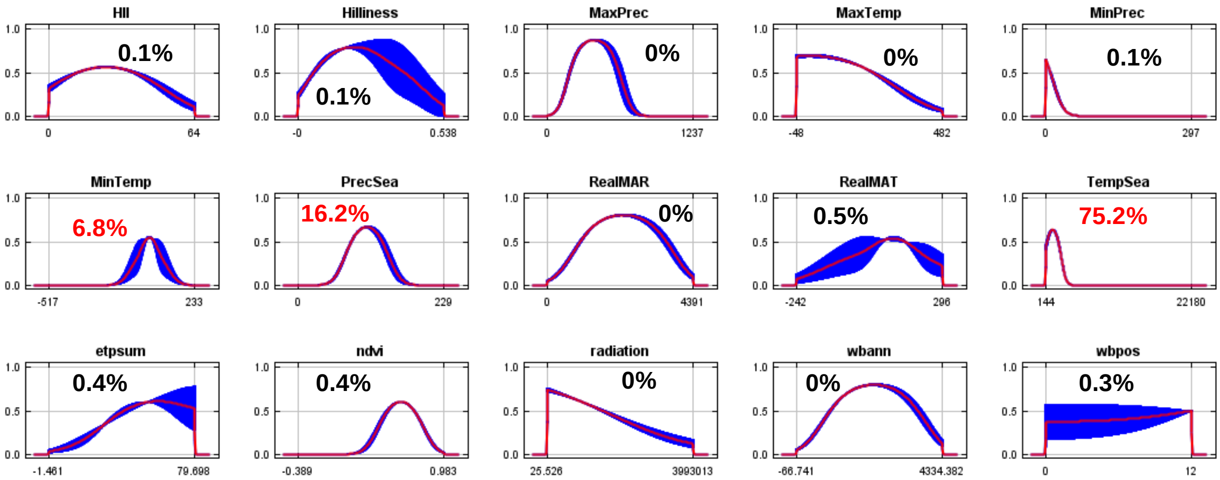

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Malpica, F.J.,*et al*. 2008)

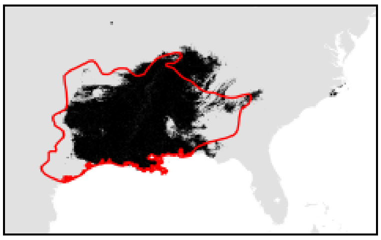


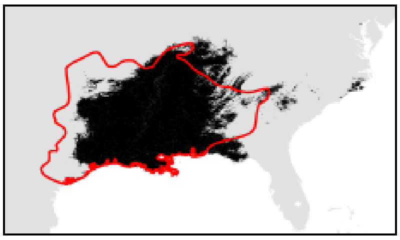


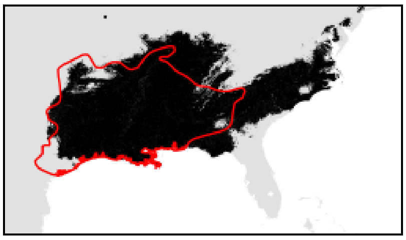
#73 – Swamp rabbit (*Sylvilagus aquaticus*)
n = 66
Expert: Robert Kissell, Memphis State University
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 25km/year (Expert)
Status: MODELLABLE; **Included in final analysis:** √

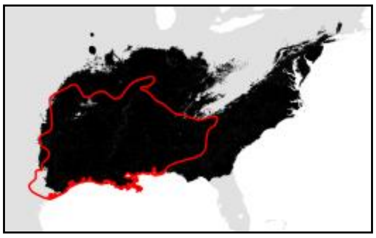
Model evaluation metric	
AUC	0.95
Omission rate	0.09
Sensitivity	0.91
Specificity	0.99
Proportion correct	0.99
Kappa	**0.76**
True Skill Statistic	0.91

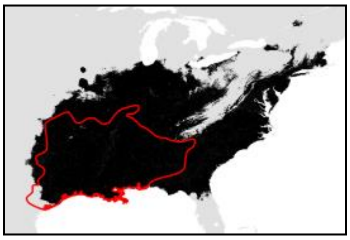
Summary: The Swamp rabbit's bioclimatic envelope is predicted to increase by 200% with a ~2° mean latitudinal polewards shift and a mean increase in elevation of ~60m driven by an increase in maximum elevation. 95% of the permutation importance of the model was contributed to by temperature seasonality (38.1%), mean annual temperature (36.7%), mean annual precipitation (12.7%), precipitation seasonality (4.7%) and minimum precipitation (3.6%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

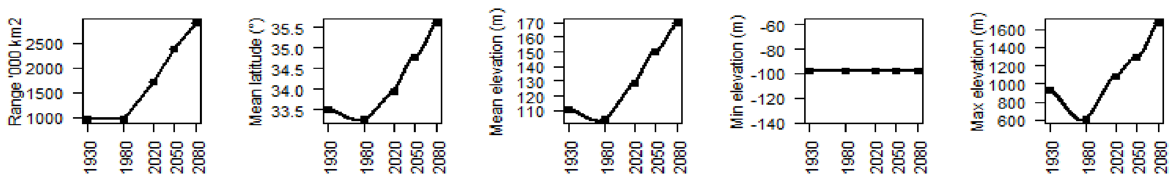

c) ~ 2020s (2010-2039)

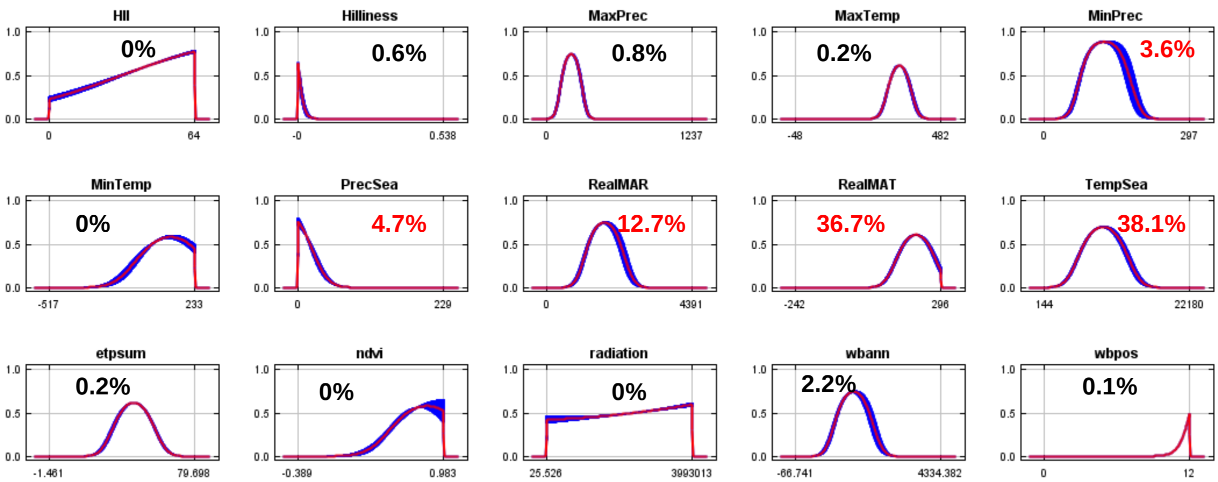

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Boyer, A.F. 2008)

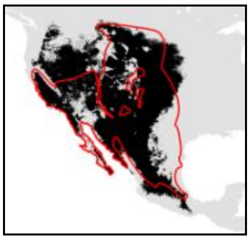




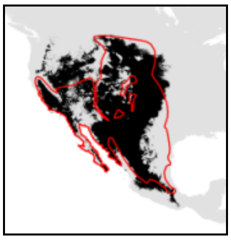
#74 – Desert cottontail (*Sylvilagus audubonii*)
n = 1040
Expert: Consuelo Lorenzo, Departamento Conservación de la Biodiversidad, Chiapas
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 7.5km/year (Similar ecology to *S.palustris*)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.94
Omission rate	0.08
Sensitivity	0.92
Specificity	0.96
Proportion correct	0.96
Kappa	**0.78**
True Skill Statistic	0.88

Summary: The Desert cottontail's bioclimatic envelope is predicted to increase by 5% with a ~1° mean latitudinal polewards shift and a mean increase in elevation of ~30m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by precipitation seasonality (36.6%), annual evapotranspiration (27.1%), mean annual temperature (13.6%), minimum temperature (9.1%), maximum temperature (3.0%), annual water balance (2.1%), minimum precipitation (1.9%) and human influence index (1.7%).

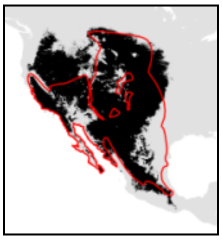


a) ~ 1930s (1900-1949)

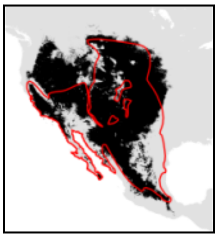


b) ~ 1980s (1950-2000)

c) ~ 2020s (2010-2039)



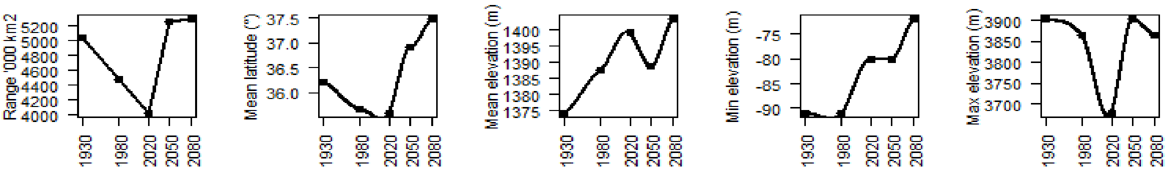
d) ~ 2050s (2040-2069)

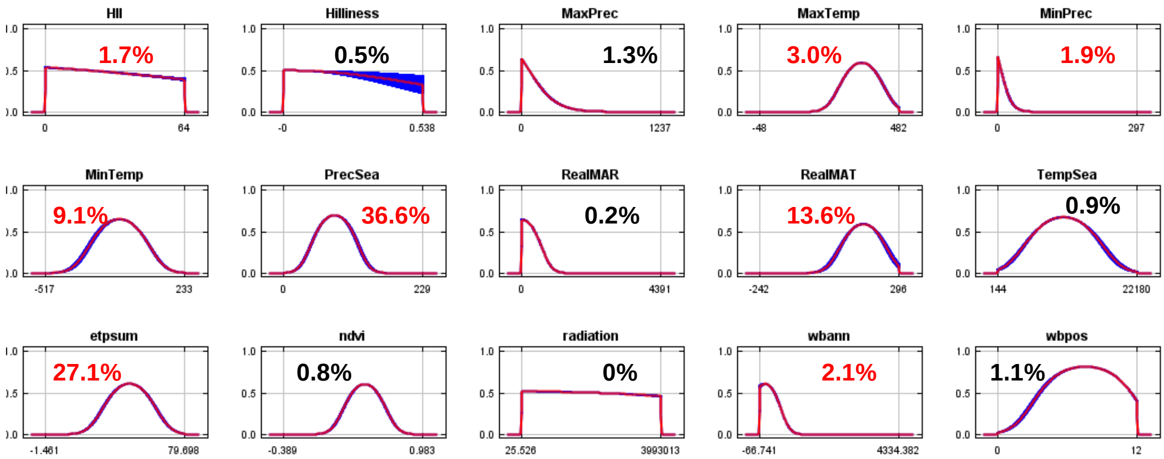


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Romero Malpica, F.J. & Rangel Cordero, H. 2008)

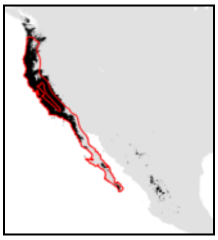


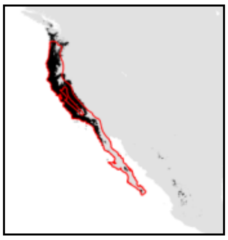


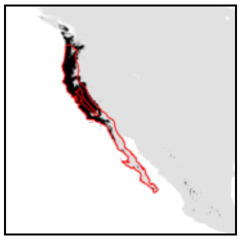
#75 – Brush rabbit (*Sylvilagus bachmani*)
n = 263
Expert: Consuelo Lorenzo, Departamento Conservación de la Biodiversidad, Chiapas
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 3km/year (Similar ecology to *S.transitionalis*)
Status: MODELLABLE; **Included in final analysis:** √

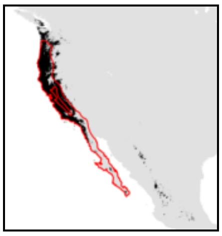
Model evaluation metric	
AUC	0.96
Omission rate	0.08
Sensitivity	0.92
Specificity	0.99
Proportion correct	0.99
Kappa	**0.89**
True Skill Statistic	0.91

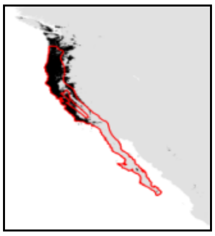
Summary: The Brush rabbit's bioclimatic envelope is predicted to decrease by 15% with a ~3° mean latitudinal polewards shift and a mean decrease in elevation of ~10m. 95% of the permutation importance of the model was contributed to by mean annual temperature (31.5%), minimum precipitation (24.5%), precipitation seasonality (14.4%), mean annual precipitation (7.1%), annual water balance (6.4%), minimum temperature (5.1%), normalised difference vegetation index (4.1%) and temperature seasonality (2.7%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

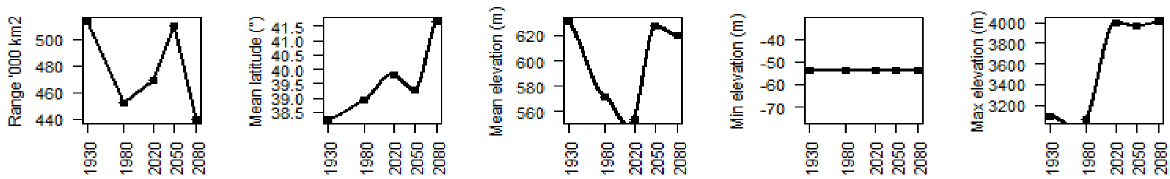

c) ~ 2020s (2010-2039)

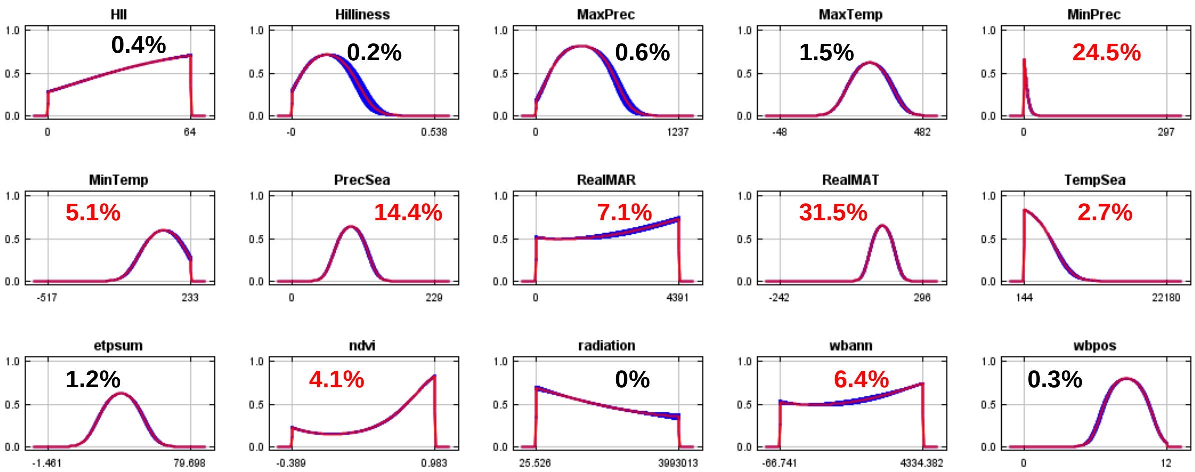

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Romero Malpica, F.J.*et al*. 2008)

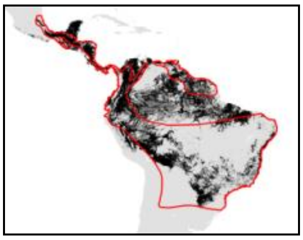


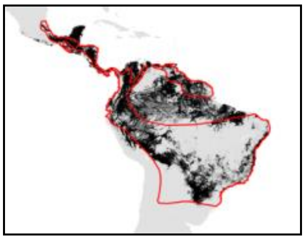


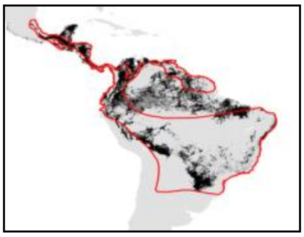
#76 – Forest rabbit (*Sylvilagus brasiliensis*)
n = 181
Expert: Jorge Salazar-Bravo, Texas Tech University
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 7.5km/year (Similar ecology to *S.palustris*)
Status: MODELLABLE; **Included in final analysis:** √

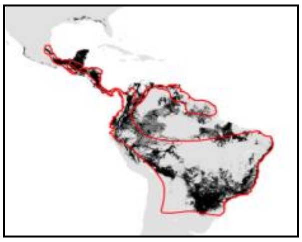
Model evaluation metric	
AUC	0.95
Omission rate	0.10
Sensitivity	0.90
Specificity	0.99
Proportion correct	0.99
Kappa	**0.73**
True Skill Statistic	0.89

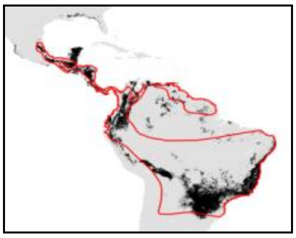
Summary: The Forest rabbit's bioclimatic envelope is predicted to decrease by 50% with a ~6° mean latitudinal polewards shift and a mean increase in elevation of ~210m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by annual evapotranspiration (71.4%), temperature seasonality (11.6%), normalised difference vegetation index (4.9%) and minimum temperature (4.6%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

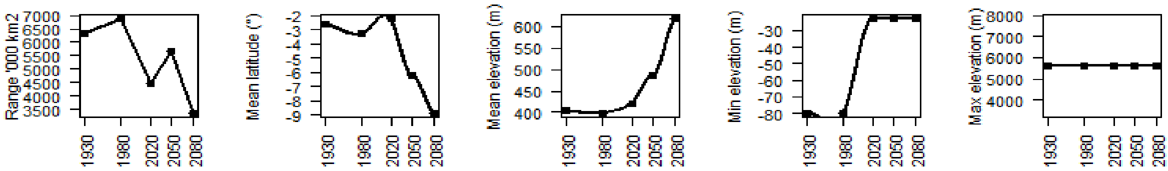

c) ~ 2020s (2010-2039)

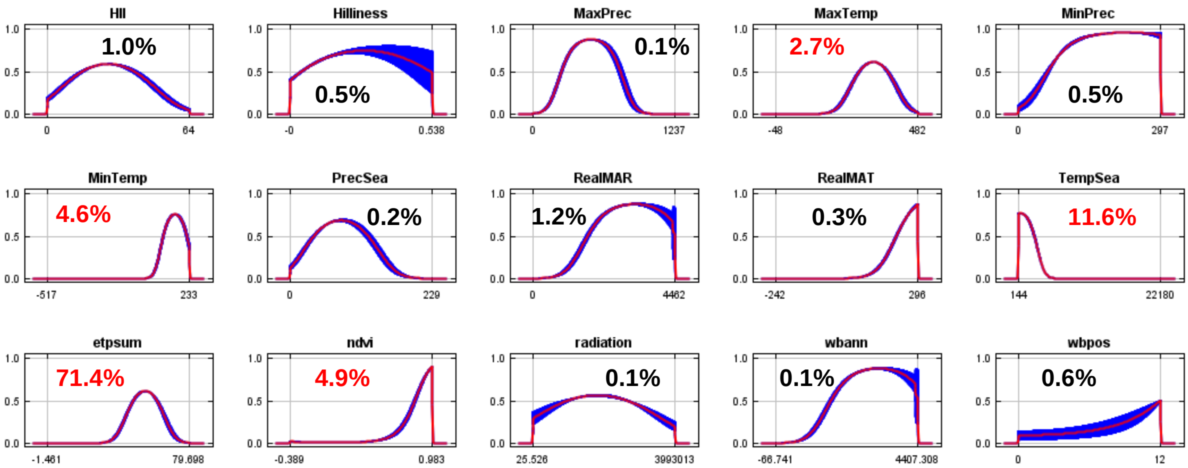

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Romero Malpica, F.J. & Rangel Cordero, H. 2008)

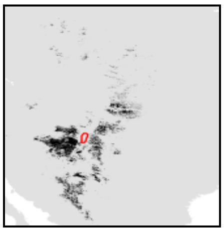




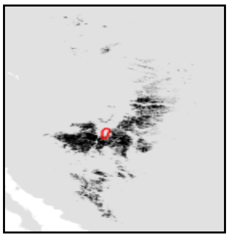
#77 – Manzano mountain cottontail (*Sylvilagus cognatus*)
n = 7
Expert: Jennifer Frey, New Mexico State University
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 0.01km/year (Similar ecology to *R.diazi*)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.52**
True Skill Statistic	0.99

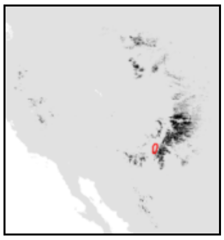
Summary: The Manzano mountain cottontail's bioclimatic envelope is predicted to decrease by 90% with a ~2^{o} mean latitudinal polewards shift and a mean increase in elevation of ~230m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by annual water balance (40.8%), minimum temperature (21.7%), precipitation seasonality (11.3%), mean annual temperature (8.2%), temperature seasonality (6.1%), minimum precipitation (4.3%) and mean annual precipitation (2.6%).



a) ~ 1930s (1900-1949)



b) ~ 1980s (1950-2000)



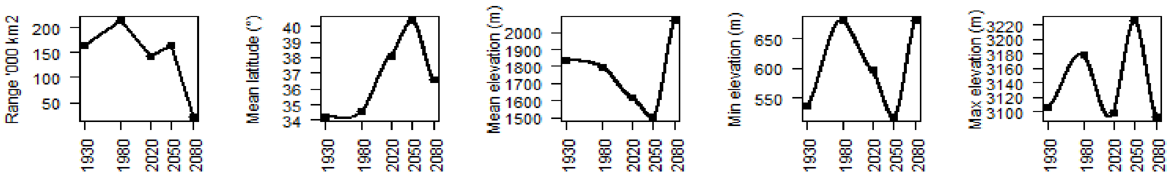
c) ~ 2020s (2010-2039)

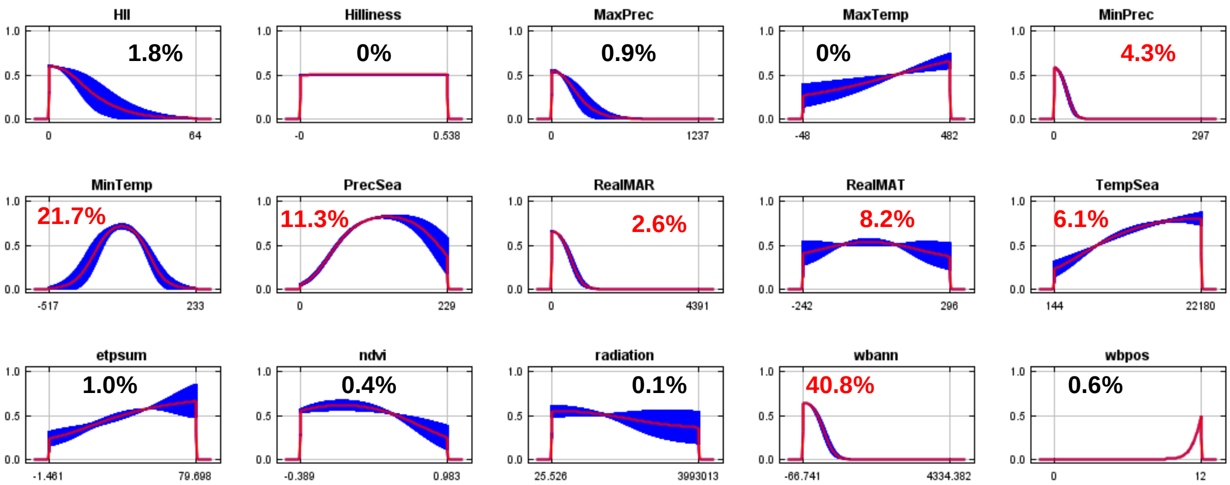
d) ~ 2050s (2040-2069)

e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Boyer, A. F. 2008)

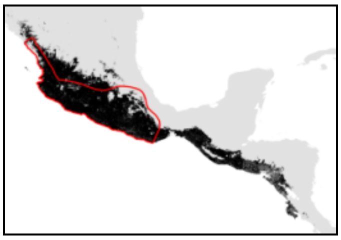


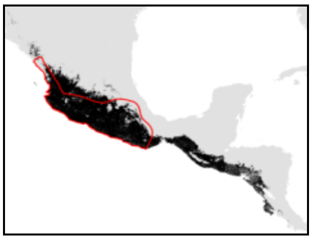


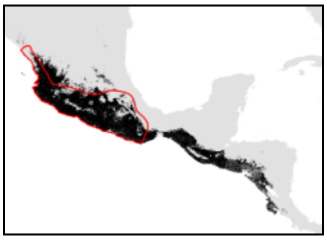
#78 – Mexican cottontail (*Sylvilagus cunicularius*)
n = 76
Expert: Jorge Vazquez, Laboratorio de Ecología del Comportamiento, UAT-UNAM
Expert evaluation: Medium
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 7.5km/year (Similar ecology to *S.palustris*)
Status: MODELLABLE; **Included in final analysis:** √

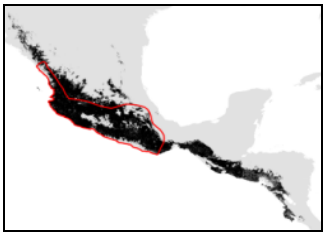
Model evaluation metric	
AUC	0.95
Omission rate	0.10
Sensitivity	0.90
Specificity	0.99
Proportion correct	0.99
Kappa	**0.73**
True Skill Statistic	0.89

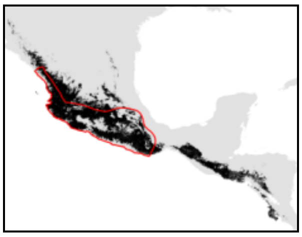
Summary: The Mexican cottontail's bioclimatic envelope is predicted to decrease by 15% with a ~0.5° mean latitudinal polewards shift and a mean increase in elevation of ~200m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by temperature seasonality (48.3%), precipitation seasonality (42.8%), normalised difference vegetation index (3.5%) and minimum temperature (2.2%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

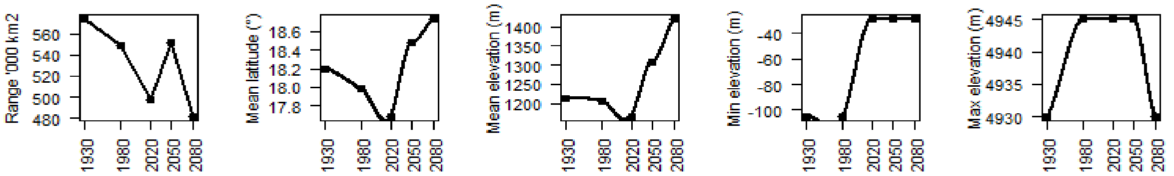

c) ~ 2020s (2010-2039)

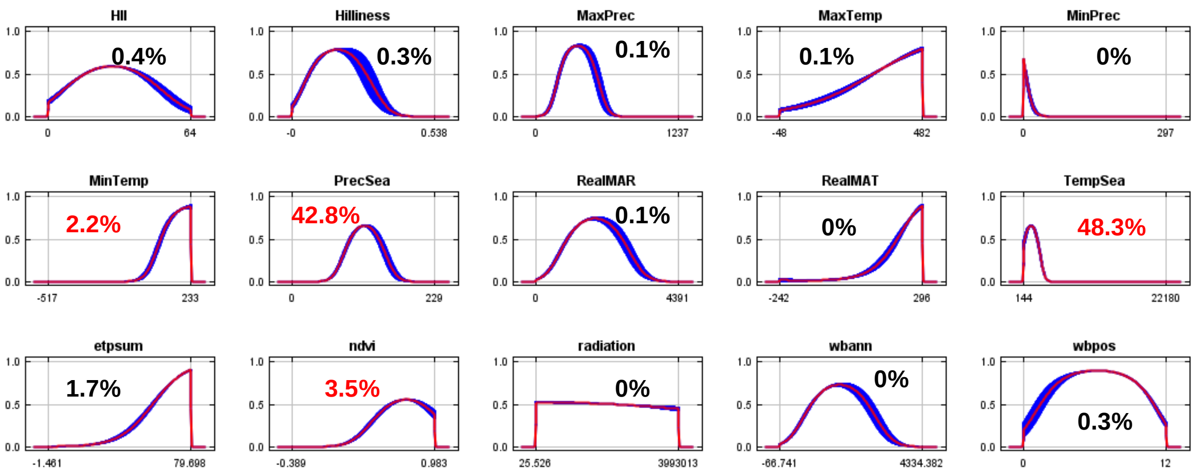

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Romero Malpica, F.J. & Rangel Cordero, H. 2008)

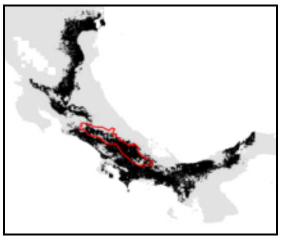


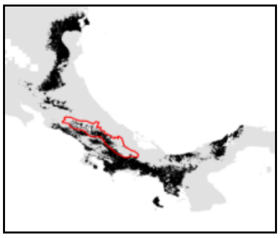


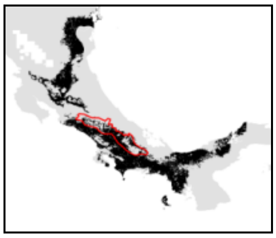
#79 – Dice's cottontail (*Sylvilagus dicei*)
n = 8
Expert: Jan Schipper, Arizona State University
Expert evaluation: Poor
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 0.01km/year (Similar ecology to *S.cognatus*)
Status: UNMODELLABLE; **Included in final analysis:** X

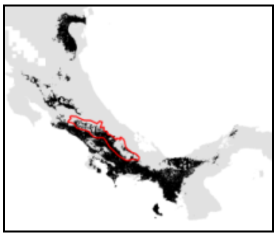
Model evaluation metric	
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.73**
True Skill Statistic	0.99

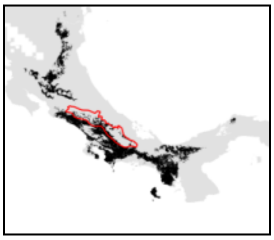
Summary: The Dice's cottontail's bioclimatic envelope is predicted to decrease by 50% with a ~1° mean latitudinal shift towards the Equator and a mean decrease in elevation of ~50m driven by a decrease in maximum elevation. 95% of the permutation importance of the model was contributed to by temperature seasonality (93.7%) and annual water balance (2.6%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

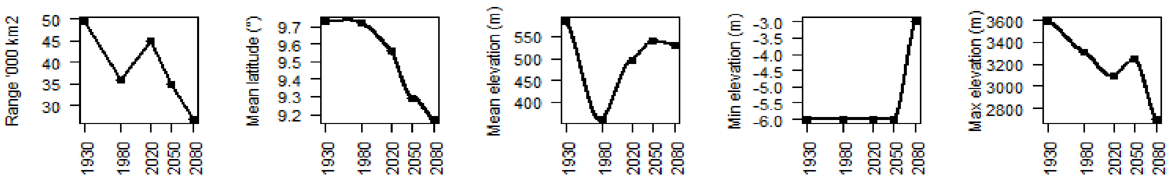

c) ~ 2020s (2010-2039)

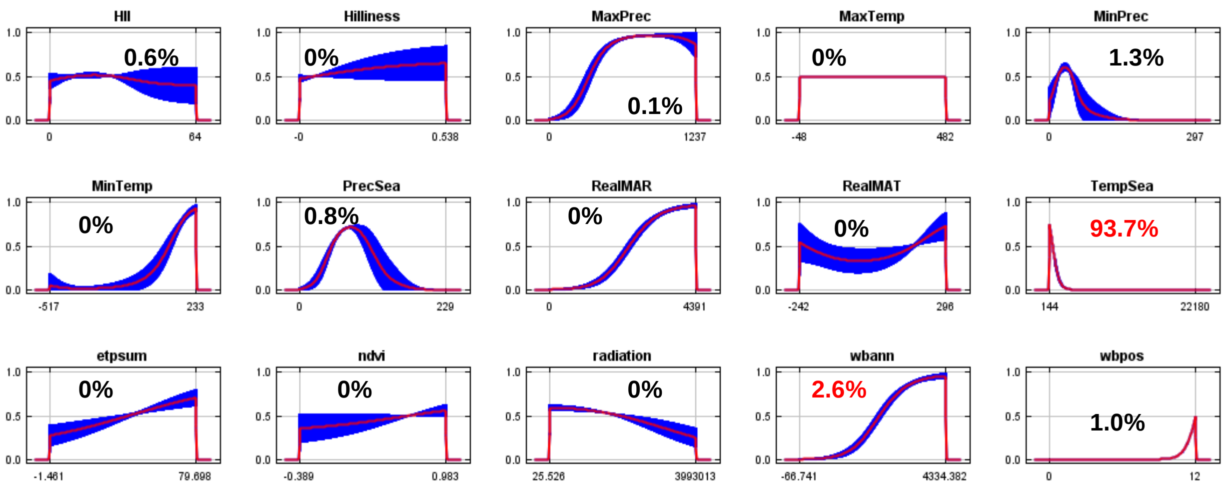

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Boyer, A.F. 2008)

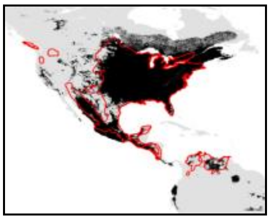


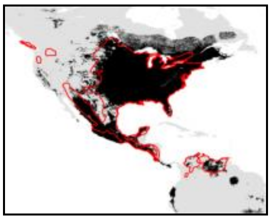


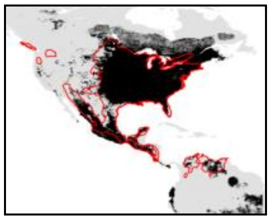
#80 – Eastern cottontail (*Sylvilagus floridanus*)
n = 1104
Expert: Jorge Vazquez, Laboratorio de Ecología del Comportamiento, UAT-UNAM
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 7.5km/year (Similar ecology to *S.palustris*)
Status: MODELLABLE; **Included in final analysis:** √

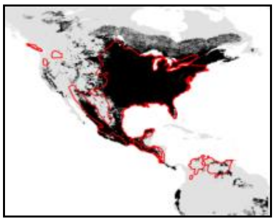
Model evaluation metric	
AUC	0.92
Omission rate	0.09
Sensitivity	0.91
Specificity	0.93
Proportion correct	0.93
Kappa	**0.69**
True Skill Statistic	0.84

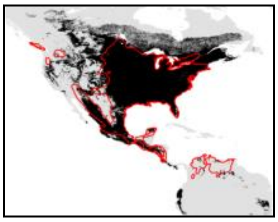
Summary: The Eastern cottontail's bioclimatic envelope is predicted to increase by 20% with a ~2^{o} mean latitudinal polewards shift and a mean increase in elevation of ~90m driven by an increase in minimum and maximum elevation. 95% of the permutation importance of the model was contributed to by annual evapotranspiration (29.5%), precipitation seasonality (26.2%), minimum temperature (11.5%), temperature seasonality (8.5%), minimum precipitation (8.1%), maximum temperature (3.3%), normalised difference vegetation index (2.9%), maximum precipitation (2.8%) and annual water balance (2.3%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

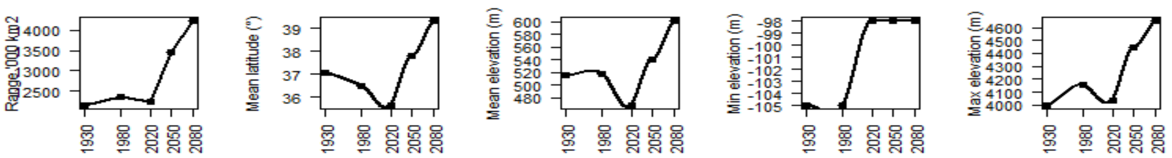

c) ~ 2020s (2010-2039)

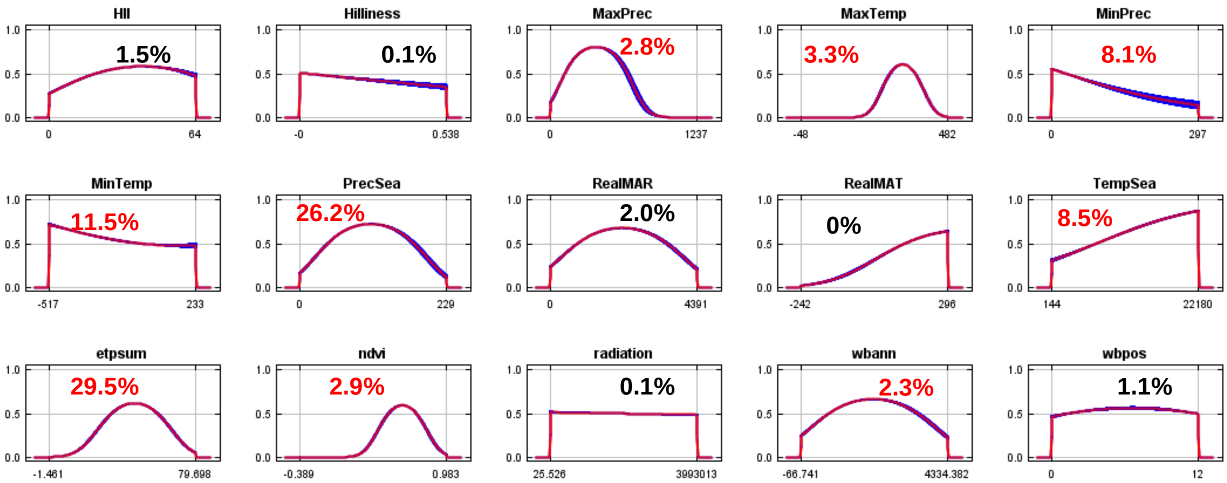

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Romero Malpica, F.J. & Rangel Cordero, H. 2008)



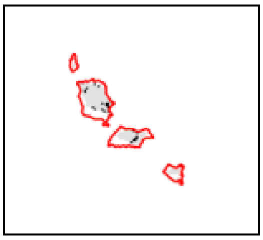


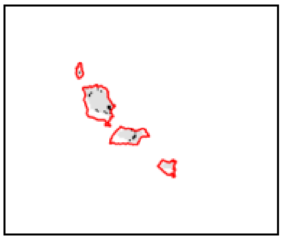
#81 – Tres Marias cottontail (*Sylvilagus graysoni*)
n = 6
Expert: Consuelo Lorenzo, Departamento Conservación de la Biodiversidad, Chiapas
Expert evaluation: Good
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 0.01km/year (Island species, range 0.01-0.01)
Status: MODELLABLE; **Included in final analysis:** √

Model evaluation metric	
AUC	1.00
Omission rate	0.00
Sensitivity	1.00
Specificity	1.00
Proportion correct	1.00
Kappa	**1.00**
True Skill Statistic	1.00

Summary: The Tres Marias cottontail's bioclimatic envelope is predicted to decrease by 20% with a no latitudinal polewards shift and a mean increase in elevation of ~25m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by human influence index (56.0%), minimum precipitation (32.4%), precipitation seasonality (5.2%) and annual evapotranspiration (3.2%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

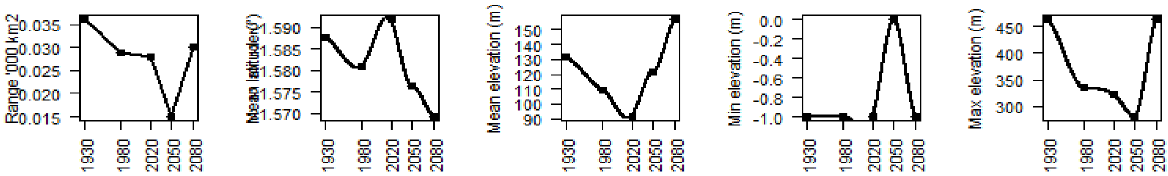

c) ~ 2020s (2010-2039)

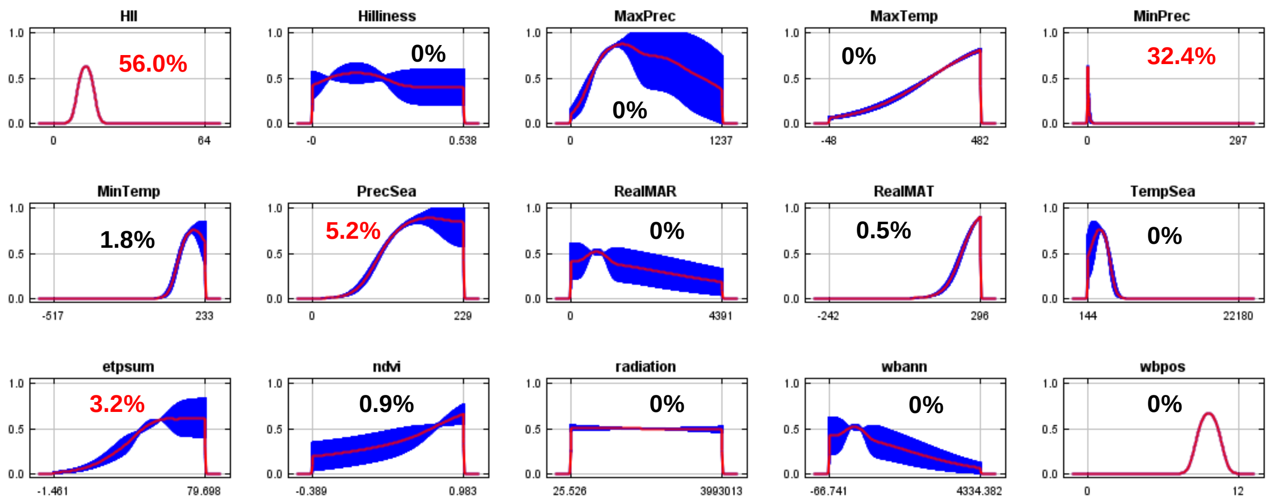

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Romero Malpica, F.J. & Rangel Cordero, H. 2008)

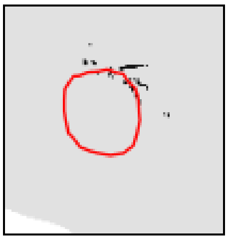


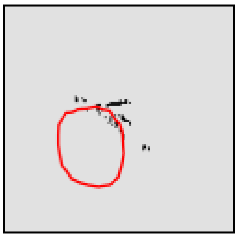


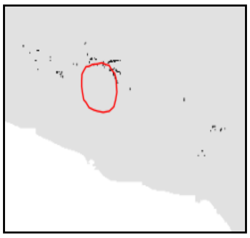
#82 – Omilteme cottontail (*Sylvilagus insonus*)
n = 3
Expert: Alejandro Velazquez, UNAM-Canada
Expert evaluation: Good
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 0.01km/year (Similar ecology to *S.dicei*)
Status: MODELLABLE; **Included in final analysis:** √

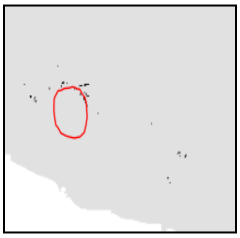
Model evaluation metric	
AUC	1.00
Omission rate	0.00
Sensitivity	1.00
Specificity	1.00
Proportion correct	1.00
Kappa	**1.00**
True Skill Statistic	1.00

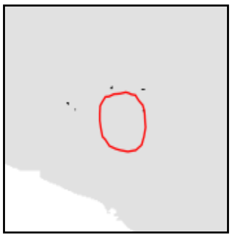
Summary: The Omilteme cottontail's bioclimatic envelope is predicted to decrease by 80% with a no latitudinal polewards shift and a mean increase in elevation of ~120m driven by an increase in maximum elevation. 95% of the permutation importance of the model was contributed to by normalised difference vegetation index (78.5%), precipitation seasonality (11.3%) and temperature seasonality (5.3%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

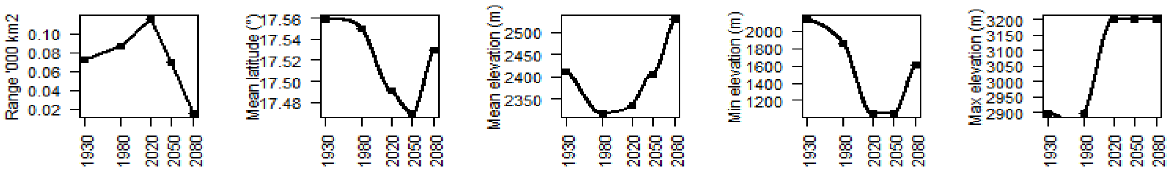

c) ~ 2020s (2010-2039)

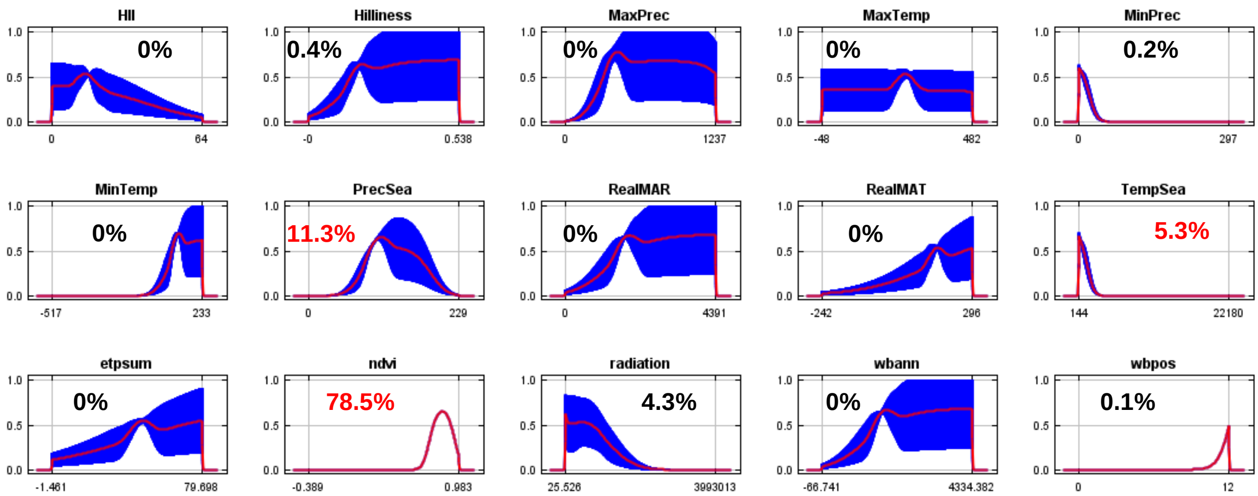

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Romero Malpica, F.J. & Rangel Cordero, H. 2008)

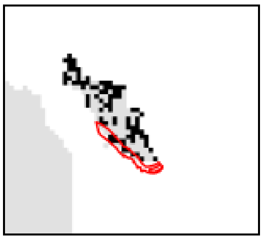




#83 – San Jose brush rabbit (*Sylvilagus mansuetus*)
n = 9
Expert: Tamara Rioja Pardela, Universidad de Ciencias y Artes de Chiapas, Mexico
Expert evaluation: Good
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 0.01km/year (Island species, range 0.01-0.01)
Status: MODELLABLE; **Included in final analysis:** √

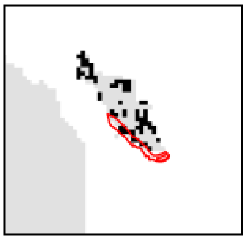
AUC	1.00
Omission rate	0.00
Sensitivity	1.00
Specificity	1.00
Proportion correct	1.00
Kappa	**1.00**
True Skill Statistic	1.00

Summary: The San Jose brush rabbit's bioclimatic envelope is predicted to decrease by 25% with a no latitudinal polewards shift and a mean increase in elevation of ~30m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by temperature seasonality (36.7%), human influence index (34.0%), minimum precipitation (21.8%) and precipitation seasonality (3.2%).

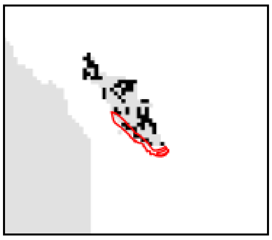


a) ~ 1930s (1900-1949)

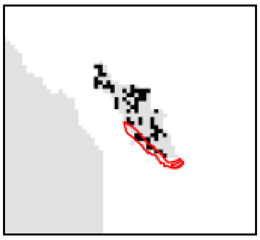
b) ~ 1980s (1950-2000)



c) ~ 2020s (2010-2039)



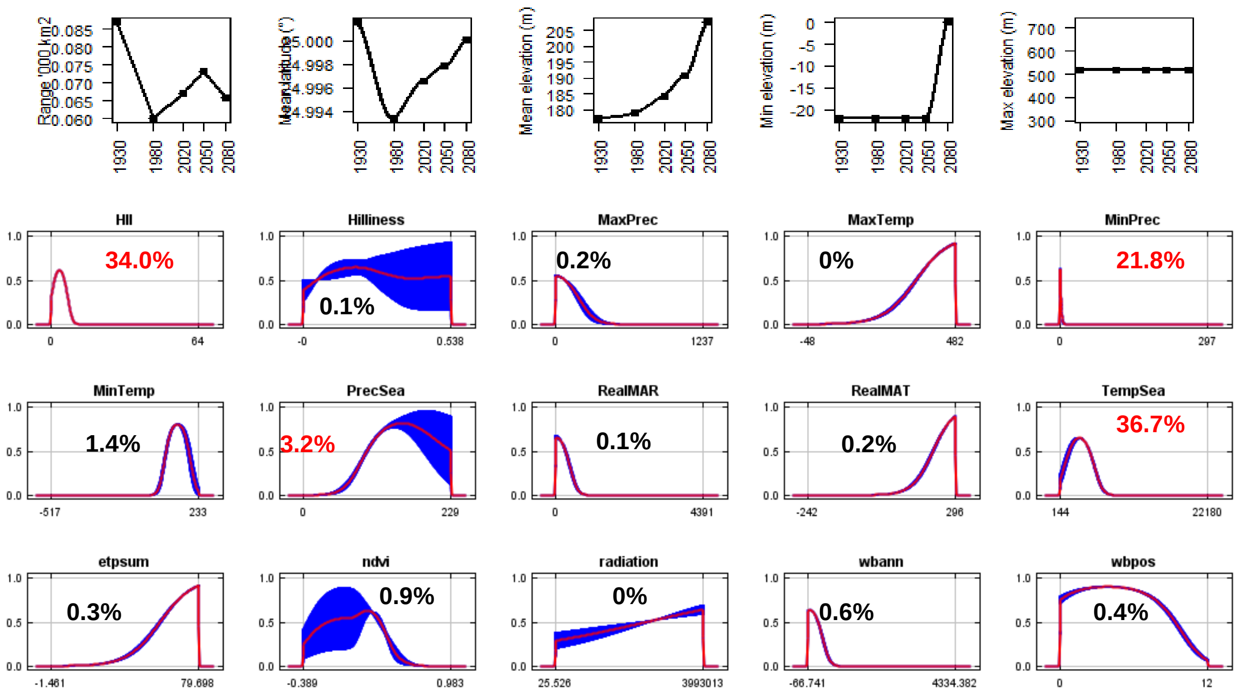
d) ~ 2050s (2040-2069)



e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

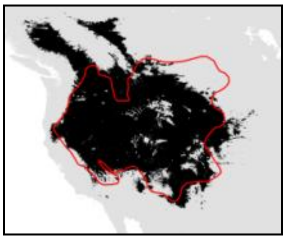
Red polygon = IUCN range (Lorenzo, C. & Álvarez-Castañeda, S. 2011)

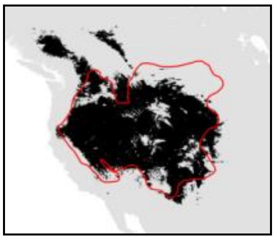


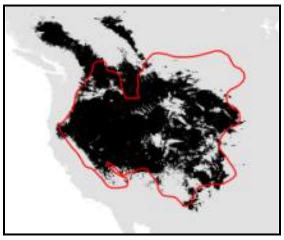
#84 – Mountain cottontail (*Sylvilagus nuttallii*)
n = 290
Expert: Jennifer Frey, New Mexico State University
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 7.5km/year (Similar ecology to *S.palustris*)
Status: MODELLABLE; **Included in final analysis:** √

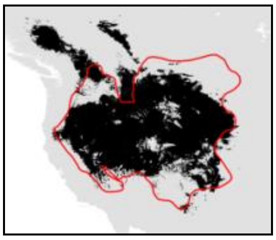
AUC	0.95
Omission rate	0.09
Sensitivity	0.91
Specificity	0.99
Proportion correct	0.99
Kappa	**0.78**
True Skill Statistic	0.90

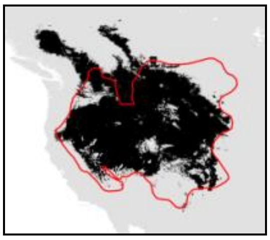
Summary: The Mountain cottontail's bioclimatic envelope is predicted to decrease by 20% with a ~1° mean latitudinal polewards shift and a mean increase in elevation of ~40m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by mean annual temperature (64.0%), maximum temperature (26.9%), temperature seasonality (2.8%) and minimum precipitation (1.4%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

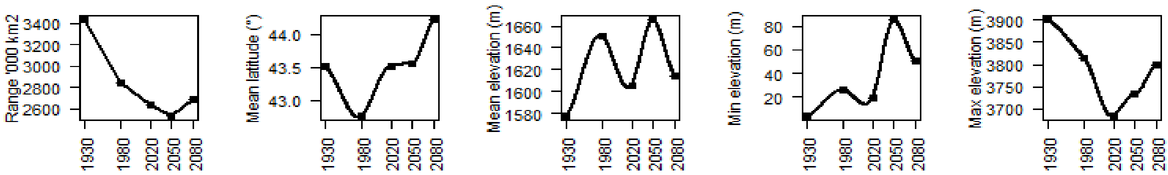

c) ~ 2020s (2010-2039)

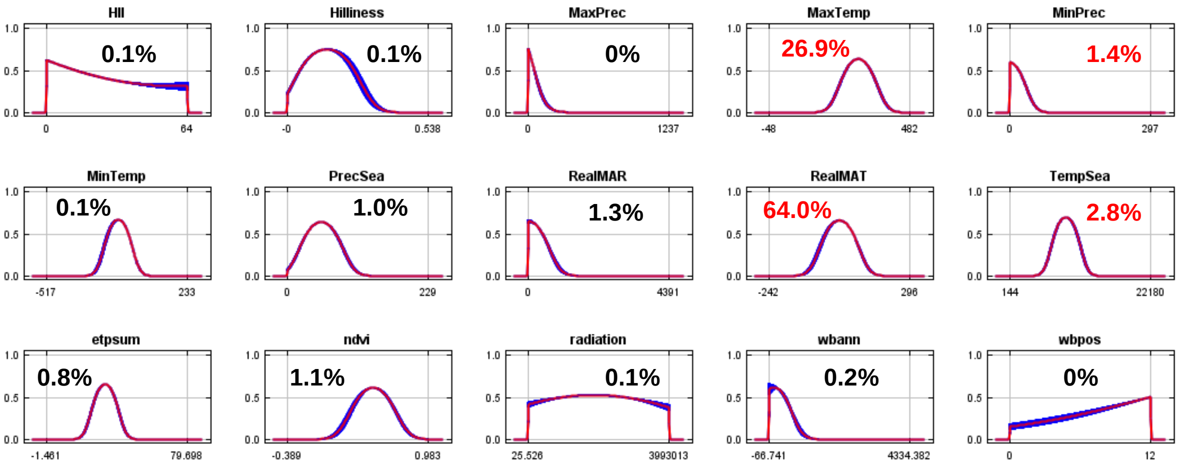

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Smith, A.T. & Boyer, A.F. 2008)

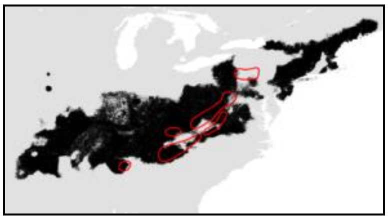


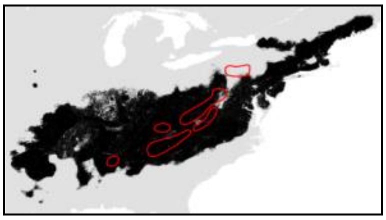


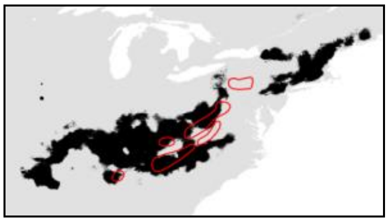
#85 – Appalachian cottontail (*Sylvilagus obscurus*)
n = 39
Expert: Michael Barbour, Alabama Natural Heritage Program
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic only
Dispersal distance: 0.01km/year (Similar ecology to *S.dicei*)
Status: MODELLABLE; **Included in final analysis:** √

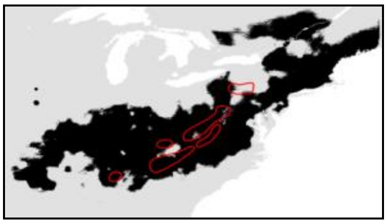
AUC	0.97
Omission rate	0.05
Sensitivity	0.95
Specificity	0.99
Proportion correct	0.99
Kappa	**0.73**
True Skill Statistic	0.95

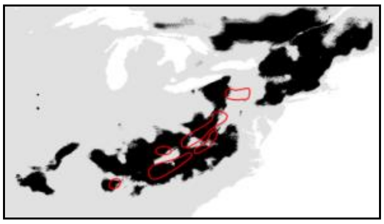
Summary: The Appalachian cottontail's bioclimatic envelope is predicted to decrease by 10% with a ~3° mean latitudinal polewards shift and a mean increase in elevation of ~70m. 95% of the permutation importance of the model was contributed to by annual evapotranspiration (42.0%), minimum temperature (24.2%), minimum precipitation (18.8%) and precipitation seasonality (10.0%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

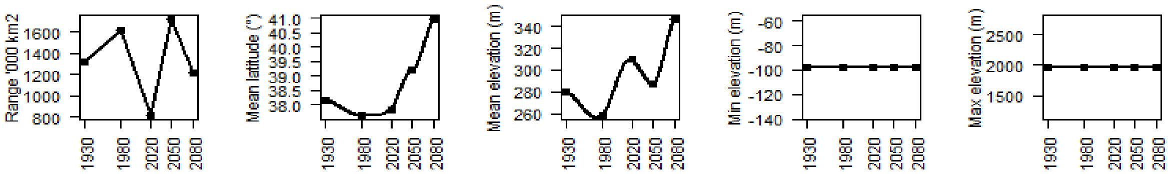

c) ~ 2020s (2010-2039)

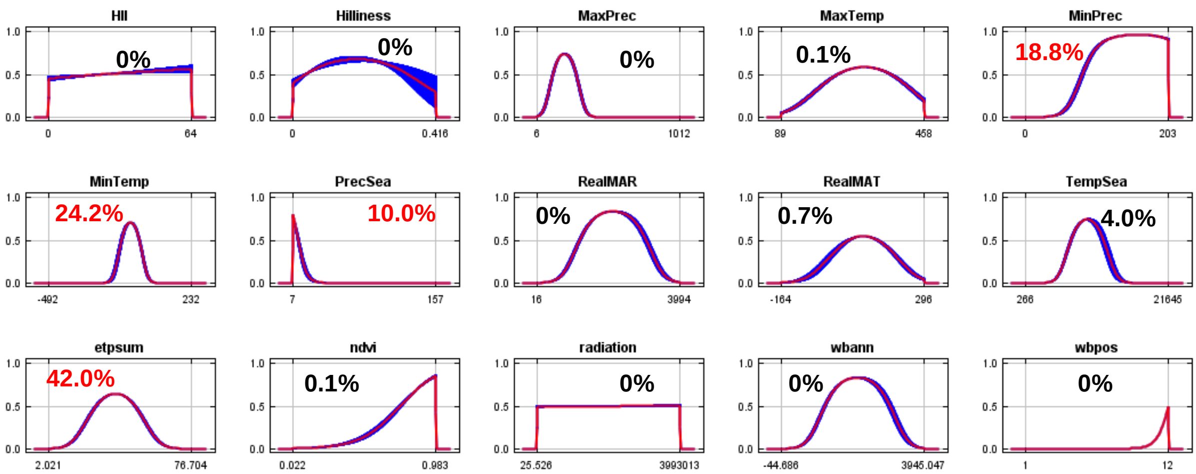

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Barry, R. & Lazell, J. 2008)

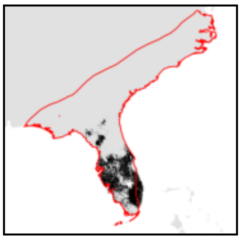


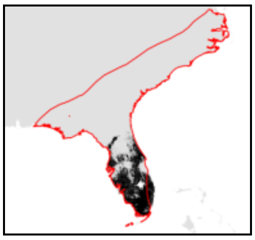


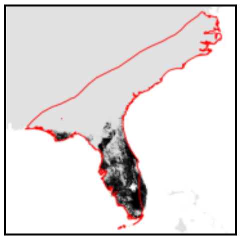
#86 – Marsh rabbit (*Sylvilagus palustris*)
n = 25
Expert: Bob McCleery, University of Florida
Expert evaluation: Good
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 7.5km/year (Expert)
Status: MODELLABLE; **Included in final analysis:** √

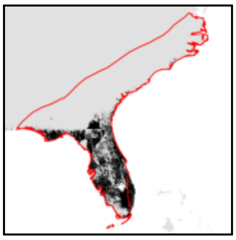
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.75**
True Skill Statistic	0.99

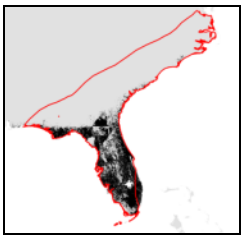
Summary: The Marsh rabbit's bioclimatic envelope is predicted to increase by 90% with a ~1° mean latitudinal polewards shift and a mean increase in elevation of ~2m driven by an increase in maximum elevation. 95% of the permutation importance of the model was contributed to by surface roughness index (73.1%), minimum precipitation (18.3%) and precipitation seasonality (4.9%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

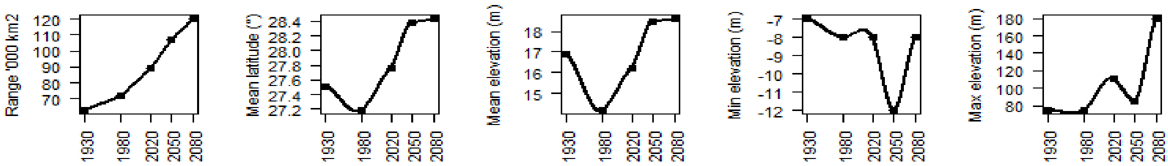

c) ~ 2020s (2010-2039)

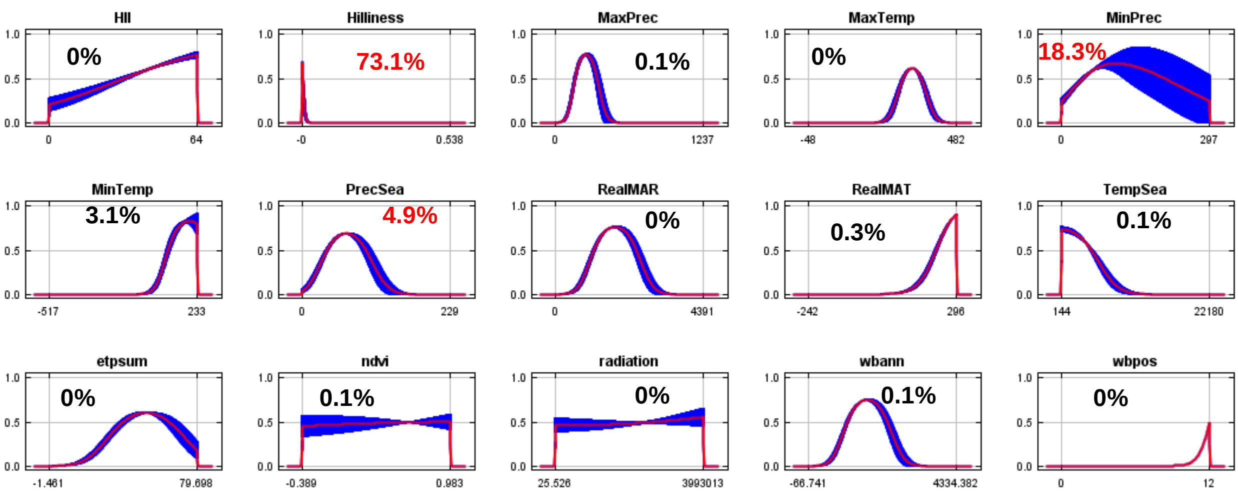

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Faulhaber, C.A. & Smith, A.T. 2008)

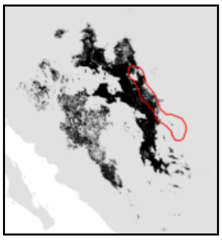


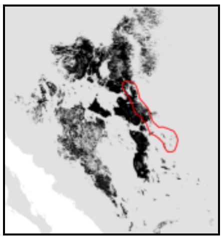


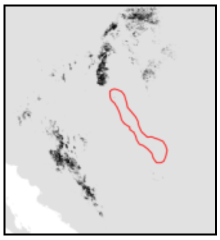
#87 – Robust cottontail (*Sylvilagus robustus*)
n = 9
Expert: Dana Lee, Oklahoma State University
Expert evaluation: Poor
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 0.01km/year (Similar ecology to *S.dicei*)
Status: UNMODELLABLE; **Included in final analysis:** X

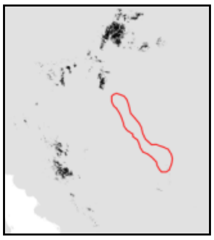
AUC	0.94
Omission rate	0.11
Sensitivity	0.89
Specificity	0.99
Proportion correct	0.99
Kappa	**0.27**
True Skill Statistic	0.88

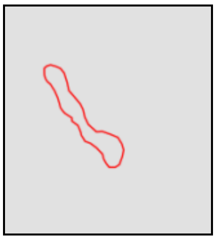
Summary: The Robust cottontail's bioclimatic envelope is predicted to decrease by 90% with a ~4° mean latitudinal polewards shift and a mean increase in elevation of ~480m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by precipitation seasonality (68.5%), minimum precipitation (8.2%), temperature seasonality (7.1%), minimum temperature (4.5%), mean annual precipitation (3.6%), annual water balance (2.6%) and number of months with a positive water balance (1.6%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

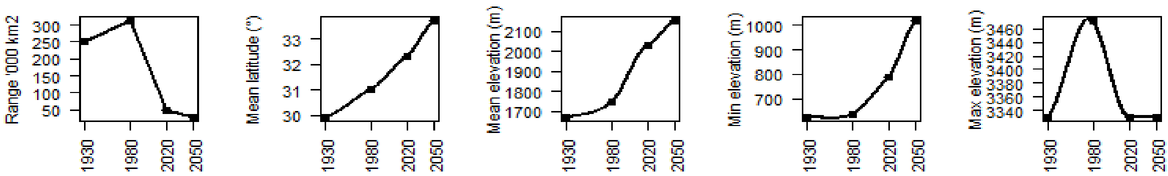

c) ~ 2020s (2010-2039)

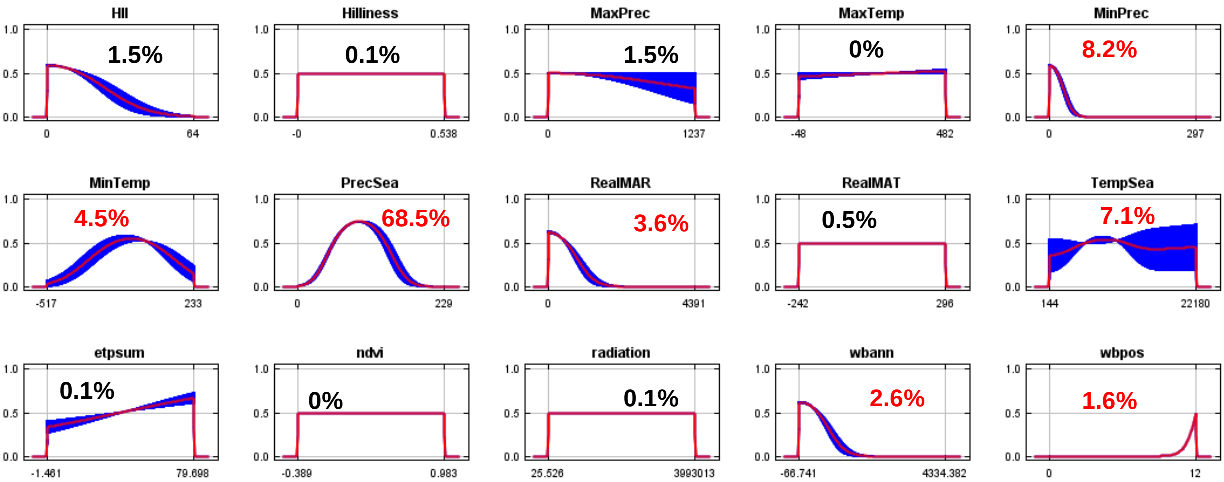

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Ruedas, L. & Smith, A.T. 2008)

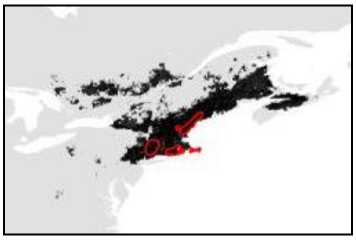


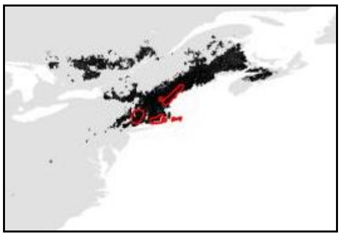


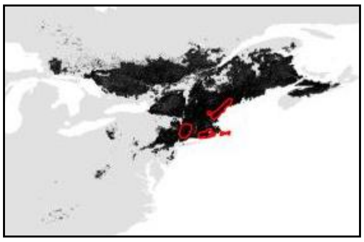
#88 – New England cottontail (*Sylvilagus transitionalis*)
n = 18
Expert: John Litvaitis, University of New Hampshire
Expert evaluation: Medium
Data: Modern and historic
Envelope: Climatic and habitat
Dispersal distance: 3km/year (Expert)
Status: MODELLABLE; **Included in final analysis:** √

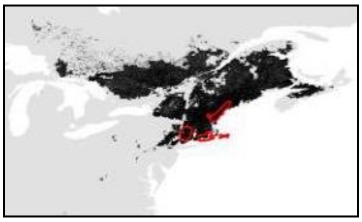
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.68**
True Skill Statistic	0.99

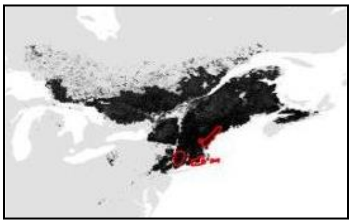
Summary: The New England cottontail's bioclimatic envelope is predicted to increase by 110% with a ~1° mean latitudinal polewards shift and a mean increase in elevation of ~70m driven by an increase in maximum elevation. 95% of the permutation importance of the model was contributed to by annual evapotranspiration (23.5%), temperature seasonality (22.2%), minimum temperature (17.4%), normalised difference vegetation index (16.0%), mean annual temperature (8.6%), maximum temperature (5.9%) and minimum precipitation (5.9%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)

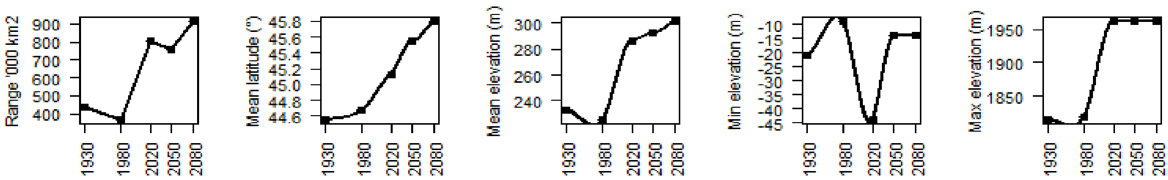

c) ~ 2020s (2010-2039)

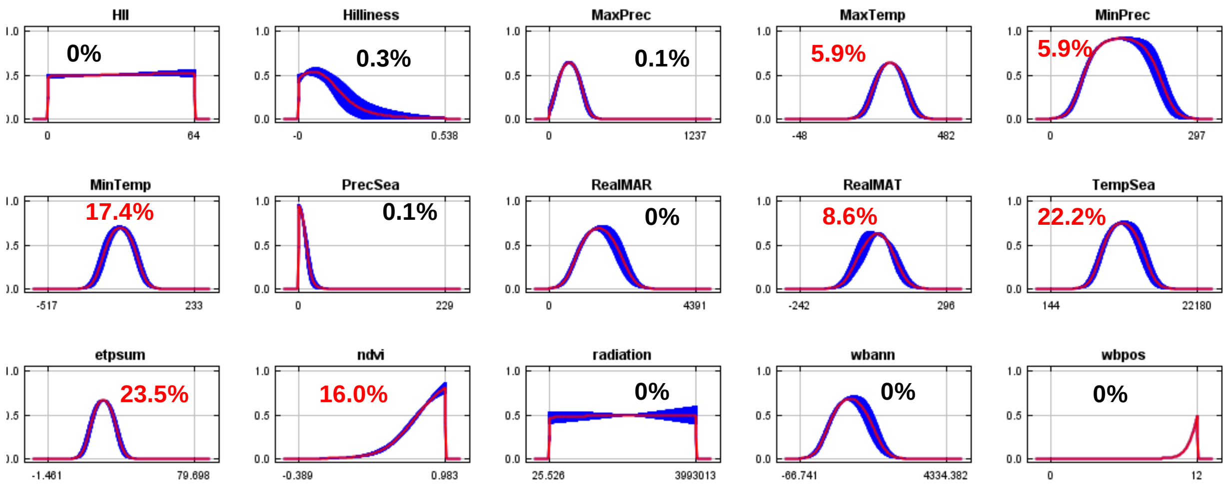

d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Barry, R., *et al*. 2008)

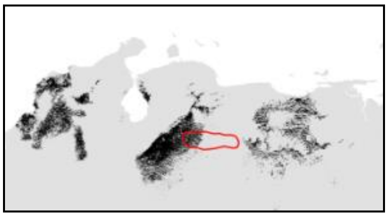


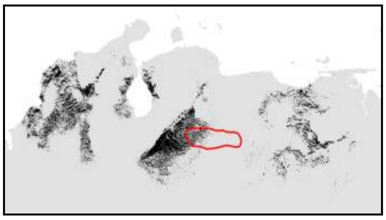


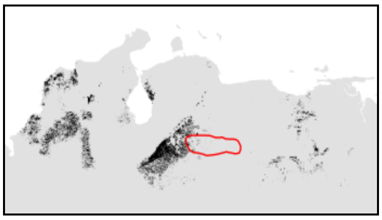
#89 – Venezuelan lowland rabbit (*Sylvilagus varynaensis*)
n = 6
Expert: Daniel Lew, Venezuelan Institute of Scientific Research, Ecology Centre, Biodiversity Unit
Expert evaluation: Poor
Data: Only modern
Envelope: Climatic and habitat
Dispersal distance: 3km/year (Similar ecology to *S.transitionalis*)
Status: UNMODELLABLE; **Included in final analysis:** X

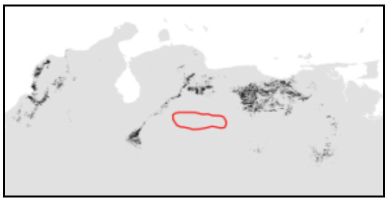
AUC	0.99
Omission rate	0.00
Sensitivity	1.00
Specificity	0.99
Proportion correct	0.99
Kappa	**0.92**
True Skill Statistic	0.99

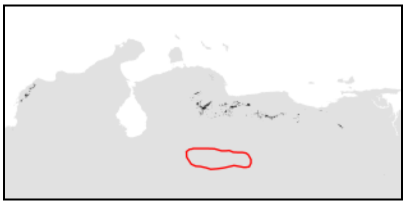
Summary: The Venezuelan lowland rabbit's bioclimatic envelope is predicted to decrease by 100% with a ~1.5° mean latitudinal polewards shift and a mean increase in elevation of ~275m driven by an increase in minimum elevation. 95% of the permutation importance of the model was contributed to by temperature seasonality (97.7%).


a) ~ 1930s (1900-1949)


b) ~ 1980s (1950-2000)


c) ~ 2020s (2010-2039)


d) ~ 2050s (2040-2069)


e) ~ 2080s (2070-2099)

Black = predicted suitable envelope

Red polygon = IUCN range (Durant, P. & Guevara, M.A. 2008)