

Spatial adaptive responses of highly threatened European mammal species under climate change

APPENDIX II

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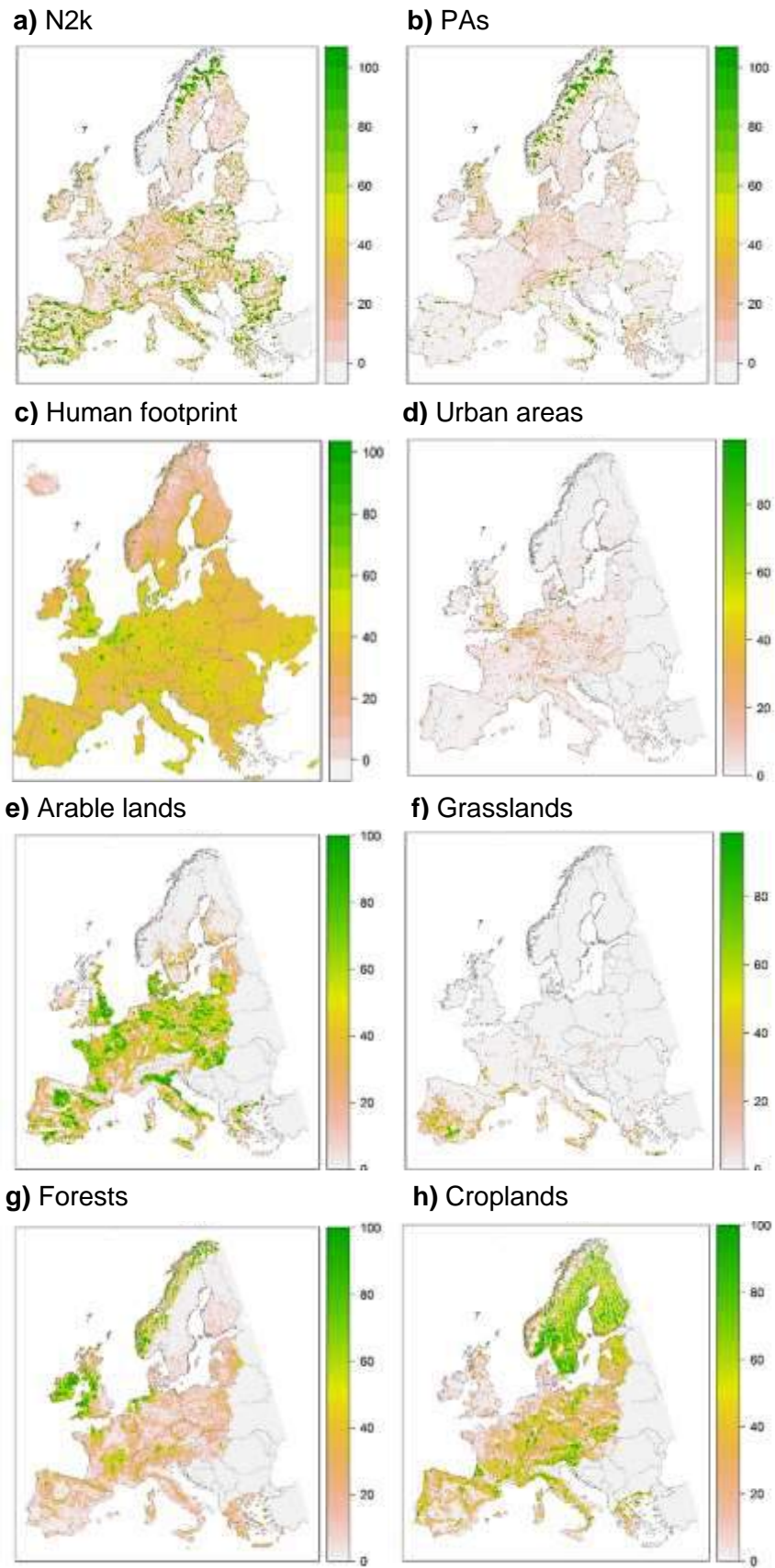


Figure S1 - Maps of **a)** percent-area coverage of Natura 2000 (N2k); **b)** percent-area coverage of nationally-designated protected areas (I to IV) (PAs); **c)** a measure of anthropic disturbance over habitats, the human footprint index (doubled to range: 0-100); **d)** percent-area coverage of urban areas; **e)** percent-area coverage of arable lands (agriculture); **f)** percent-area coverage of grasslands; **g)** percent-area coverage of forests, and **h)** percent-area coverage of cropland in the baseline period.

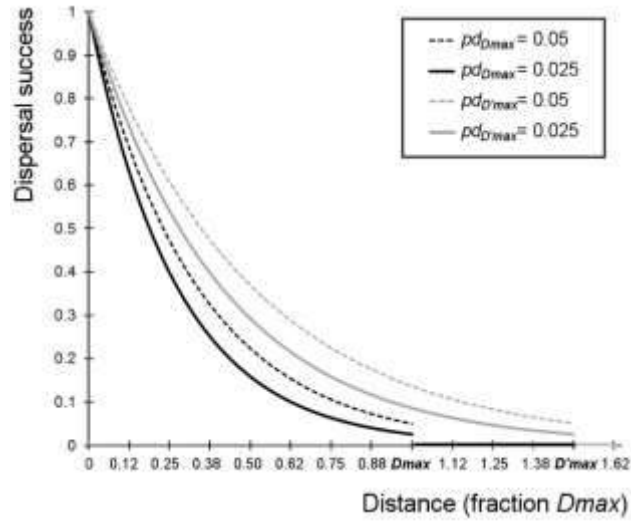
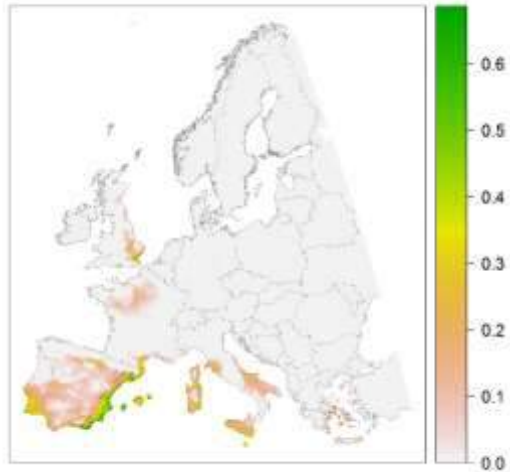
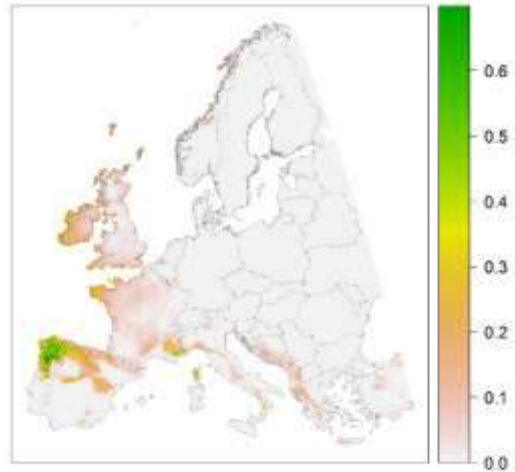


Figure S2 - The dispersal kernel curves defining the four dispersal scenarios tested in all species. Two horizontal (maximum dispersal) values were used (D_{max} and D'_{max}) representing the maximum dispersal obtained from Schloss et al (2012) and a scenario of rare extreme dispersal events (reaching 50% more distance than D_{max}). For each of these distances, two vertical values (dispersal success rates, d) were tested (2.5% and 5% of successful colonization at maximum distances). Dispersal scenarios are therefore defined by: **D1**: $d_{D_{max}} = 0.025$; **D2**: $d_{D_{max}} = 0.05$; **D3**: $d_{D'_{max}} = 0.025$; **D3**: $d_{D'_{max}} = 0.05$.

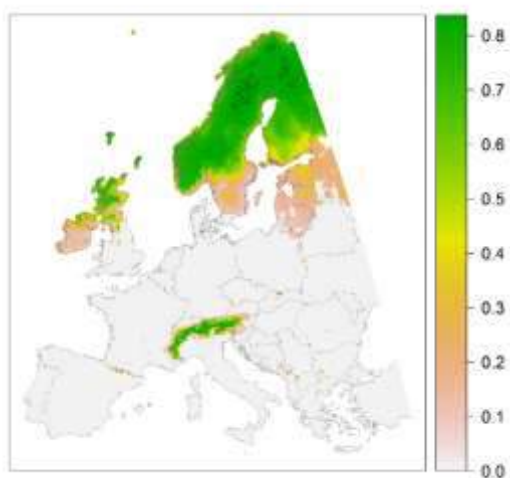
a) *Atelerix algius*



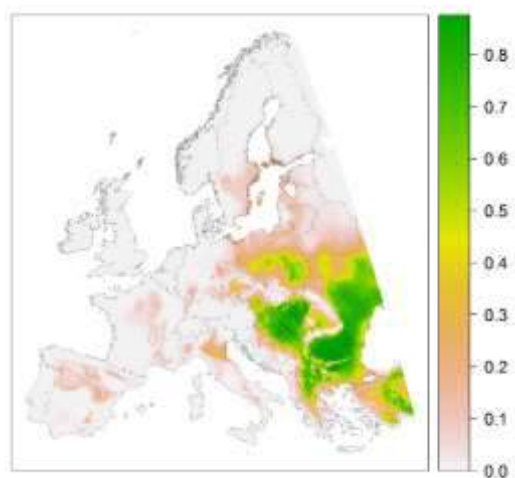
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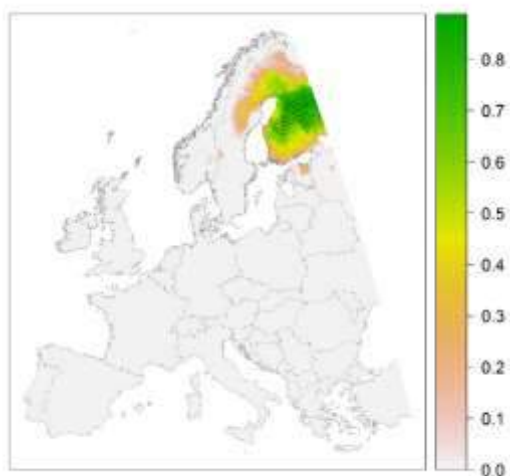
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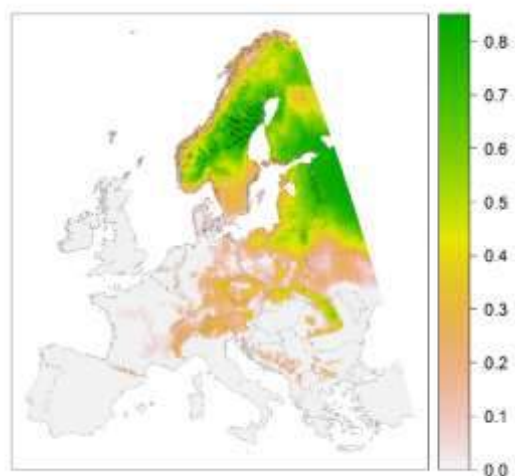
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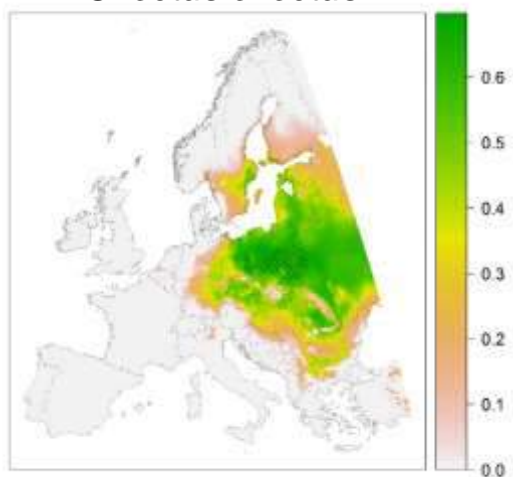


Castor fiber

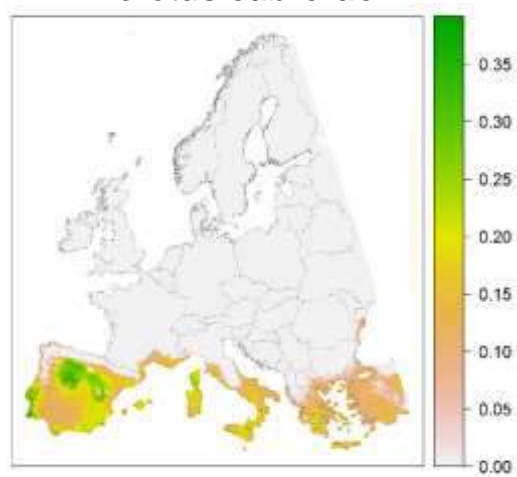


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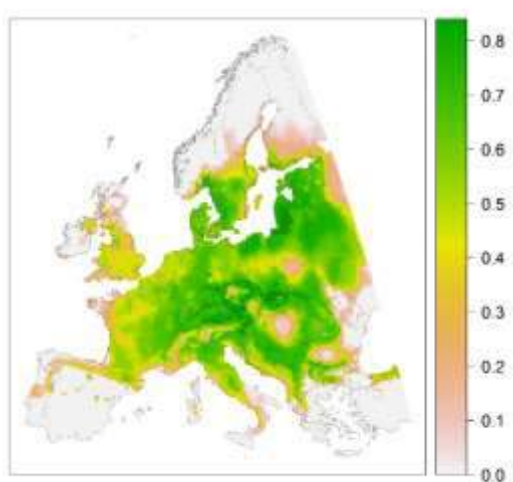
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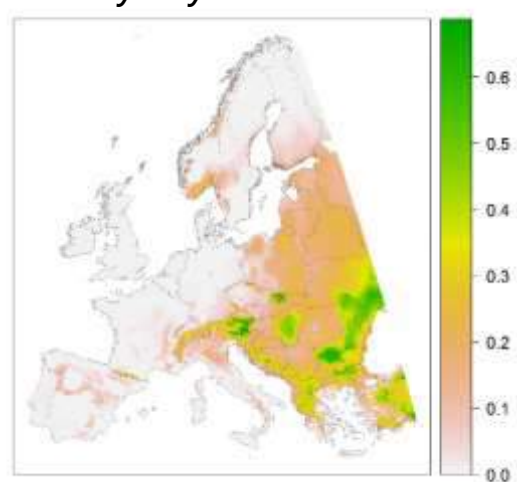
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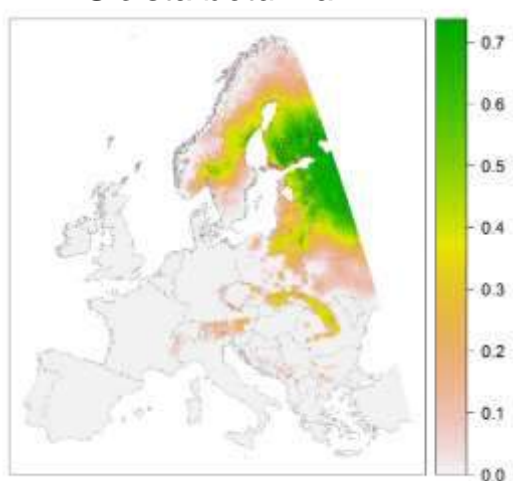
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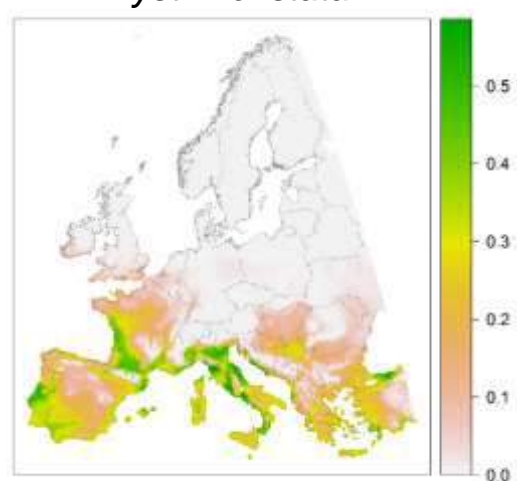
Dryomys nitedula



Sicista betulina

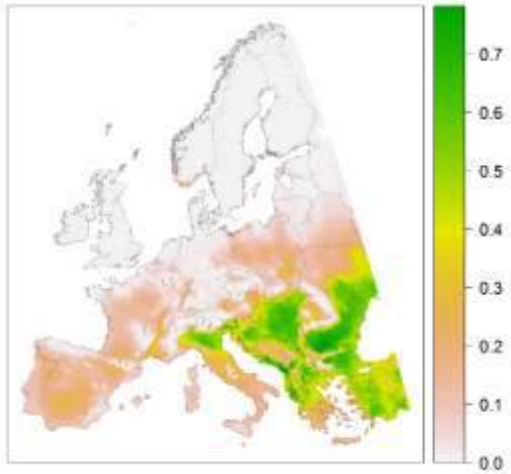


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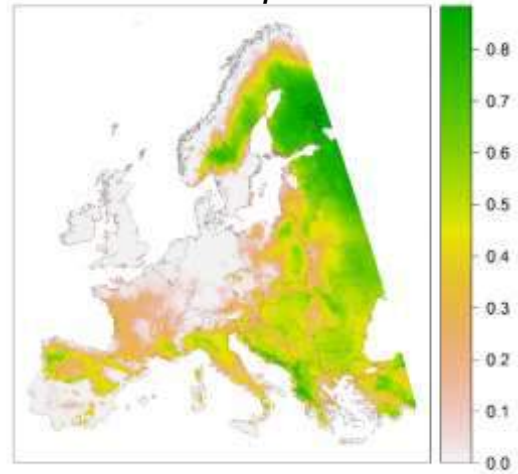


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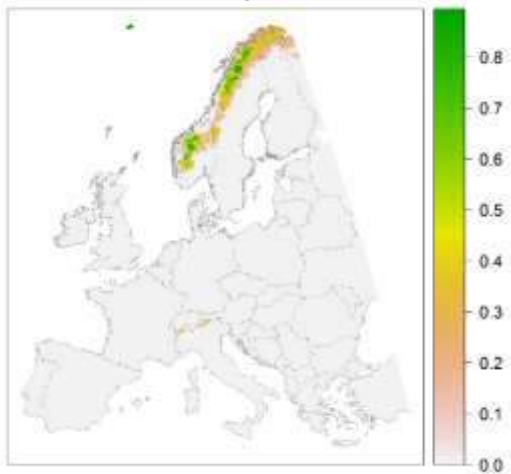
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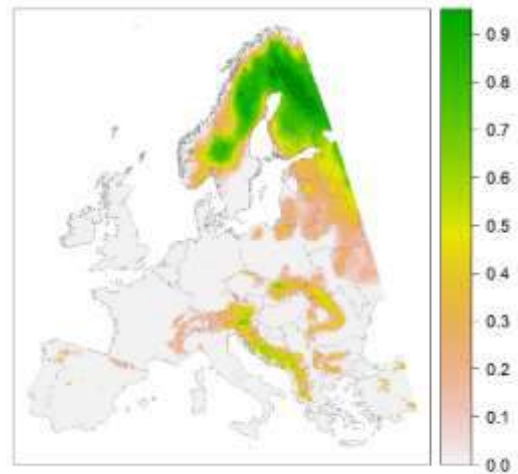
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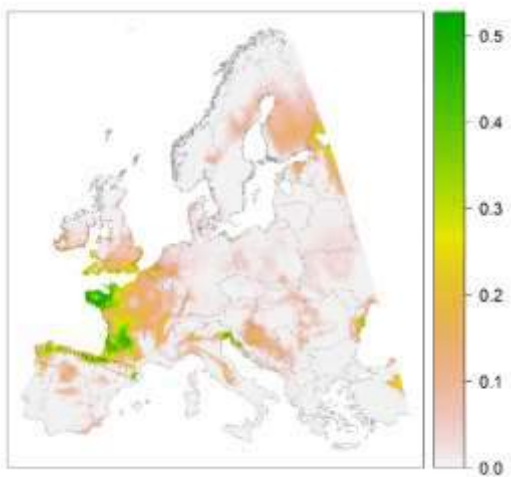
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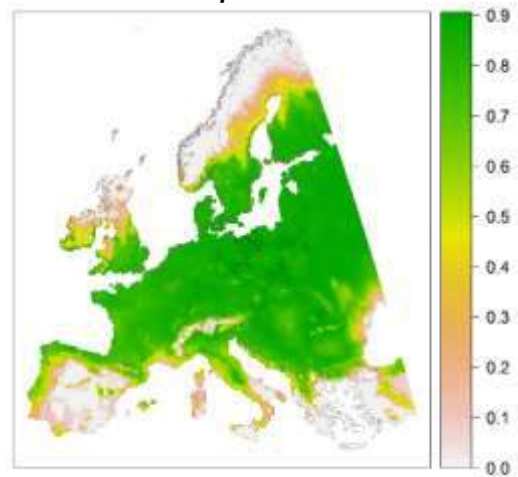
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Mustela lutreola

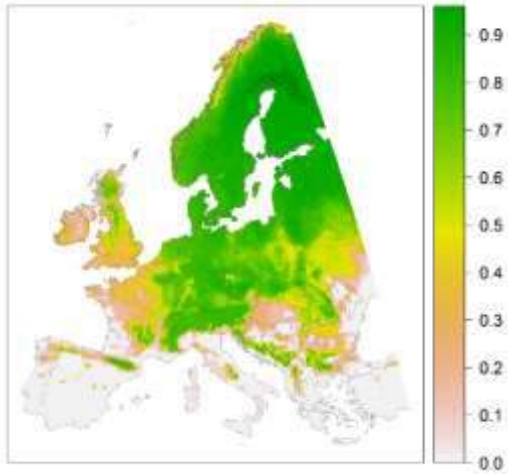


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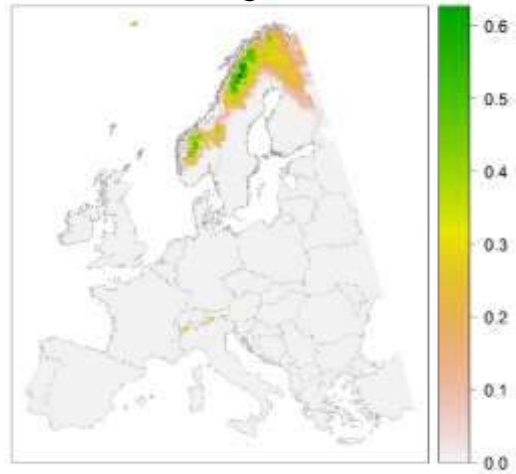


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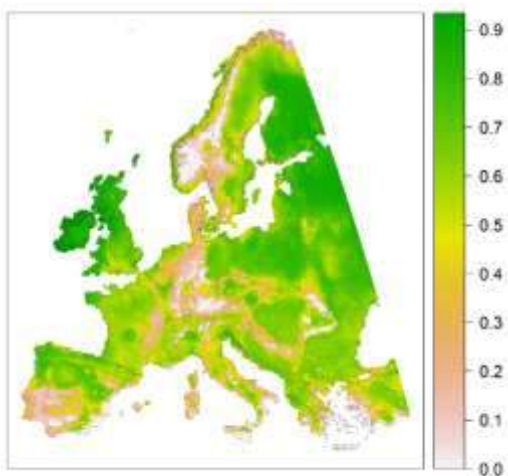
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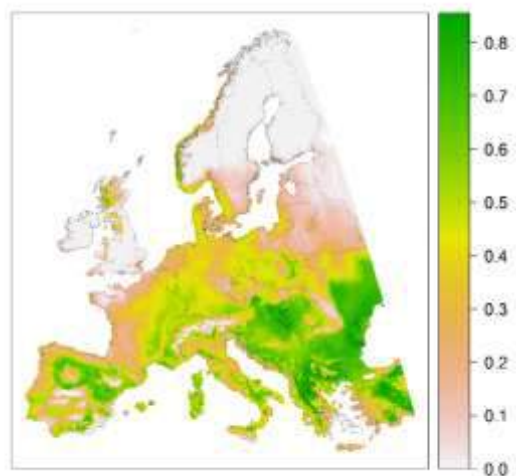
Gulo gulo



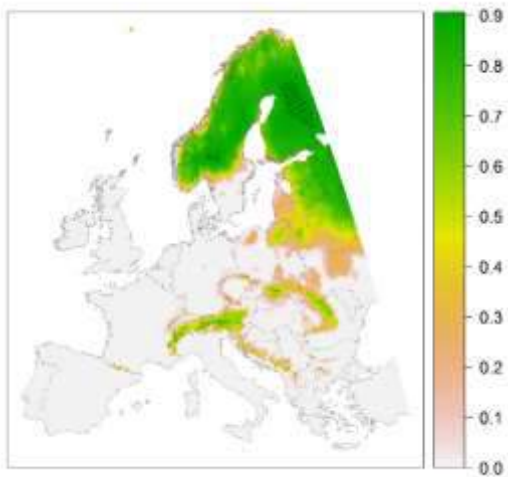
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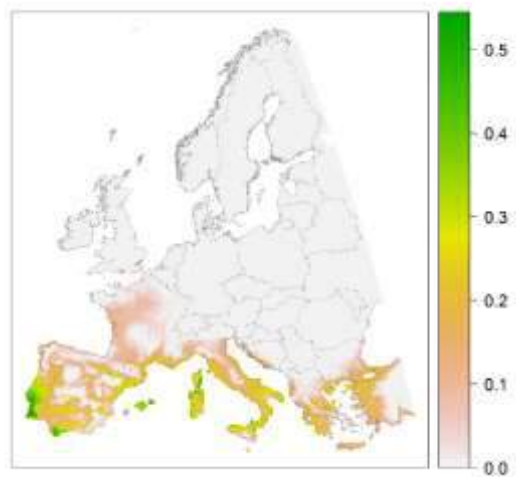
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Lynx lynx



Lynx pardinus



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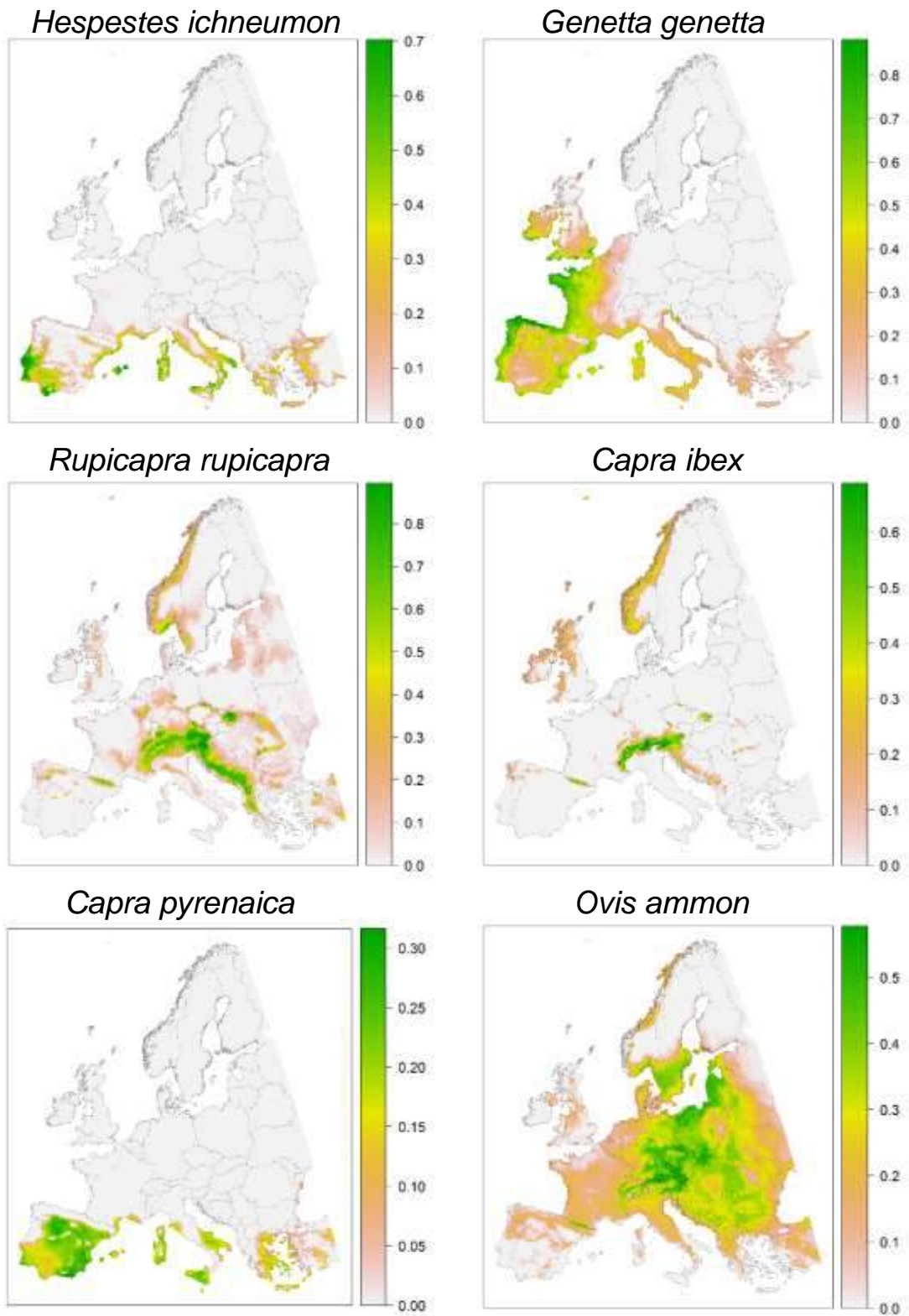
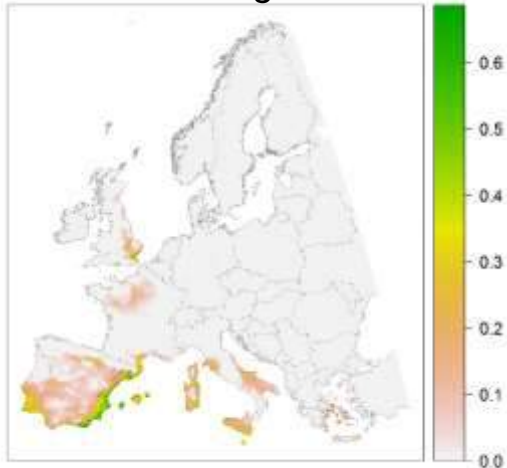
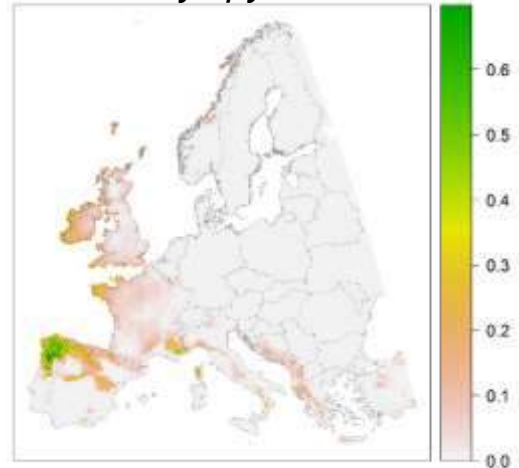


Figure 3a – The location of C^s SAT sites of each species among the average suitability values of each species along the four time periods assessed. Suitability scores and SATs refer to the RCP 8.5 x D1 scenario.

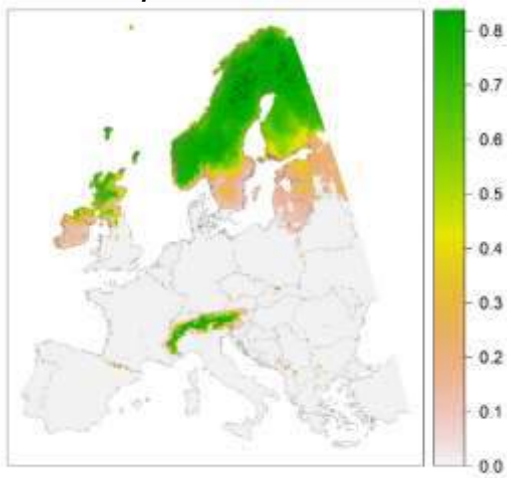
Atelerix algirus



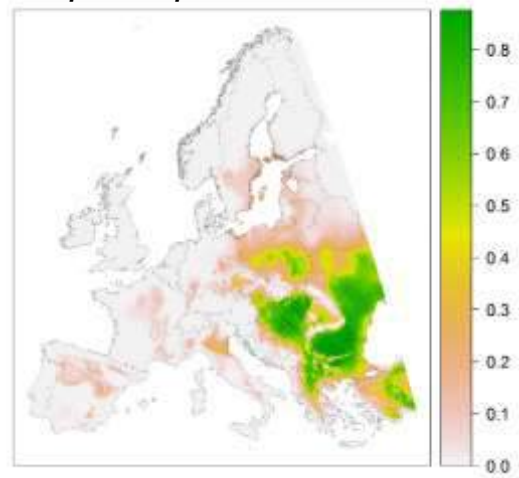
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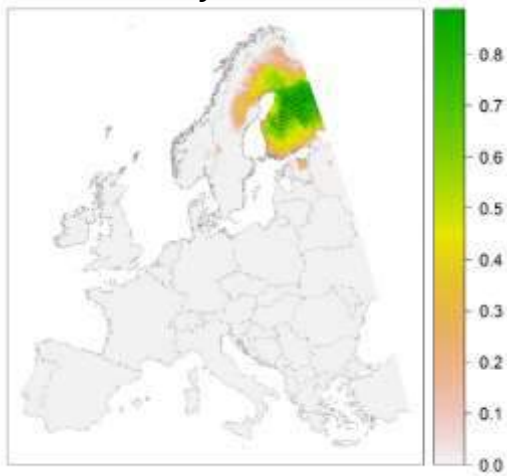
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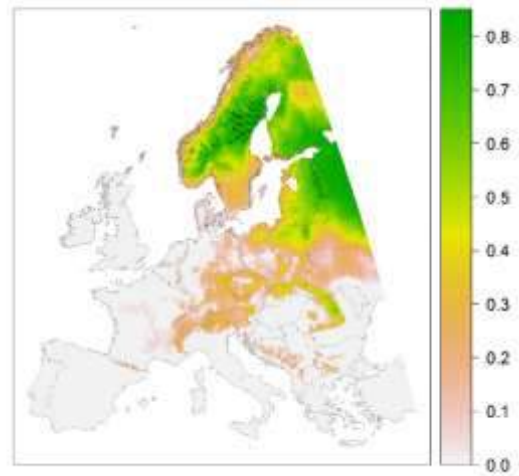
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Pteromys volans

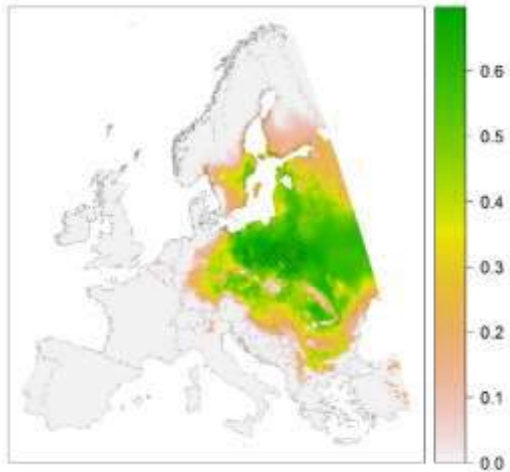


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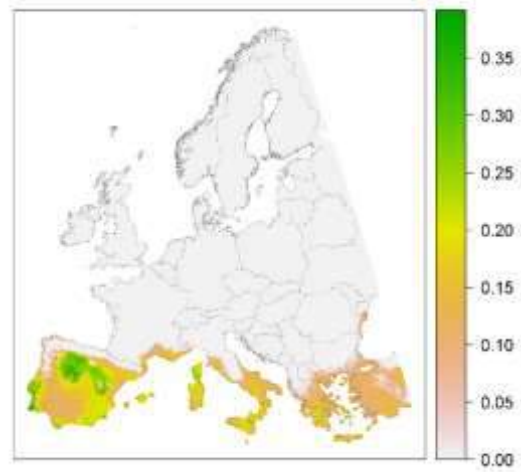


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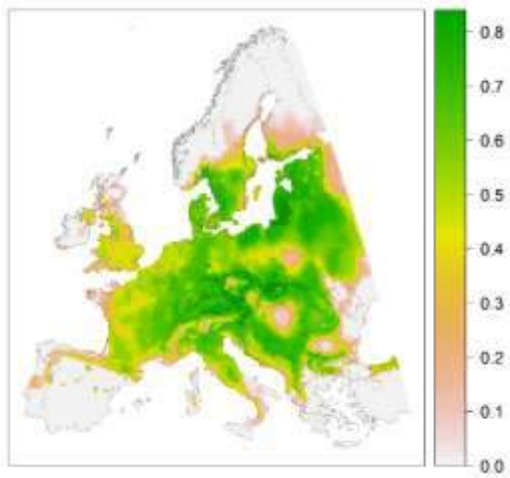
Cricetus cricetus



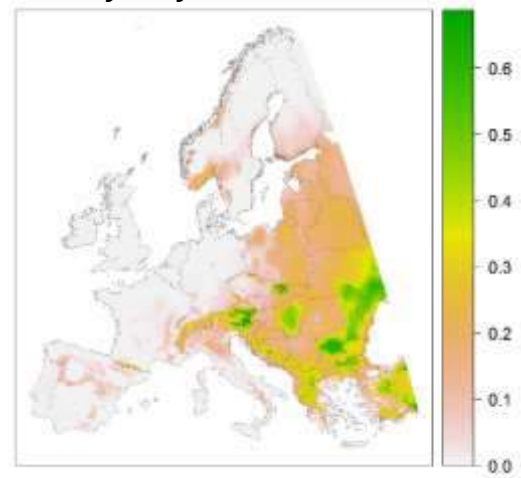
Microtus cabreræ



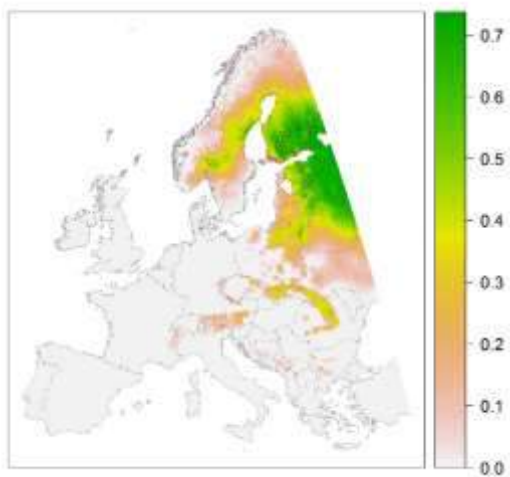
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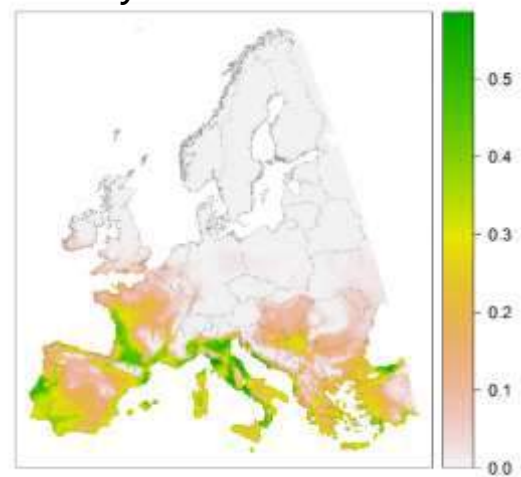
Dryomys nitedula



Sicista betulina

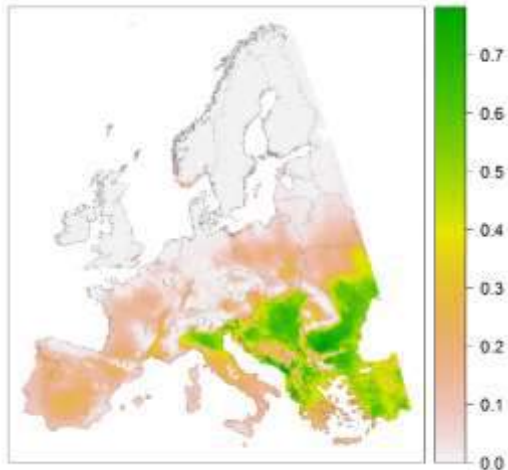


Hystrix cristata

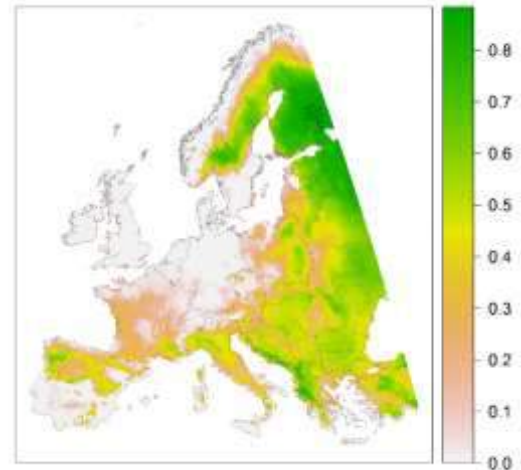


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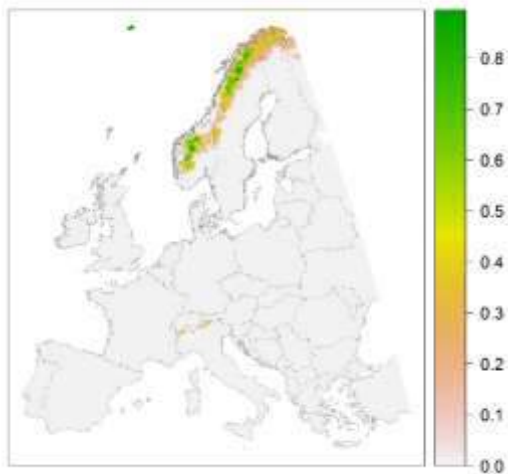
Canis aureus



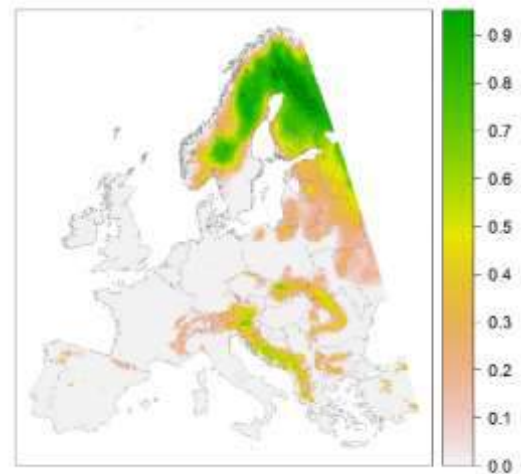
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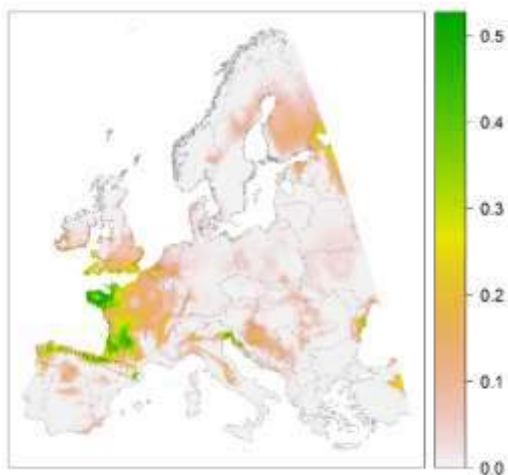
Alopex lagopus



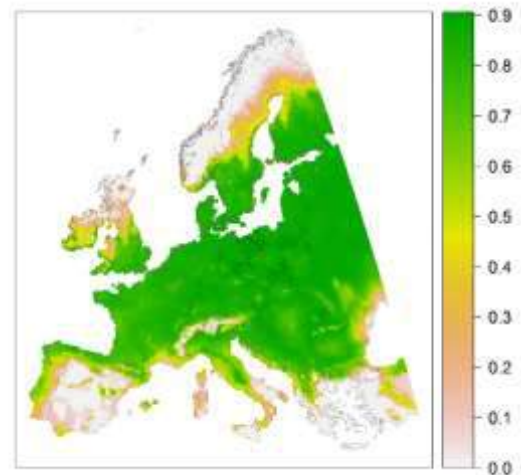
Ursus arctos



Mustela lutreola

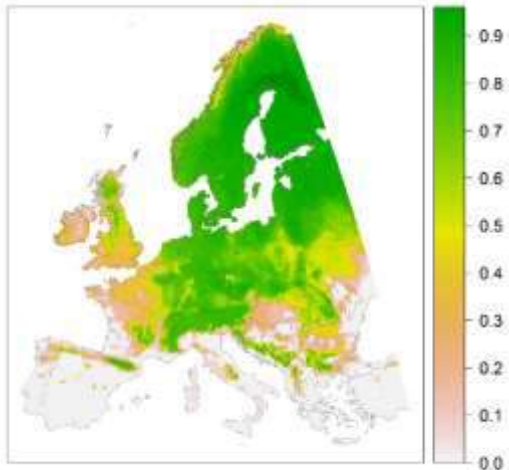


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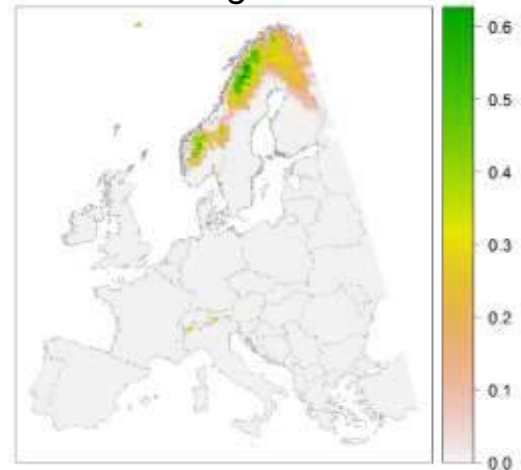


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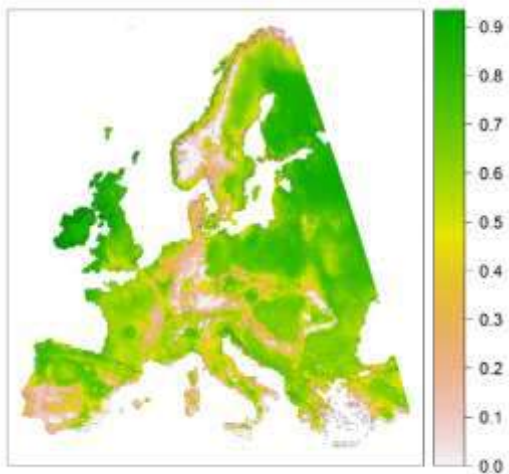
Martes martes



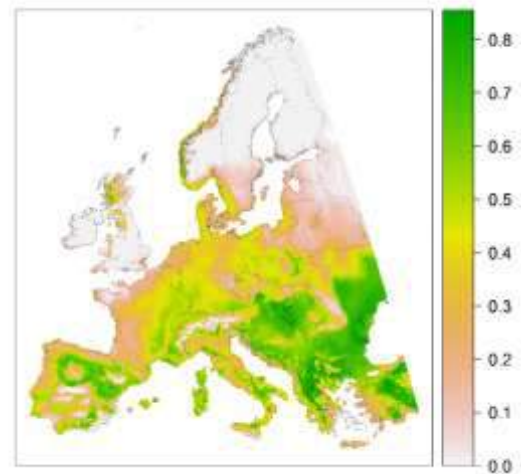
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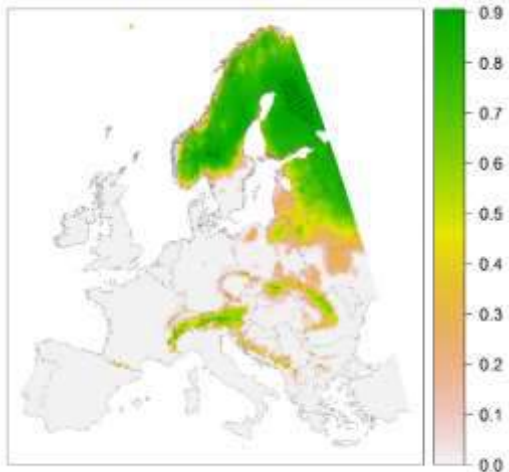
Lutra lutra



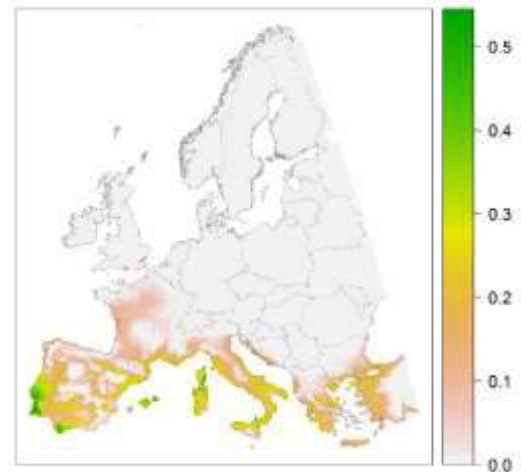
Felis silvestris



Lynx lynx

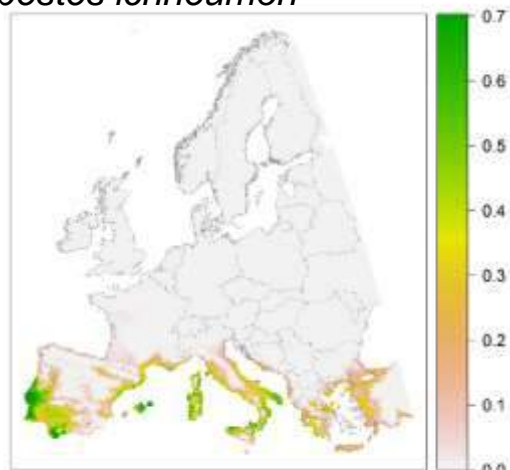


Lynx pardinus

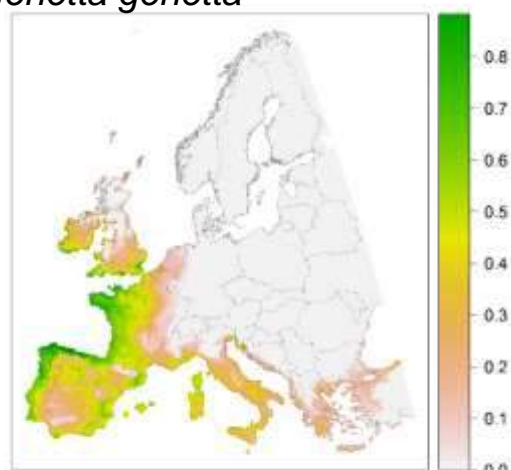


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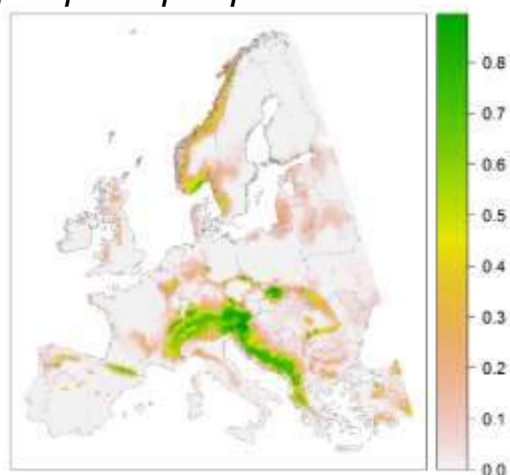
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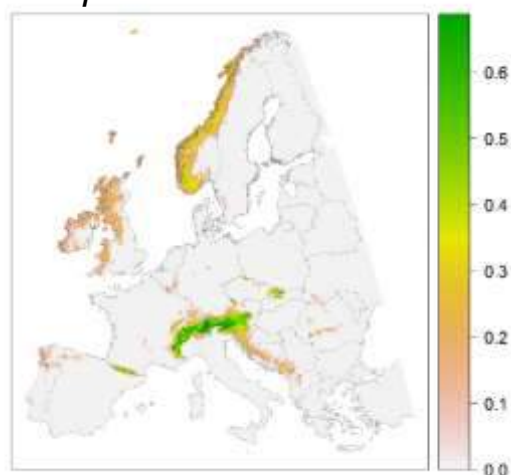
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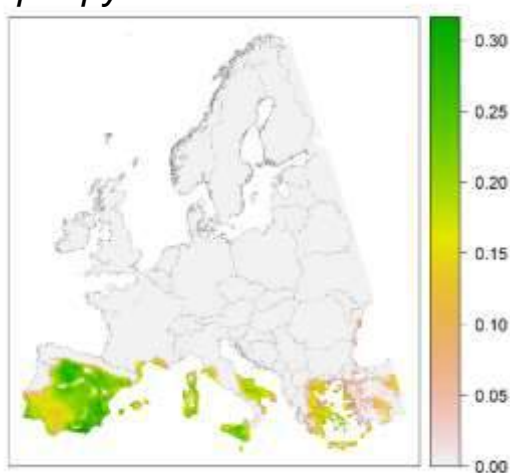
Rupicapra rupicapra



Capra ibex



Capra pyrenaica



Ovis ammon

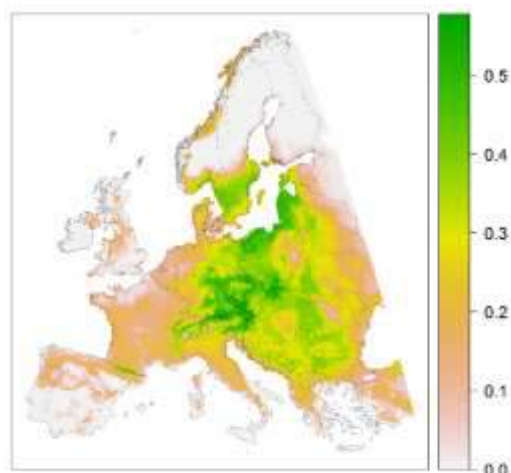
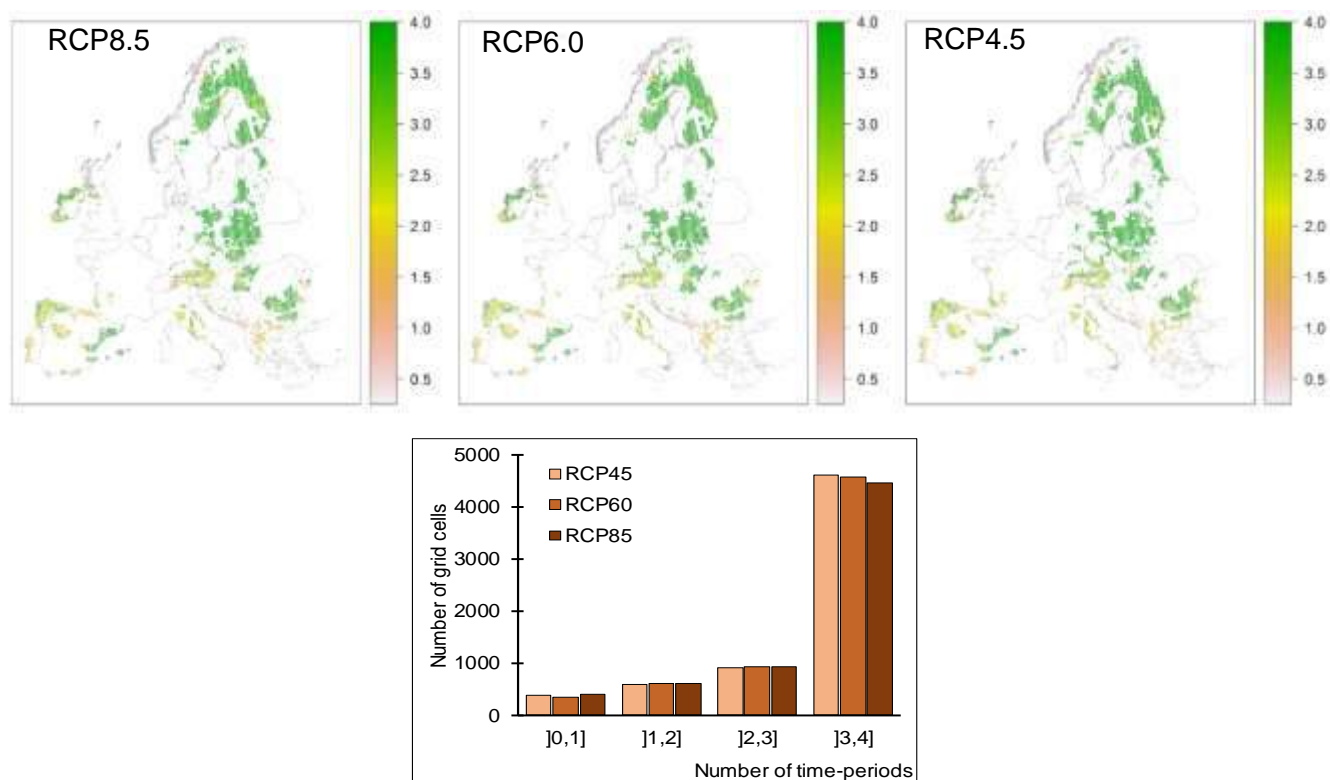


Figure 3b – The location of **C₁** SAT sites of each species among the average suitability values of each species along the four time periods assessed. Suitability scores and SATs refer to the RCP 8.5 x D1 scenario.

a) C^s



b) C^s

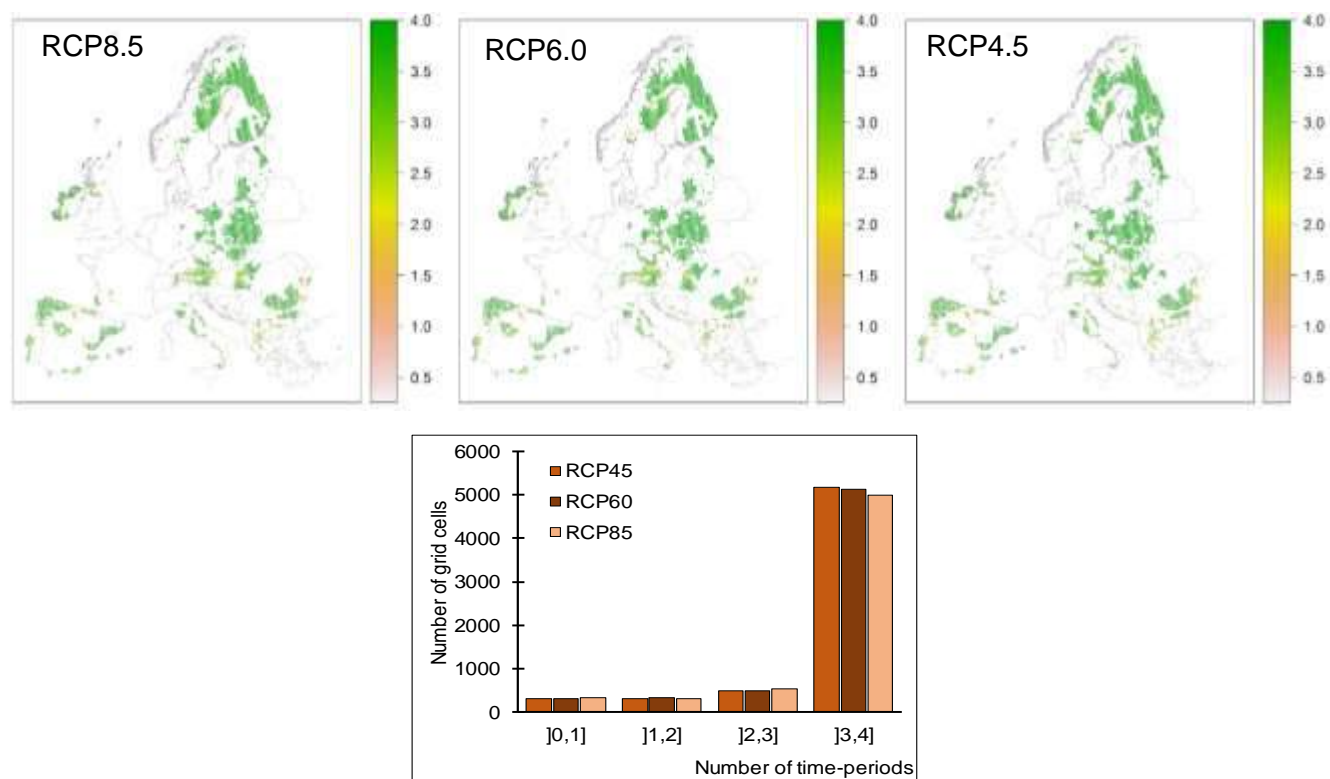
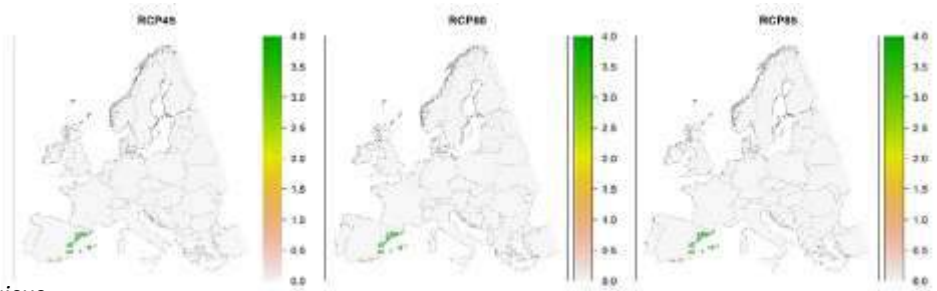
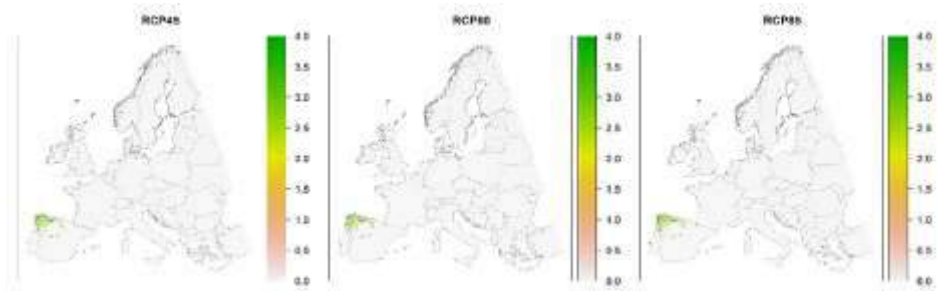


Figure S4 - Number of periods of time (among the four analyzed: baseline, 2020, 2050 and 2080) each site is used by the same SAT, in each of the three RCP scenarios analyzed (values represent averages among SATs, the four dispersal scenarios and thirty species). The larger the numbers, the more stable (i.e. spatially fixed) the trajectories are. **a)** C^s ; **b)** C^s .

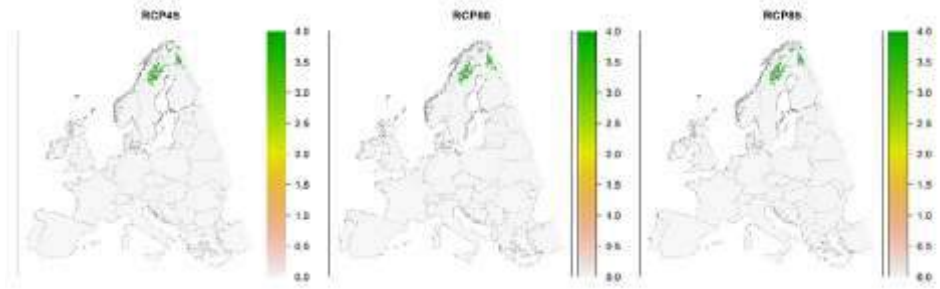
Atelerix algerus



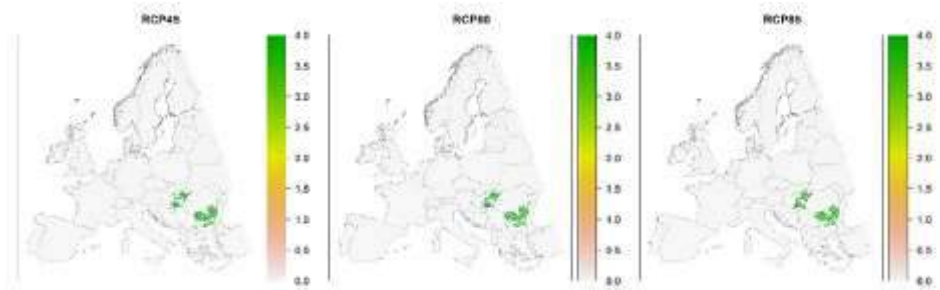
Galemys pyrenaicus



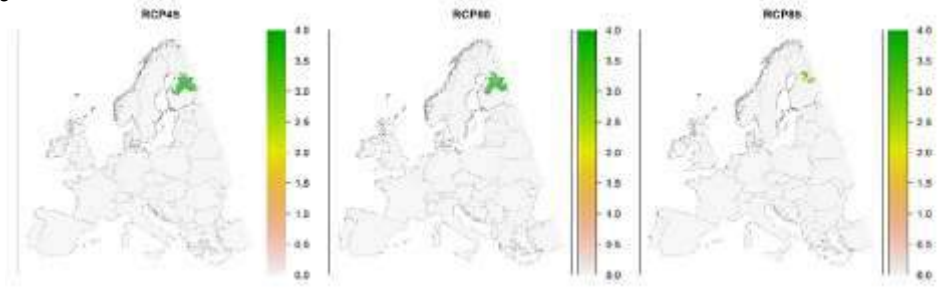
Lepus timidus



Spermophilus citellus

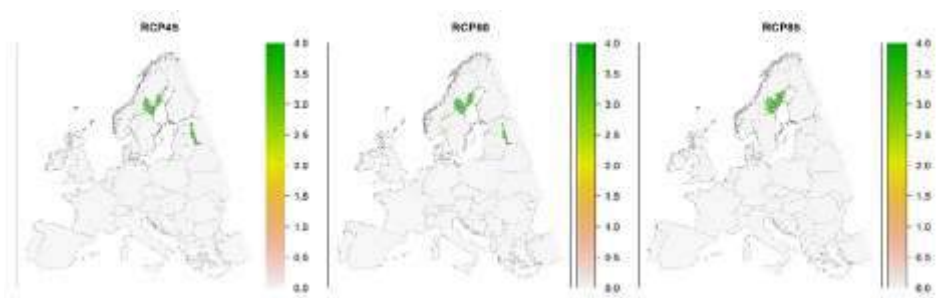


Pteromys volans

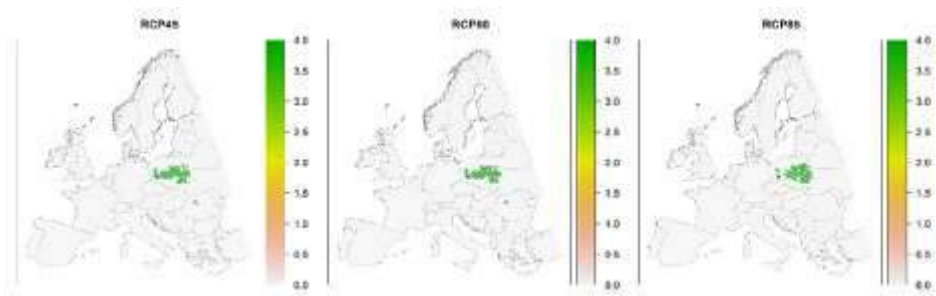


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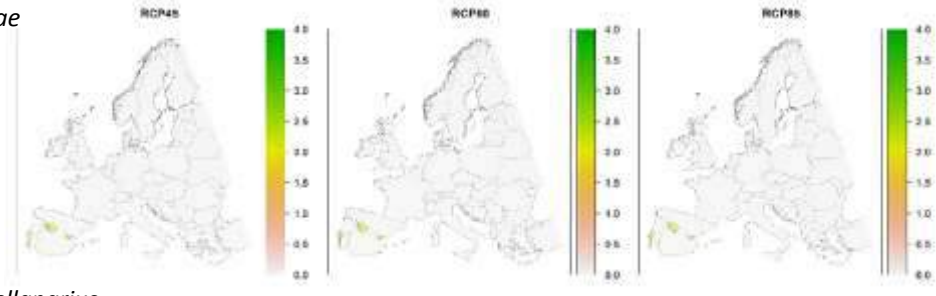
Castor fiber



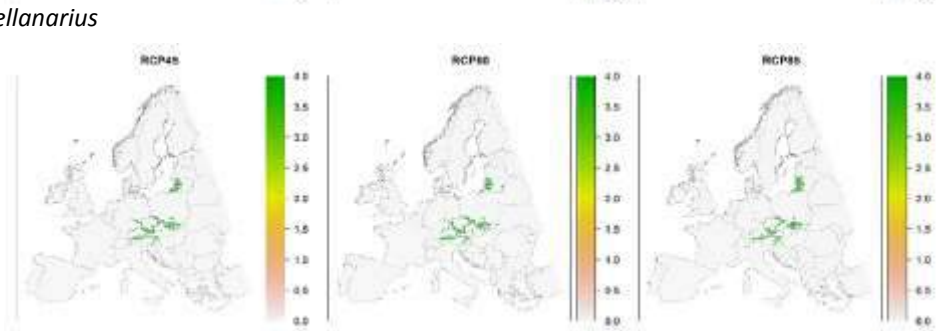
Cricetus cricetus



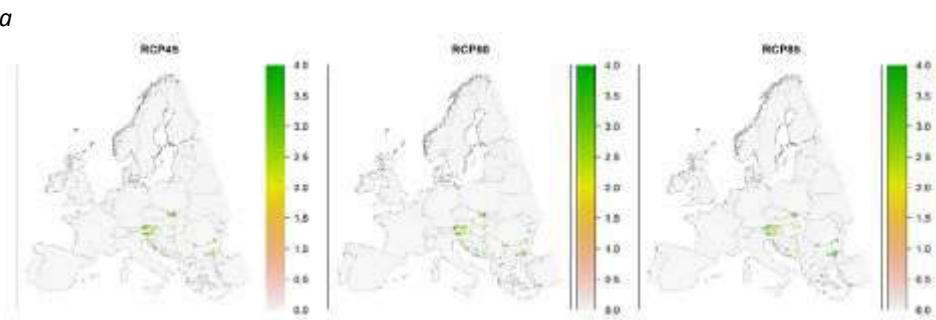
Microtus cabreræ



Muscardinus avellanarius

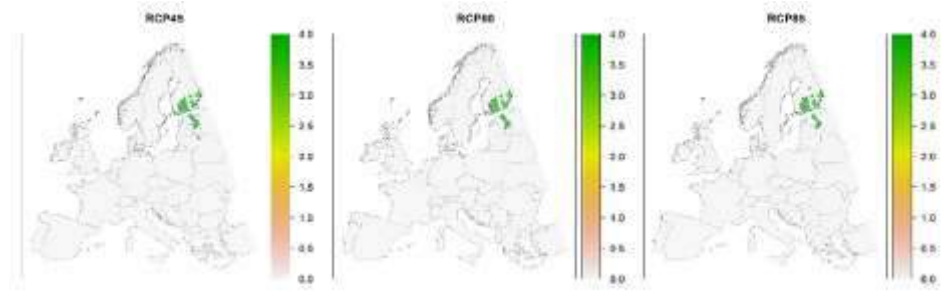


Dryomys nitedula

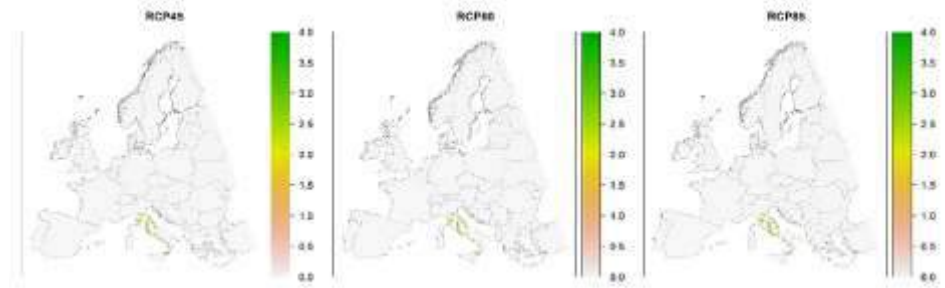


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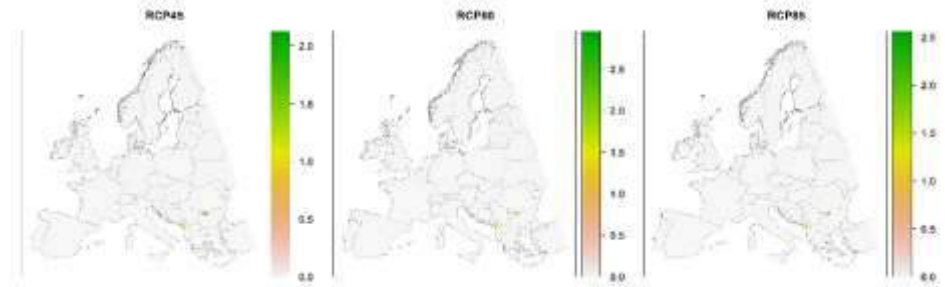
Sicista betulina



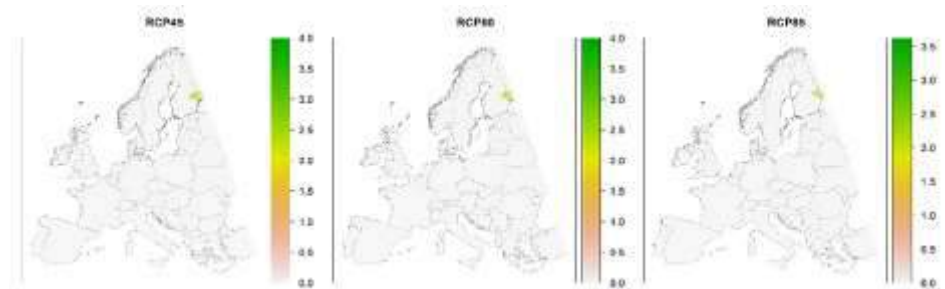
Hystrix cristata



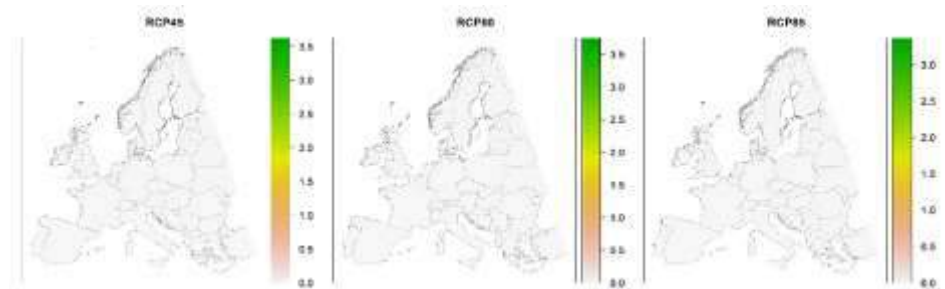
Canis aureus



Canis lupus

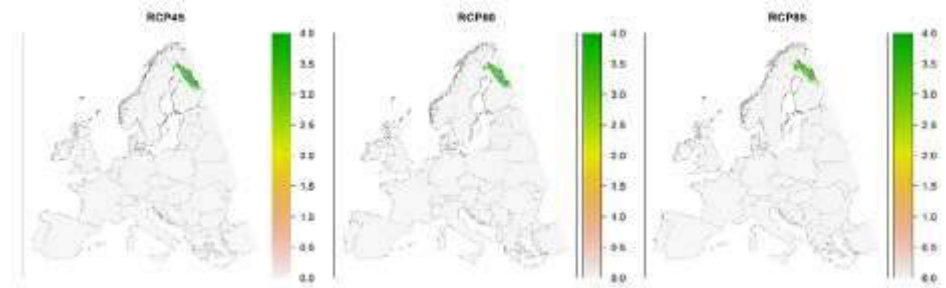


Alopex lagopus

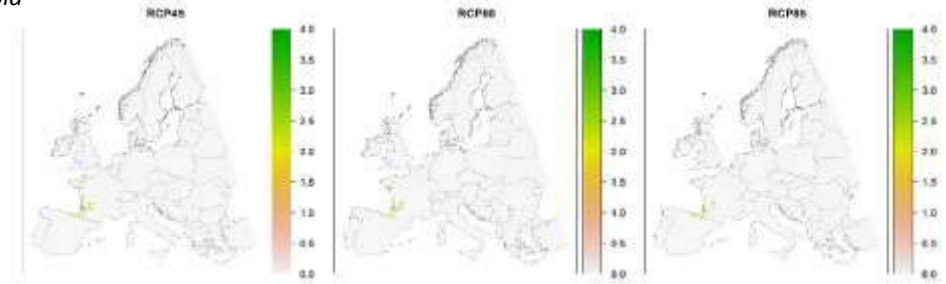


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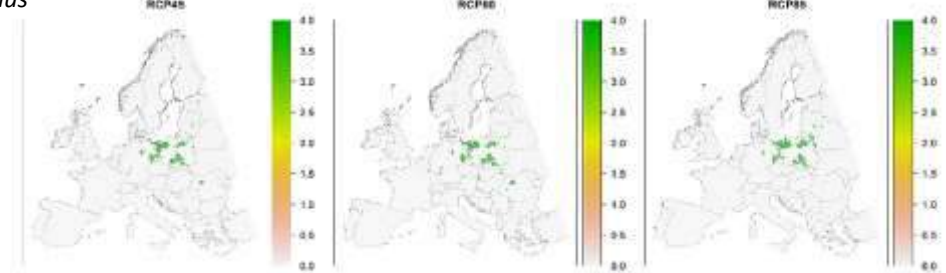
Ursus arctos



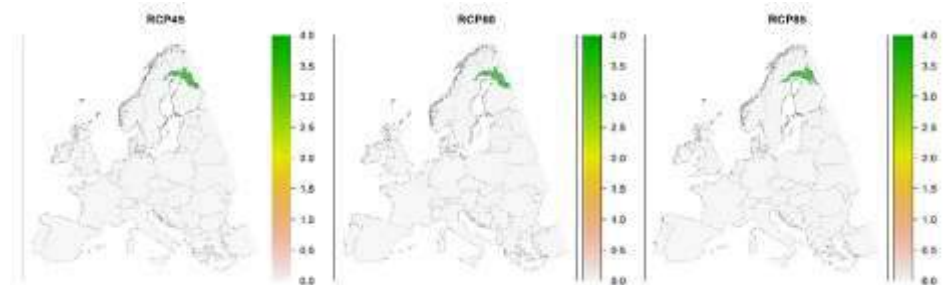
Mustela lutreola



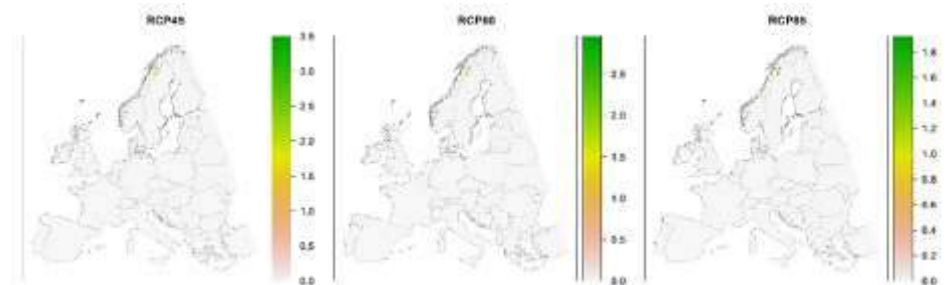
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Martes martes

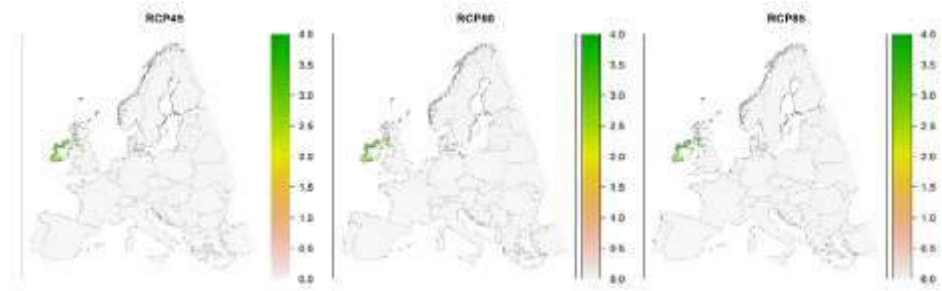


Gulo gulo

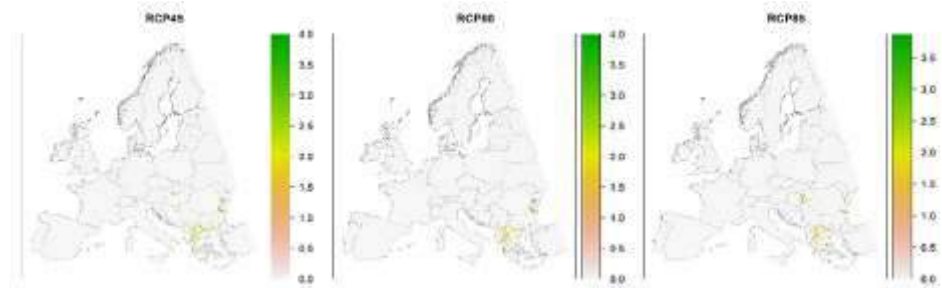


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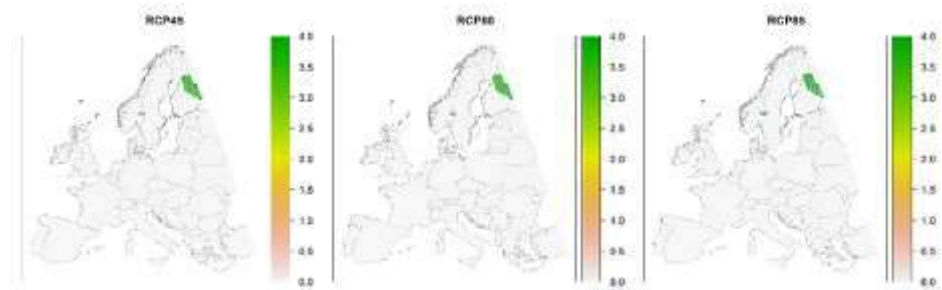
Lutra lutra



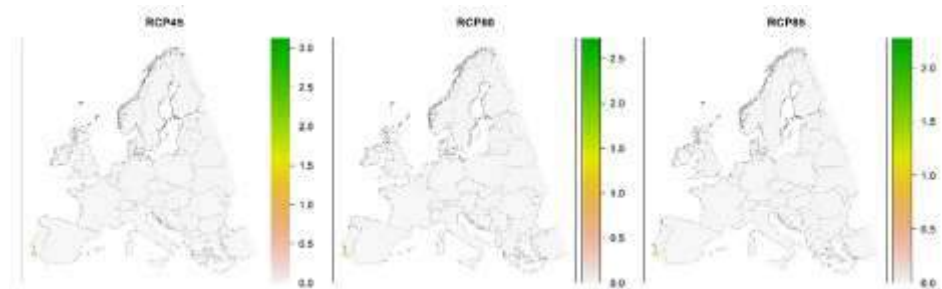
Felis sylvestris



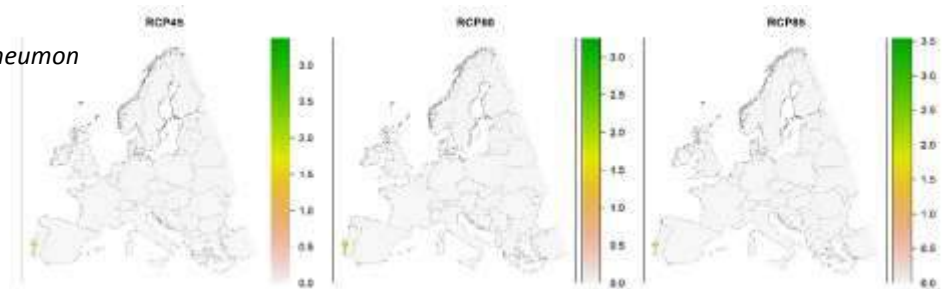
Lynx lynx



Lynx pardinus



Hespestes ichneumon



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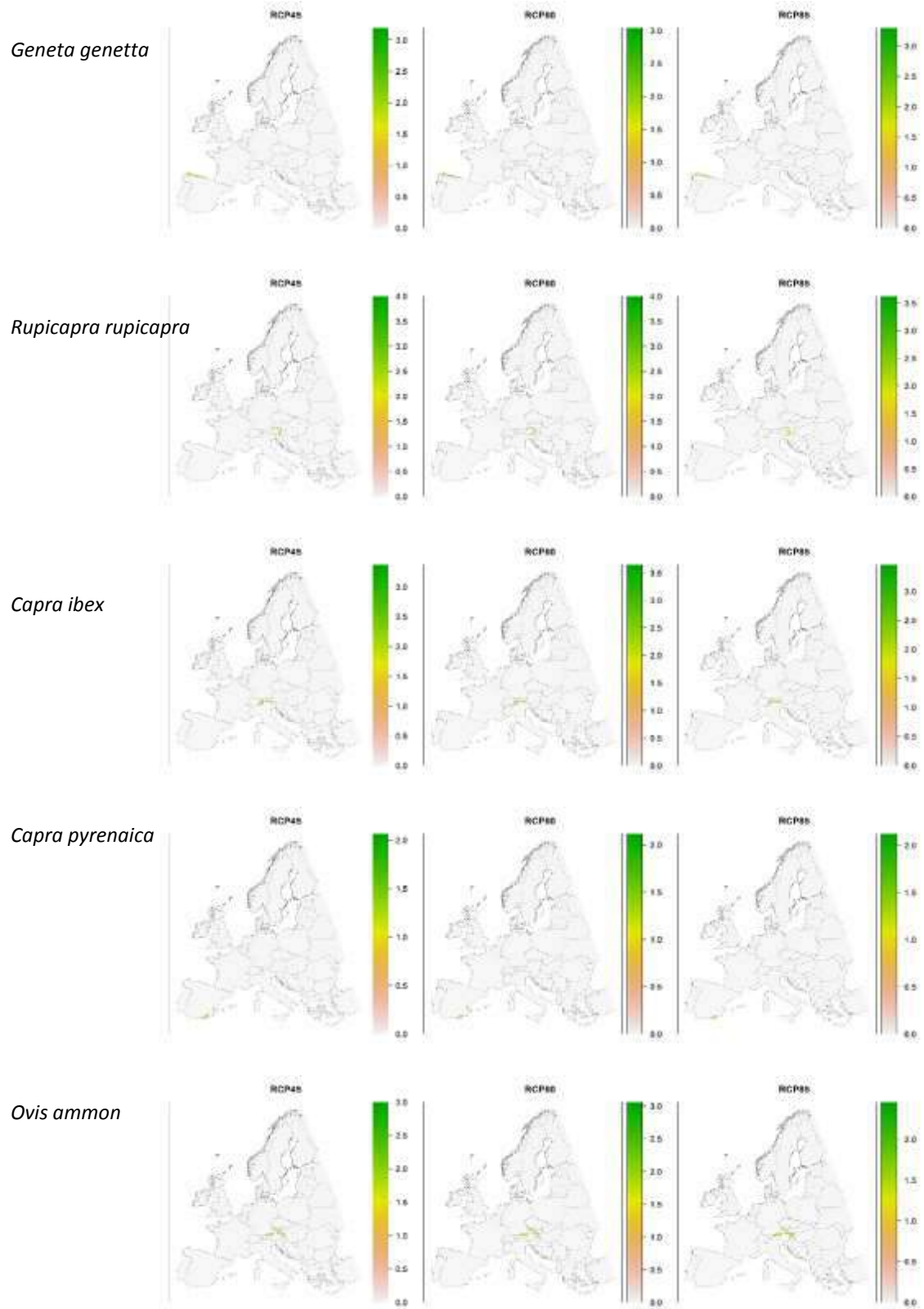
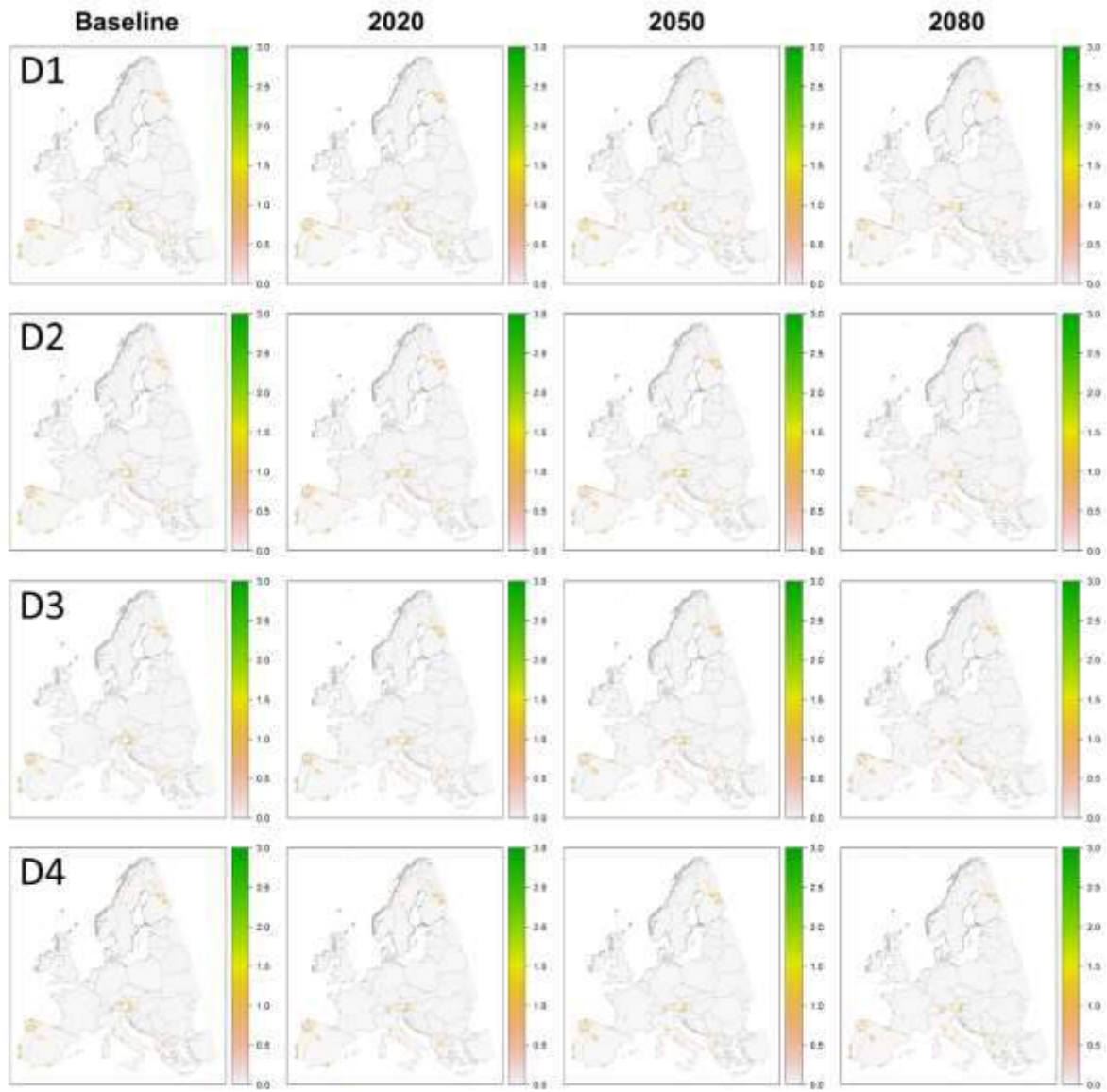
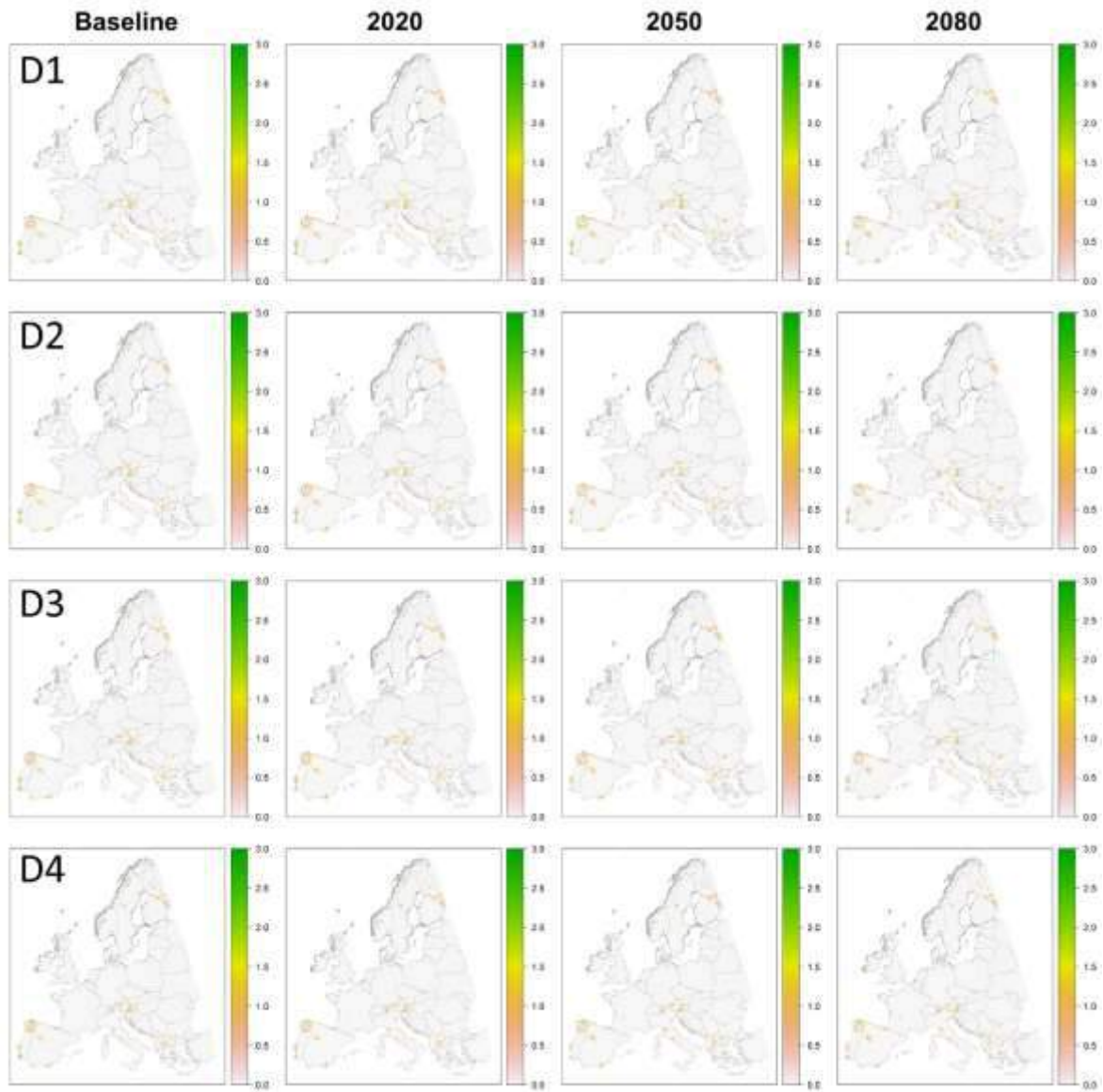


Figure S5 - Number of periods of time (among the four analyzed: baseline, 2020, 2050 and 2080) each site is crossed by a C^s SATs in each of the four climate scenarios analyzed (values represent averages among the four dispersal scenarios). The larger the numbers, the more stable (i.e. spatially fixed) the SATs are.

RCP 8.5



RCP 6.0



RCP 4.5

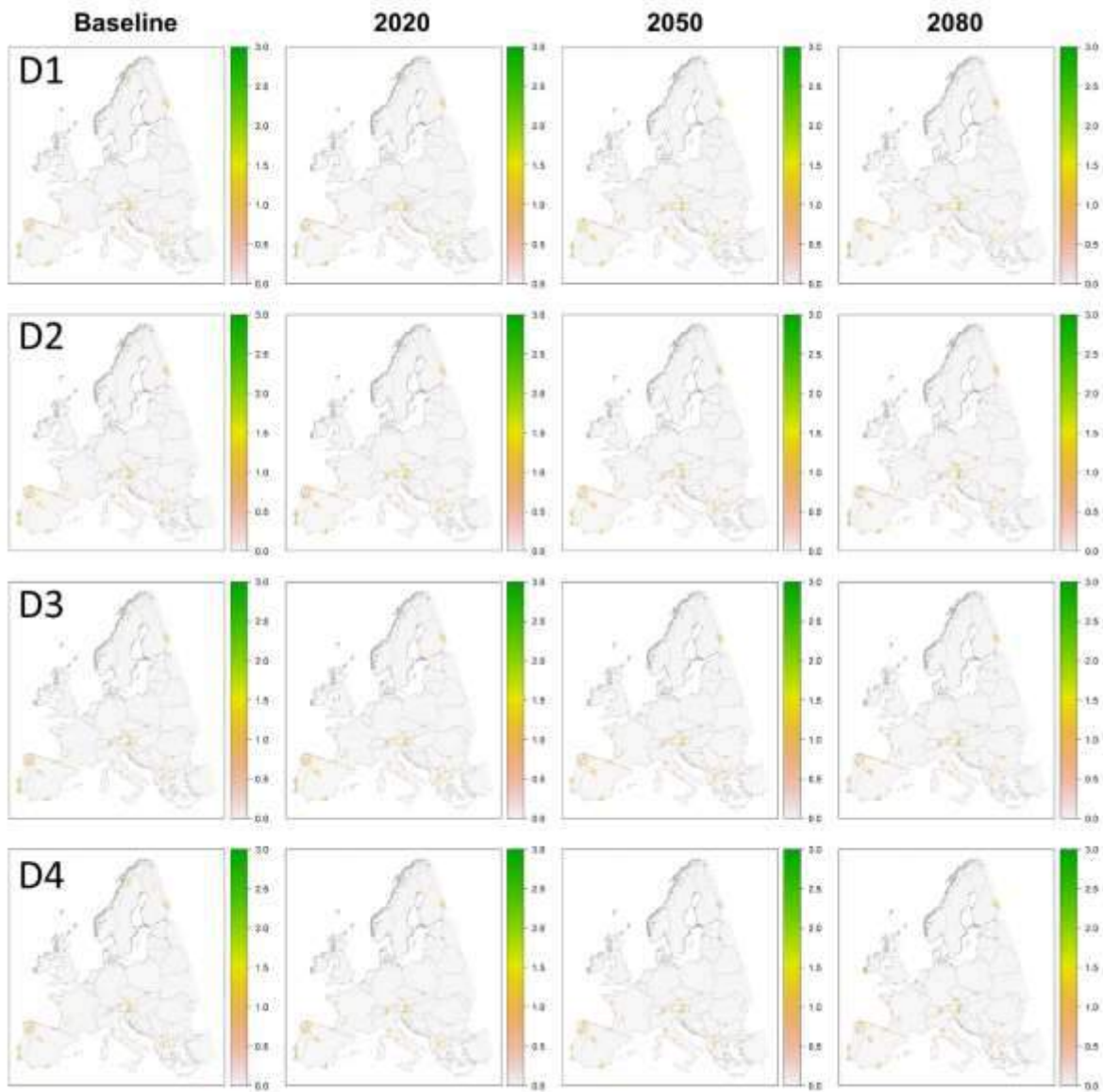


Figure S6 - Hotspots of centrality for SATs in C^s along the four time periods, measures as the number of species each site emerges as a convergence point, in each time period and for each of the climate x dispersal scenarios,

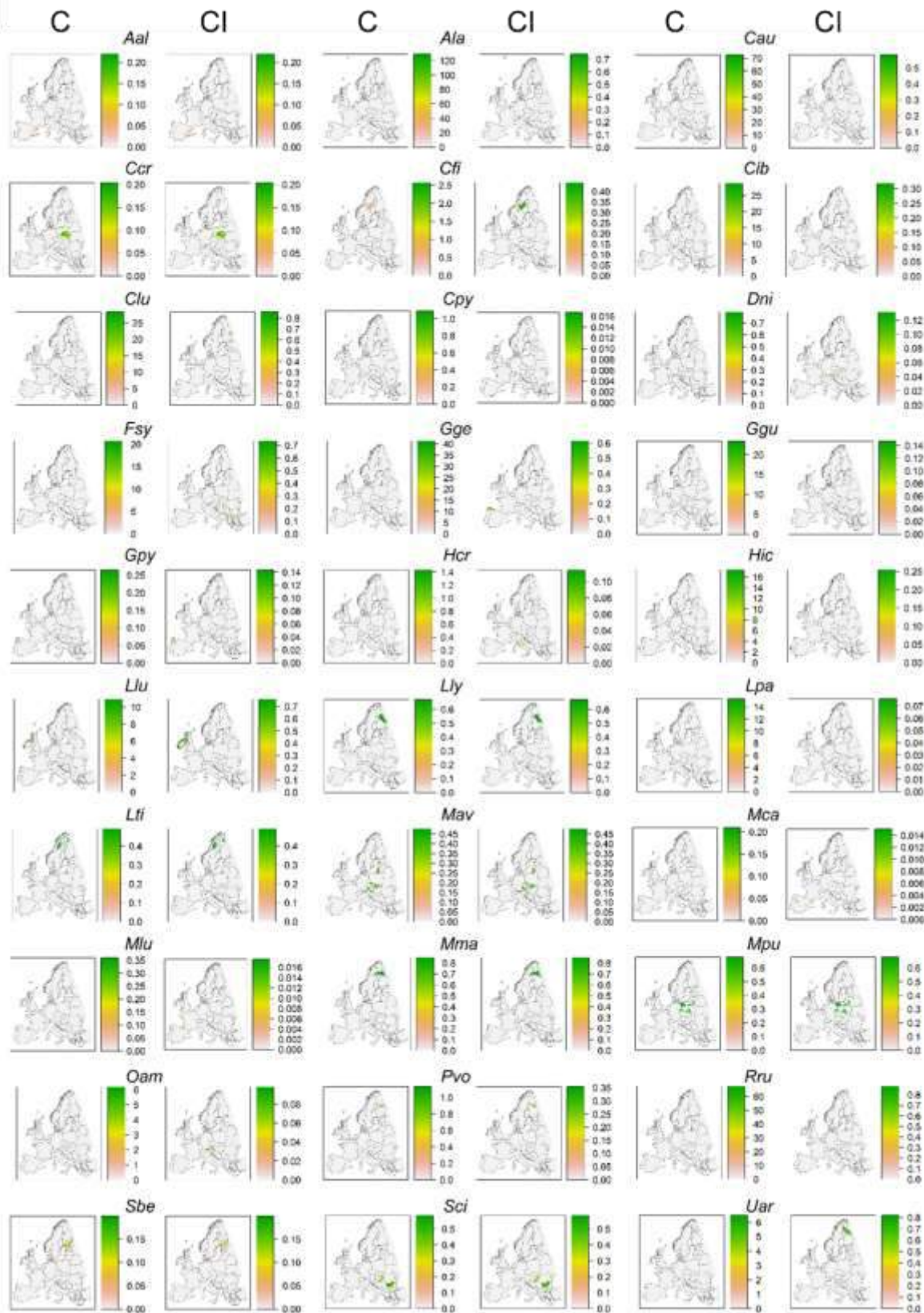


Figure S7- Maps of summed species persistence scores among the optimal species trajectories that cross each site (average values for RCP8.5 among the four dispersal assumptions). Maps refer to convergence-unconstrained SATs (**C^s**) and their derived independent trajectories (**CI^s**).

Aal: *Atelerix algirus*; **Ala:** *Alopex lagopus*; **Cau:** *Canis aureus*; **Ccr:** *Cricetus cricetus*; **Cfi:** *Castor fiber*; **Cib:** *Capra ibex*; **Clu:** *Canis lupus*; **Cpy:** *Capra pyrenaica*; **Dni:** *Dryomys nitedula*; **Fsi:** *Felis silvestris*; **Gge:** *Genetta genetta*; **Ggu:** *Gulo gulo*; **Gpy:** *Galemys pyrenaica*; **Hcr:** *Hystrix cristata*; **Hic:** *Hesperotes ichneumon*; **Llu:** *Lutra lutra*; **Lly:** *Lynx lynx*; **Lpa:** *Lynx pardinus*; **Lti:** *Lepus timidus*; **Mav:** *Muscardinus avellanarius*; **Mca:** *Microtus cabreriae*; **Mlu:** *Mustela lutreola*; **Mma:** *Martes martes*; **Mpu:** *Mustela putorius*; **Oam:** *Ovis ammon*; **Pvo:** *Pteromys volans*; **Rru:** *Rupicapra rupicapra*; **Sbe:** *Sicista betulina*; **Sci:** *Spermophilus citellus*; **Uar:** *Ursus arctos*.

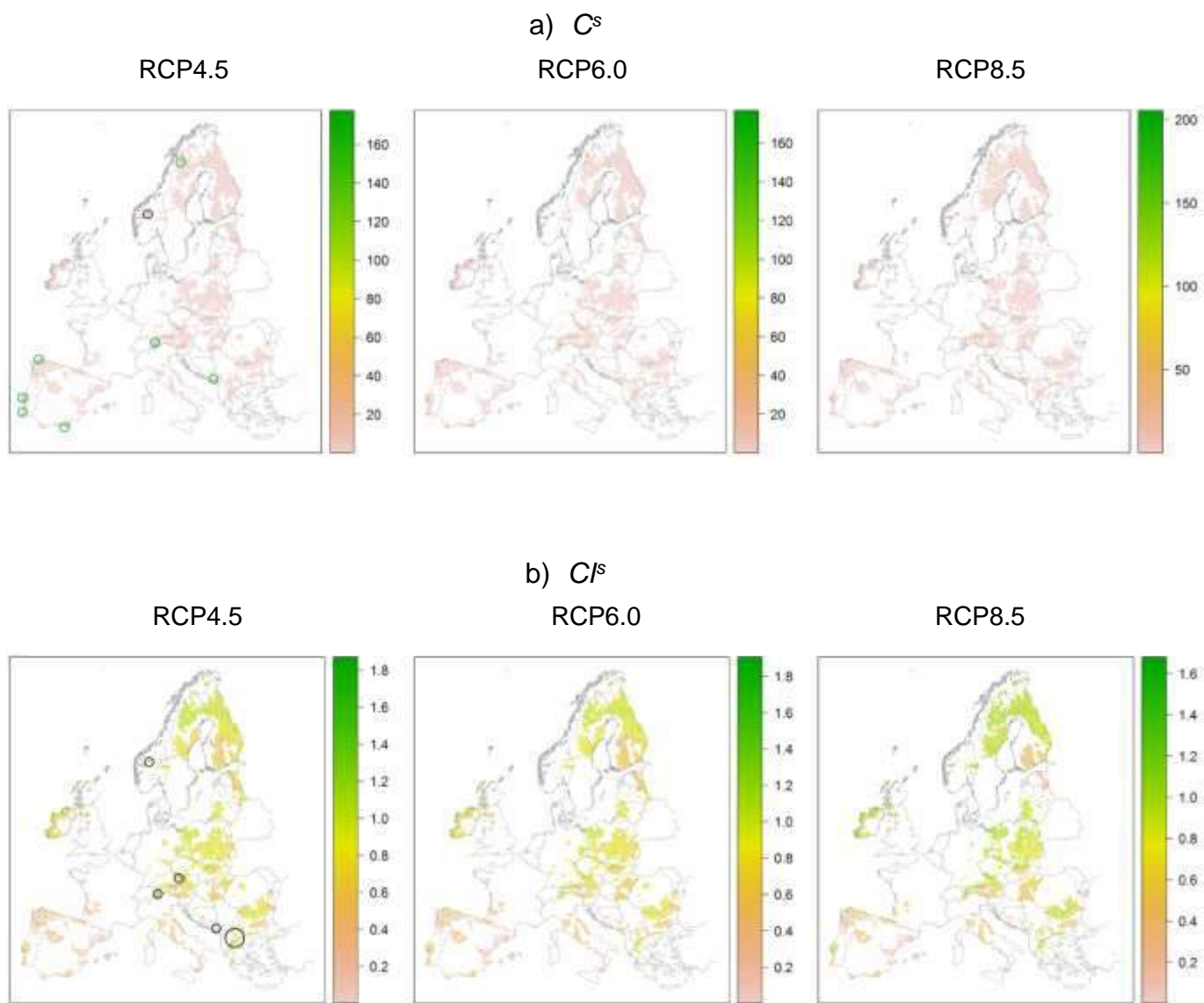


Figure S8 - The sum of persistence scores of SATs of all species, averaged among the four dispersal scenarios. The areas with the largest scores are marked with circles (green for high scores and black with the top scores. a) for SATs in C^s ; b) for SATs in C^f .

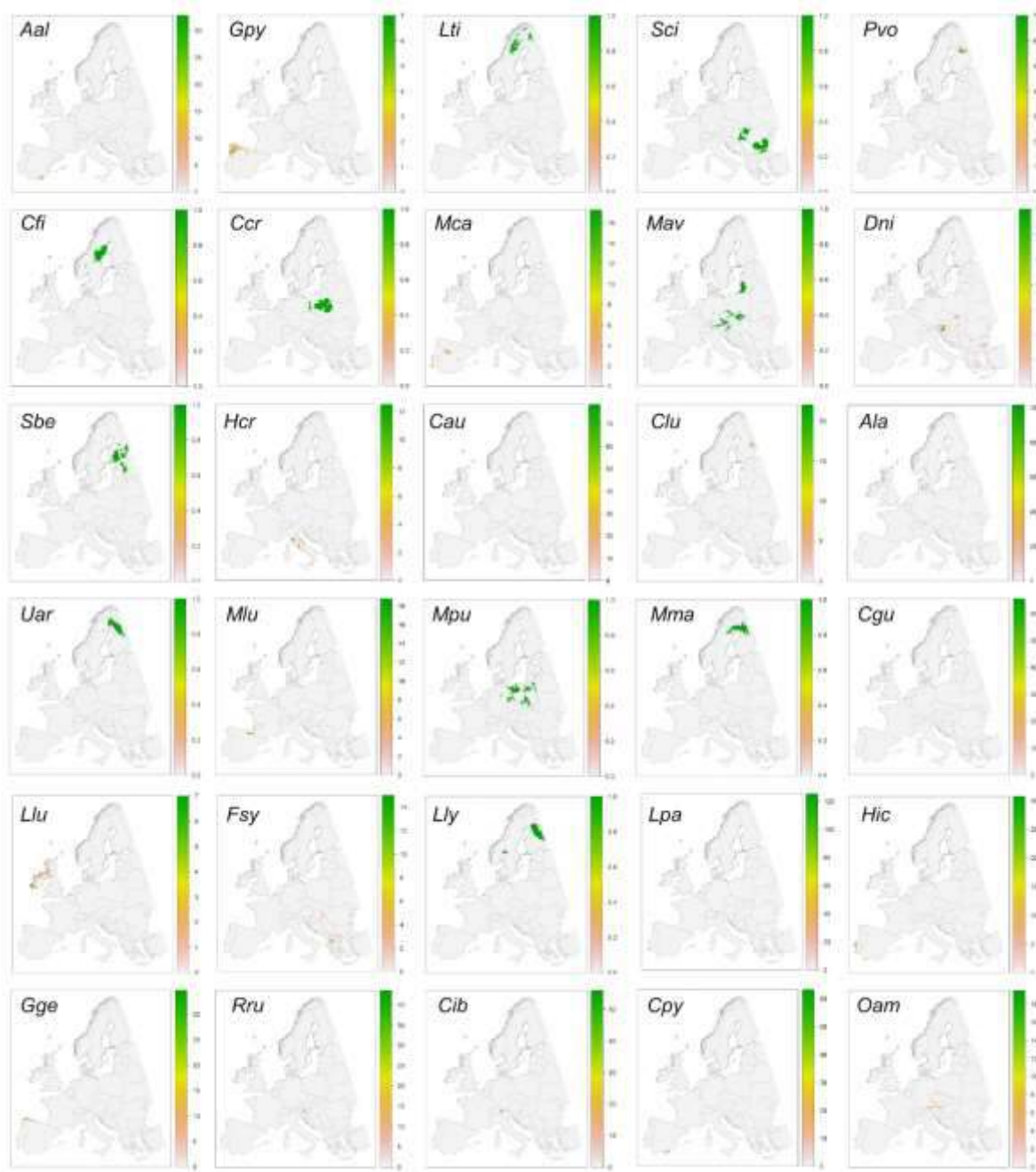


Figure S9 - Number of synchronically converging SATs in **C^s**. The values result from summing SAT convergence in the four time periods under RCP8.5 and D1 dispersal scenario.

Aal: *Atelerix algirus*; **Ala:** *Alopex lagopus*; **Cau:** *Canis aureus*; **Ccr:** *Cricetus cricetus*; **Cfi:** *Castor fiber*; **Cib:** *Capra ibex*; **Clu:** *Canis lupus*; **Cpy:** *Capra pyrenaica*; **Dni:** *Dryomys nitedula*; **Fsi:** *Felis silvestris*; **Gge:** *Genetta genetta*; **Ggu:** *Gulo gulo*; **Gpy:** *Galemys pyrenaicus*; **Hcr:** *Hystrix cristata*; **Hic:** *Hesperetes ichneumon*; **Llu:** *Lutra lutra*; **Lly:** *Lynx lynx*; **Lpa:** *Lynx pardinus*; **Lti:** *Lepus timidus*; **Mav:** *Muscardinus avellanarius*; **Mca:** *Microtus cabreræ*; **Mlu:** *Mustela lutreola*; **Mma:** *Martes martes*; **Mpu:** *Mustela putorius*; **Oam:** *Ovis ammon*; **Pvo:** *Pteromys Volans*; **Rru:** *Rupicapra rupicapra*; **Sbe:** *Sicista betulina*; **Sci:** *Spermophilus citellus*; **Uar:** *Ursus arctos*.

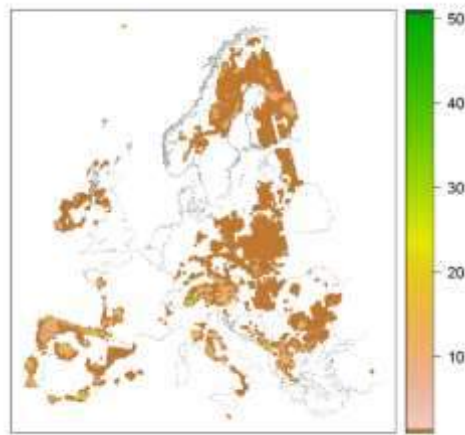


Figure S10a - Average convergence levels (i.e. number of C^s SATs of all species crossing a site in a given time period) among the 12 climate x dispersal scenarios and four periods of time. Values larger than 50 are fused in one class (sites colored in black)

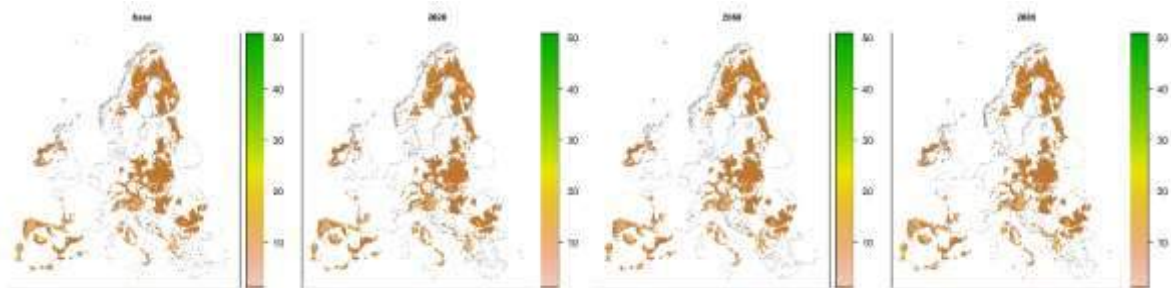


Figure S10b - Average convergence levels per period of time (i.e. number of C^s SATs of all species crossing a site in the same time period) among the 12 climate x dispersal scenarios. Values larger than 50 are fused in one class (sites colored in black)

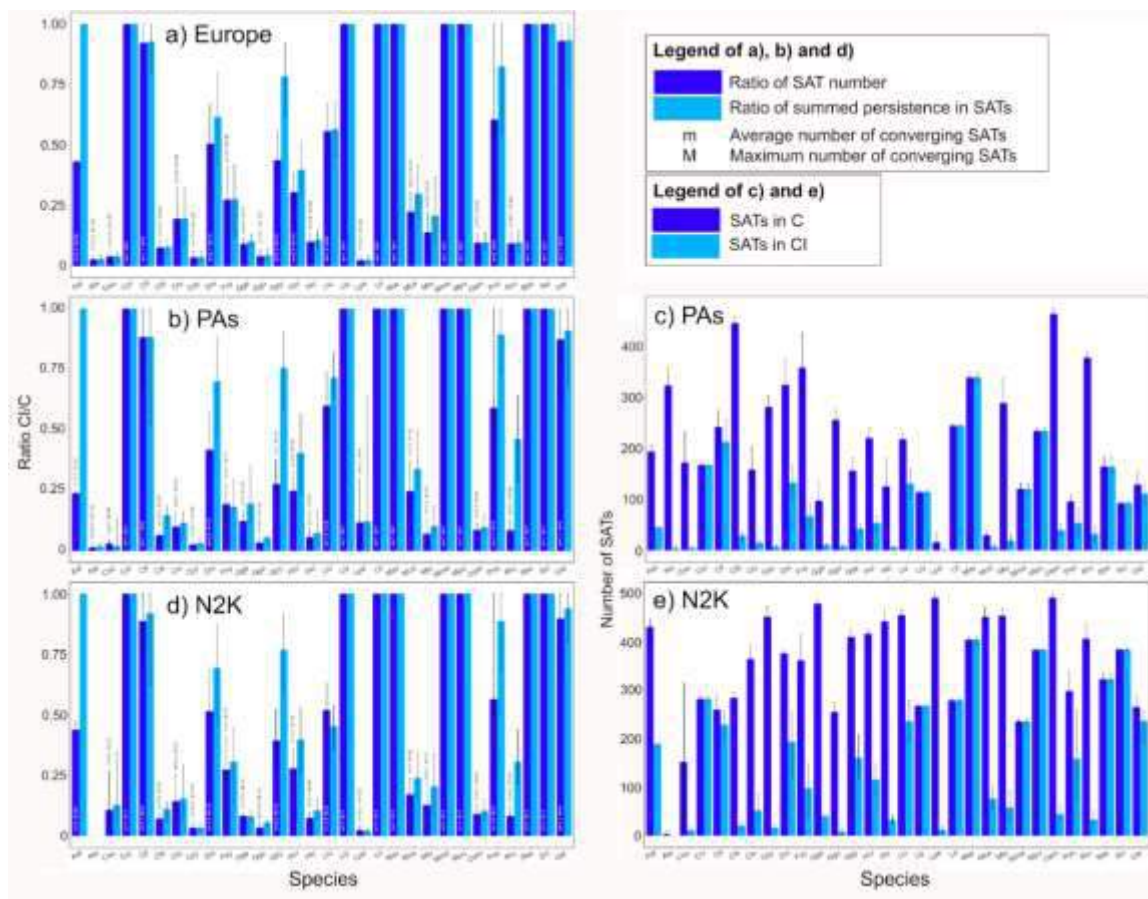


Figure S11 –Relationships between SATs in **C^s** and **Cl^s** (dark blue bars) for each species in a) Europe, b) and c) in protected areas (PAs), in at least one time period, and d), e) Natura sites (N2K), in at least one time period. In a), b) and d) analyses refer to ratios of total SATs between **Cl^s** and the 500 SATs in **C^s** (dark blue bars) and ratios between the summed persistence scores in **Cl^s** against the scores in **C^s** (light blue bars). Numbers refer to the mean (m) and maximum (M) convergence levels in in **C^s**. In c) and e) analyses refer to the number of SATs of **C^s** and **Cl^s** crossing protected areas, PAs, and Natura 2000 sites, N2s, in at least time period. Bars refer to average value from three climate x four dispersal scenarios. Whisker lines refer to maximum and minimum values.

Aal: *Atelerix algerius*; **Ala:** *Alopex lagopus*; **Cau:** *Canis aureus*; **Ccr:** *Cricetus cricetus*; **Cfi:** *Castor fiber*; **Cib:** *Capra ibex*; **Clu:** *Canis lupus*; **Cpy:** *Capra pyrenaica*; **Dni:** *Dryomys nitedula*; **Fsi:** *Felis silvestris*; **Gge:** *Genetta genetta*; **Ggu:** *Gulo gulo*; **Gpy:** *Galemys pyrenaicus*; **Hcr:** *Hystrix cristata*; **Hic:** *Hesperotes ichneumon*; **Llu:** *Lutra lutra*; **Lly:** *Lynx lynx*; **Lpa:** *Lynx pardinus*; **Lti:** *Lepus timidus*; **Mav:** *Muscardinus avellanarius*; **Mca:** *Microtus cabreræ*; **Mlu:** *Mustela lutreola*; **Mma:** *Martes martes*; **Mpu:** *Mustela putorius*; **Oam:** *Ovis ammon*; **Pvo:** *Pteromys volans*; **Rru:** *Rupicapra rupicapra*; **Sbe:** *Sicista betulina*; **Sci:** *Spermophilus citellus*; **Uar:** *Ursus arctos*.

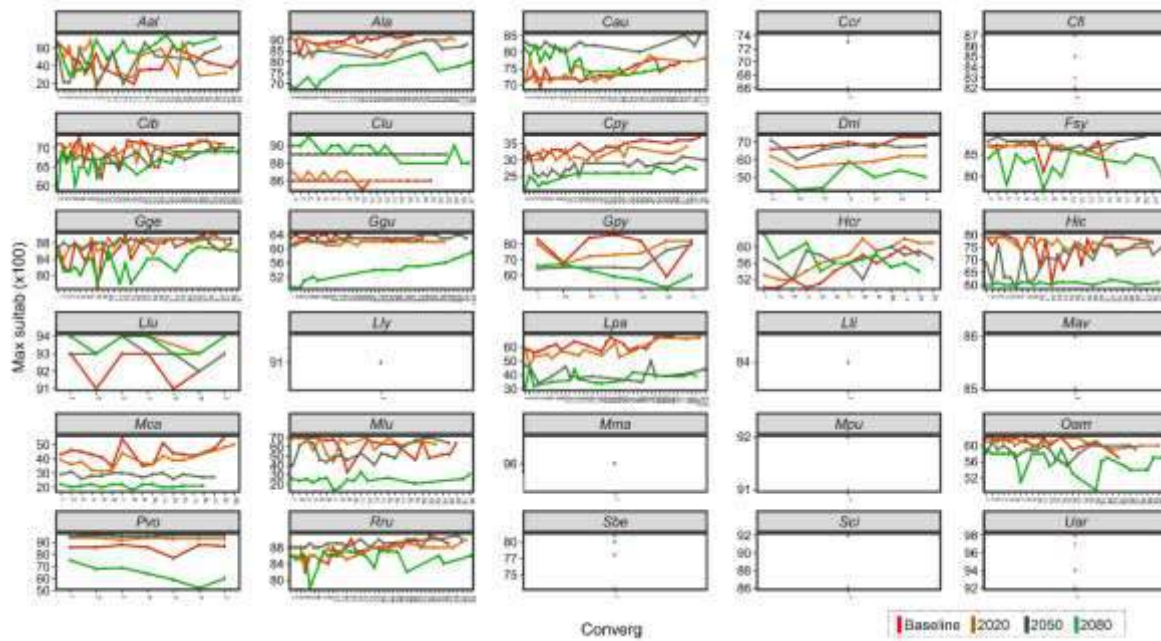


Figure S12a – The maximum climatic suitability scores of each species associated to sites in C^s SAT with distinct convergence levels in each of the time periods assessed (colored lines). Results refer to the RCP 8.5 x D1 scenario.

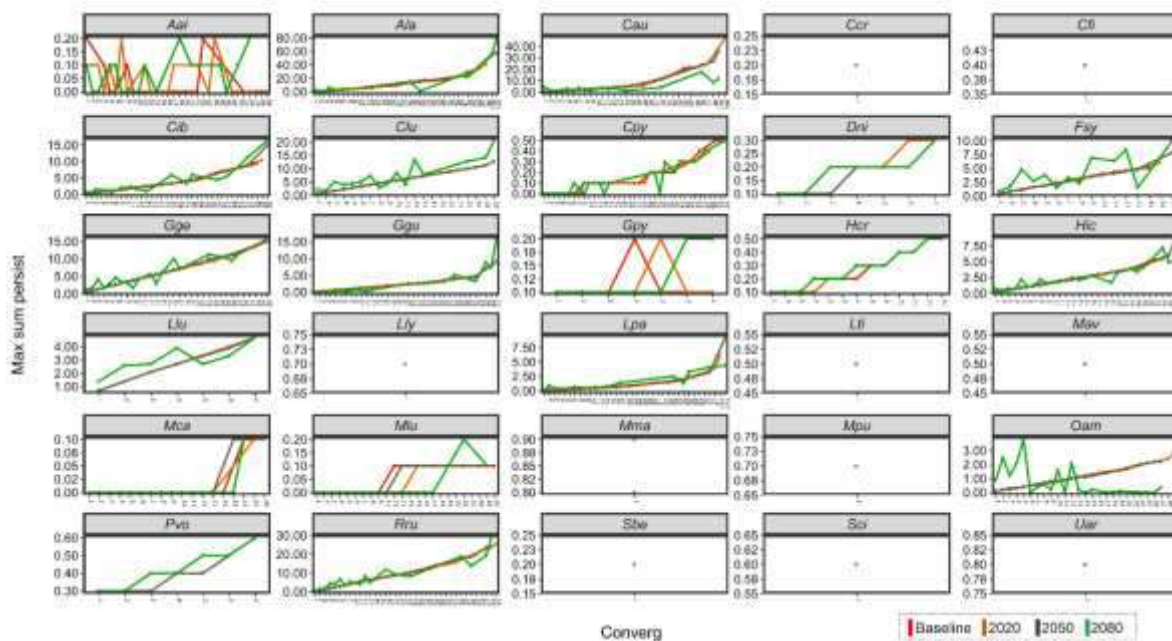
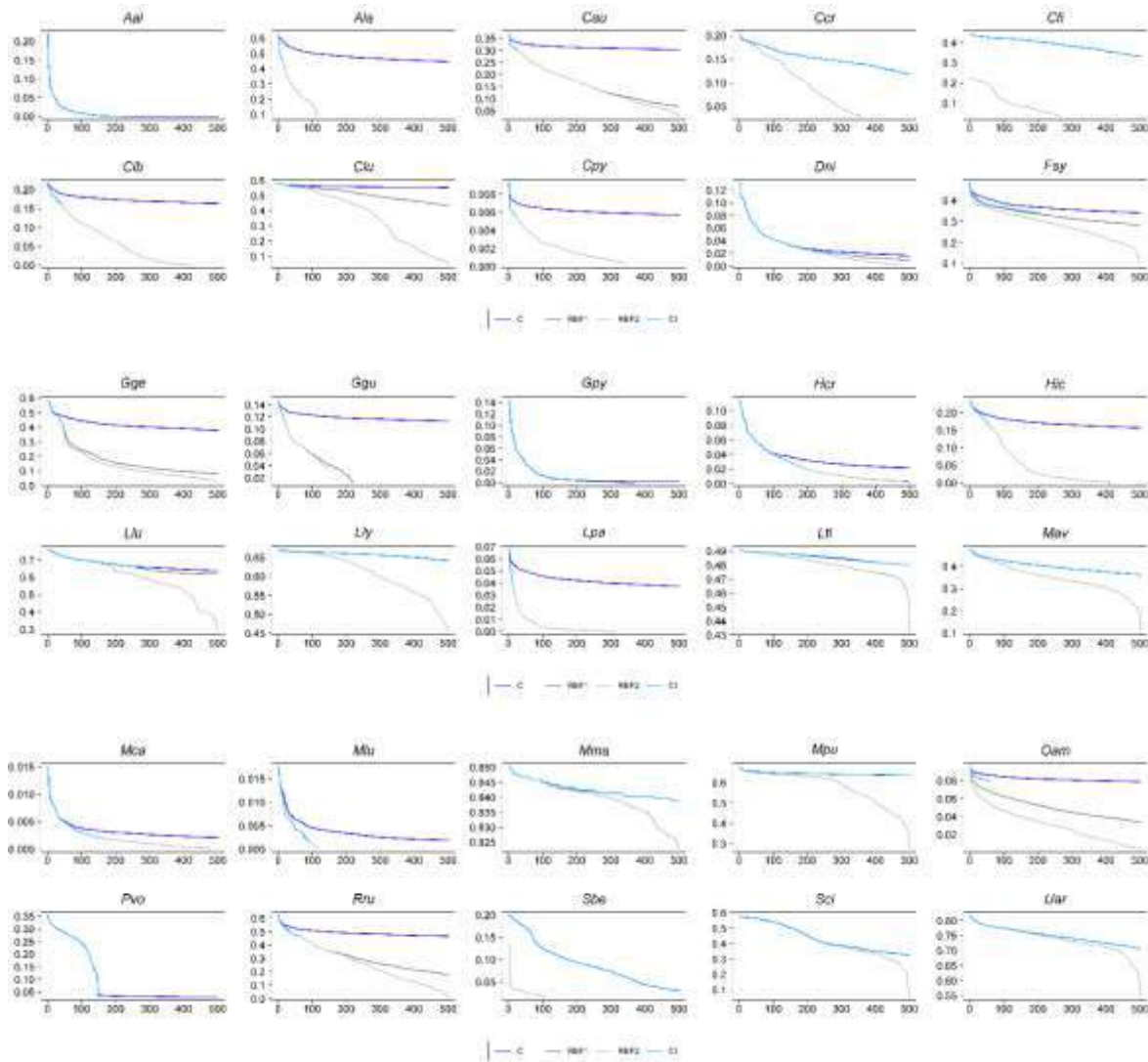
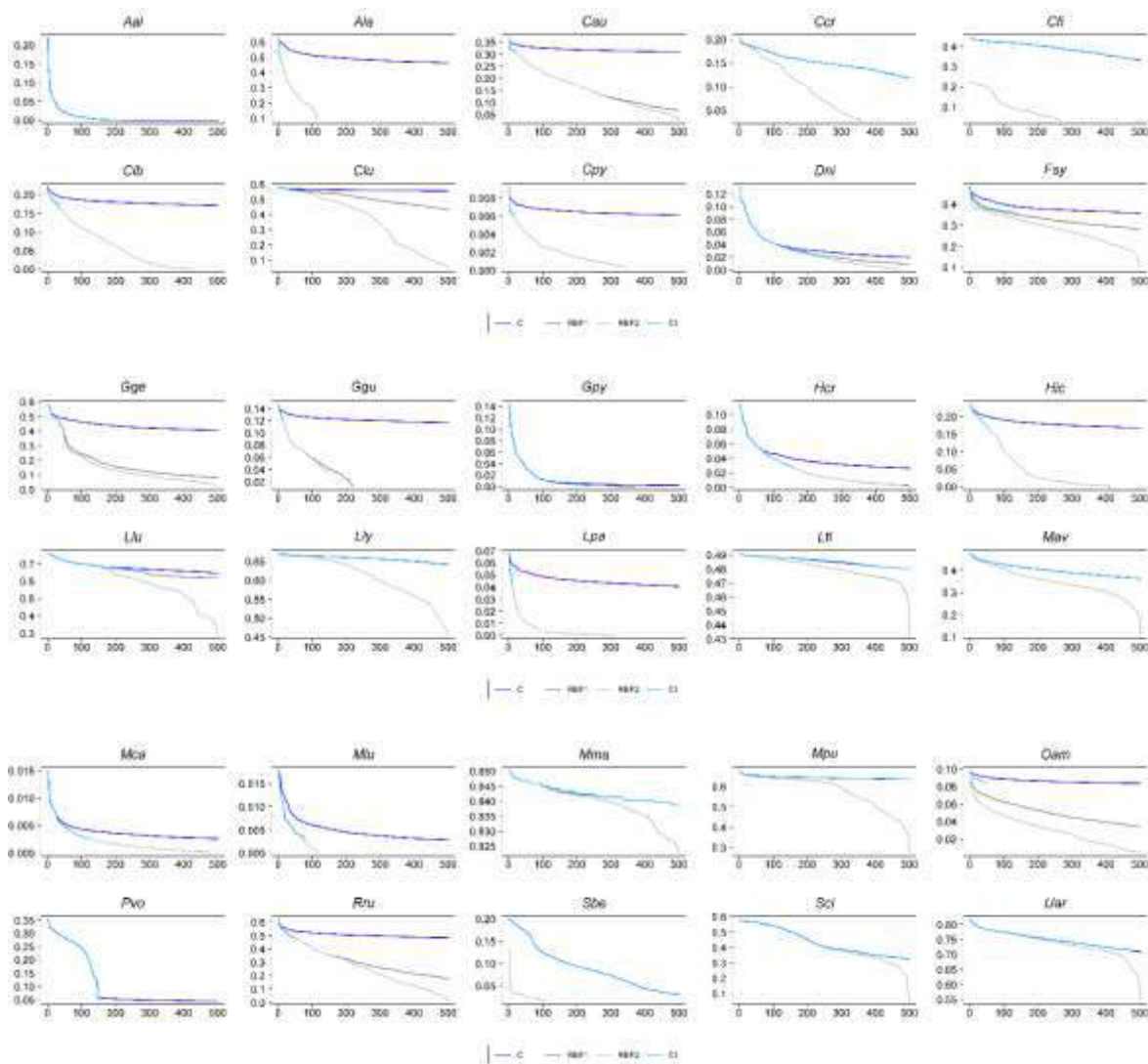


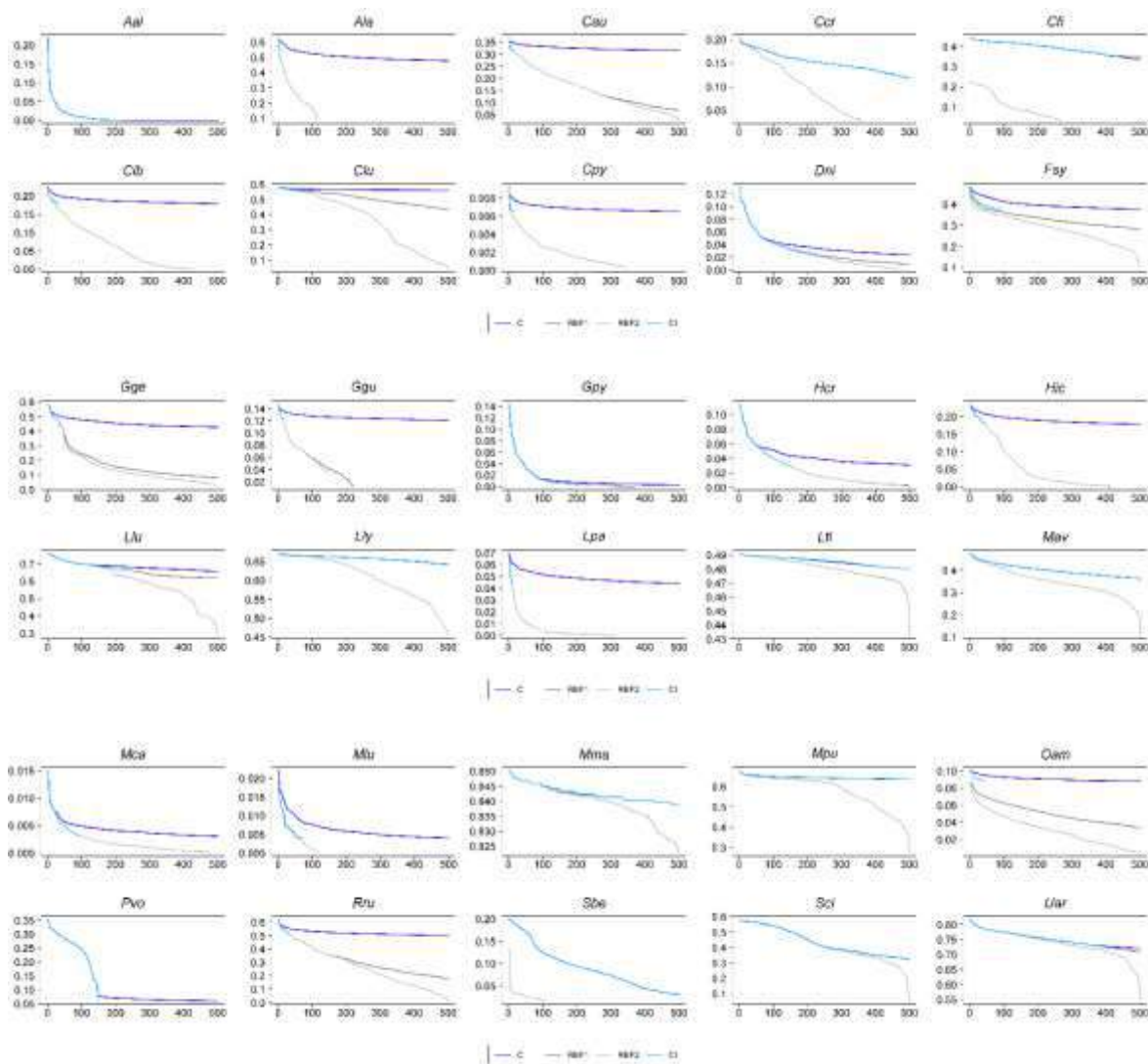
Figure S12b – The maximum sum of persistence scores of each species in C^s SAT crossing sites with distinct convergence levels in each of the time periods assessed (colored lines). Results refer to the RCP 8.5 x D1 scenario.



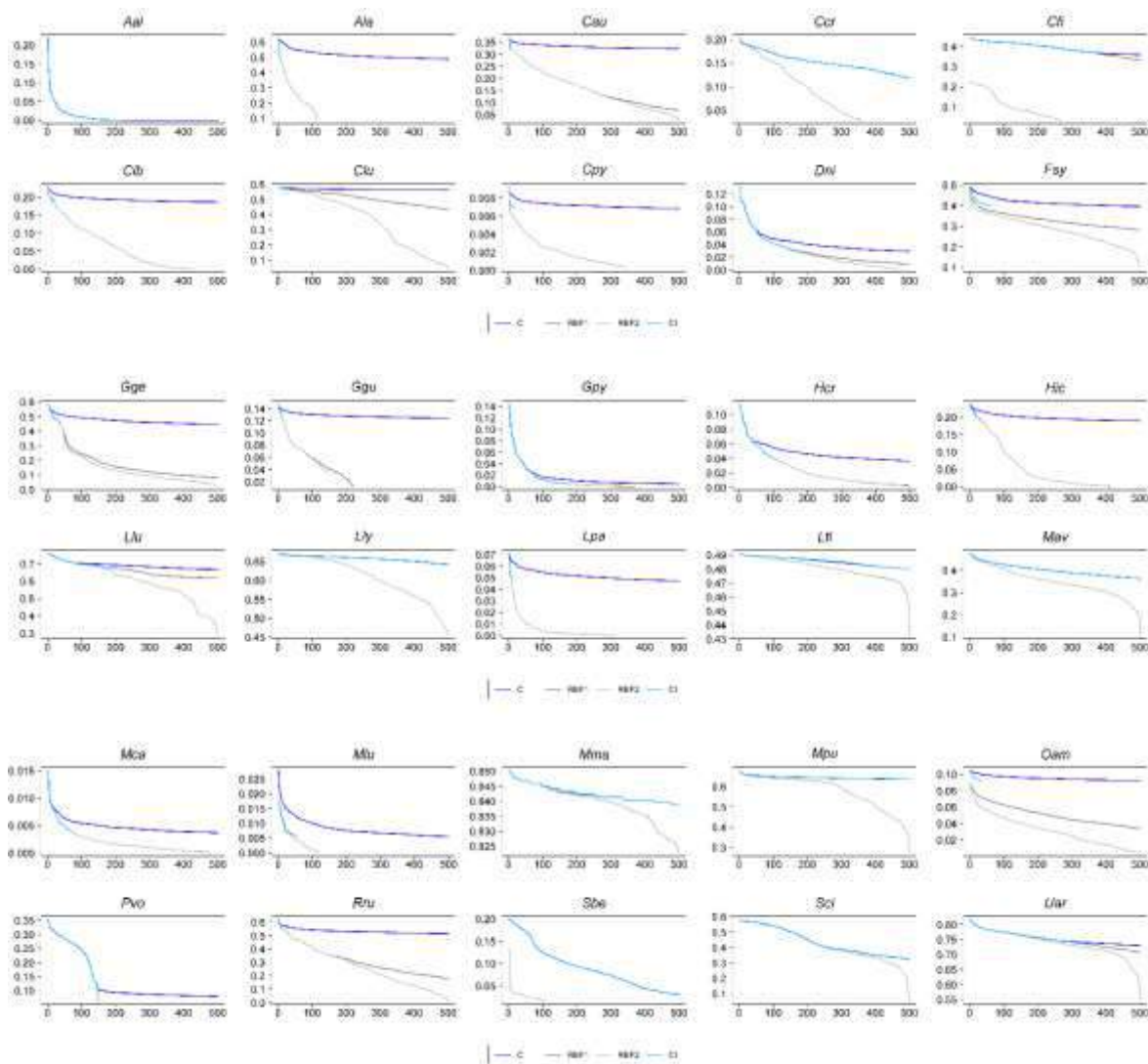
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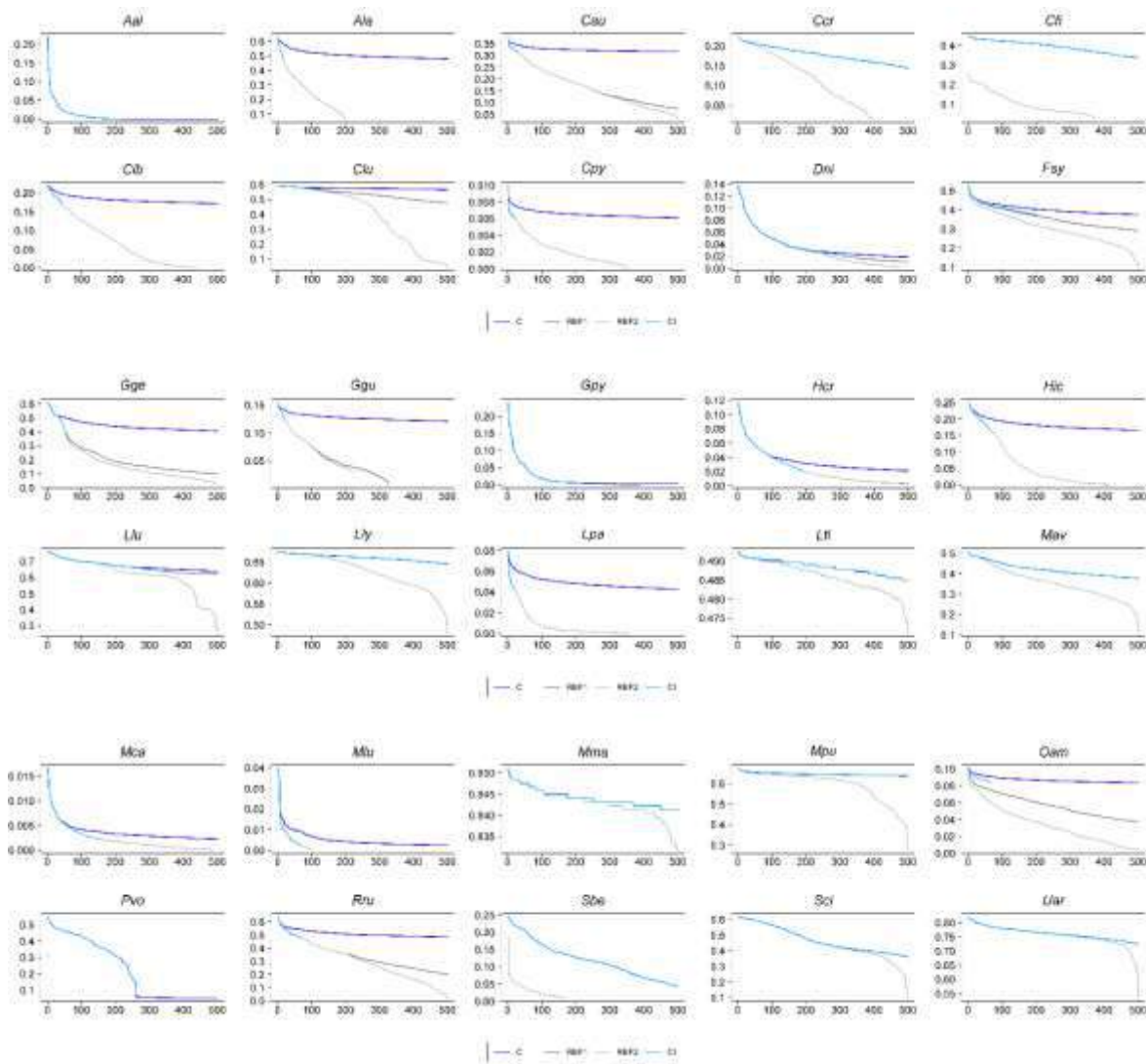
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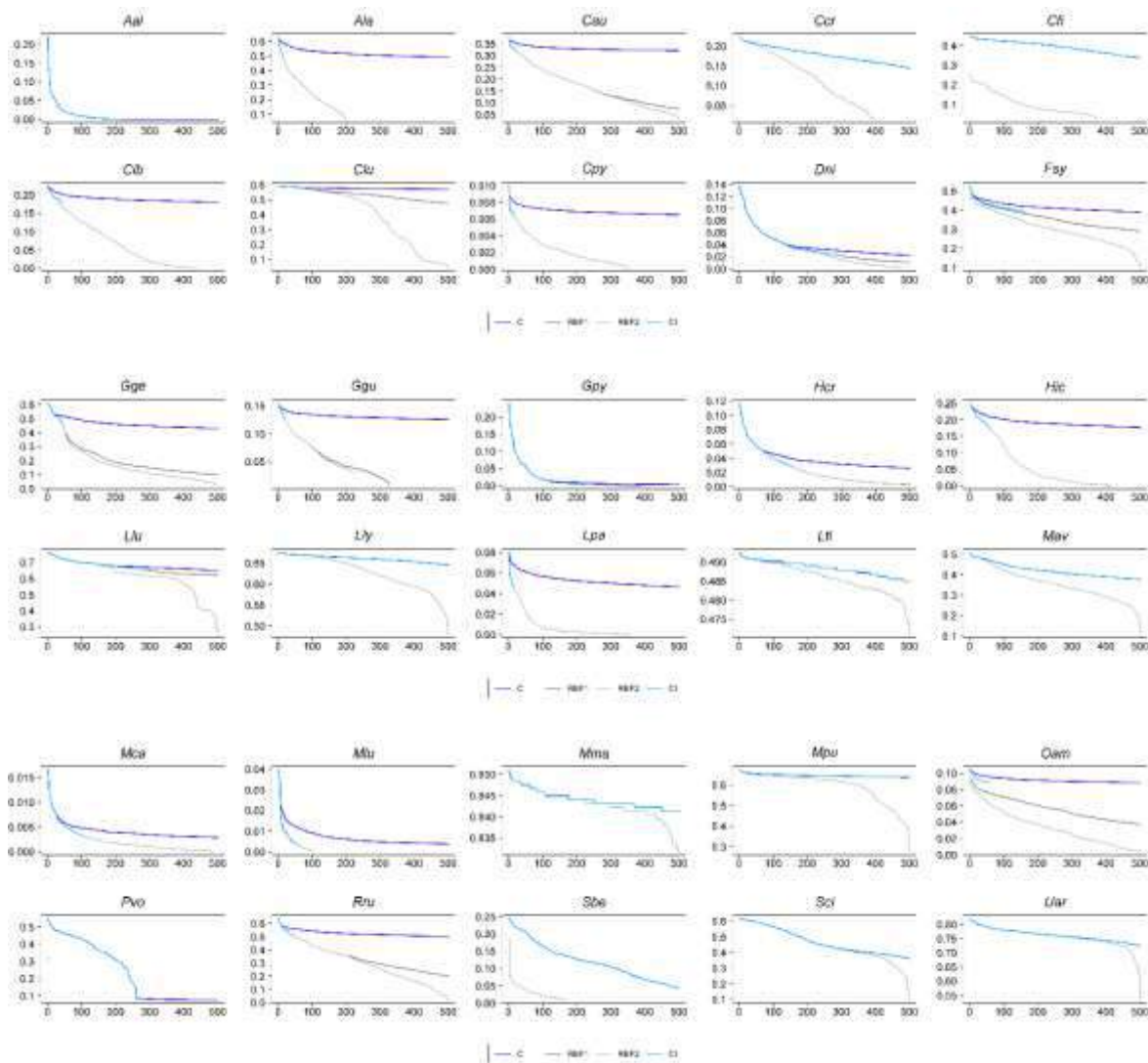


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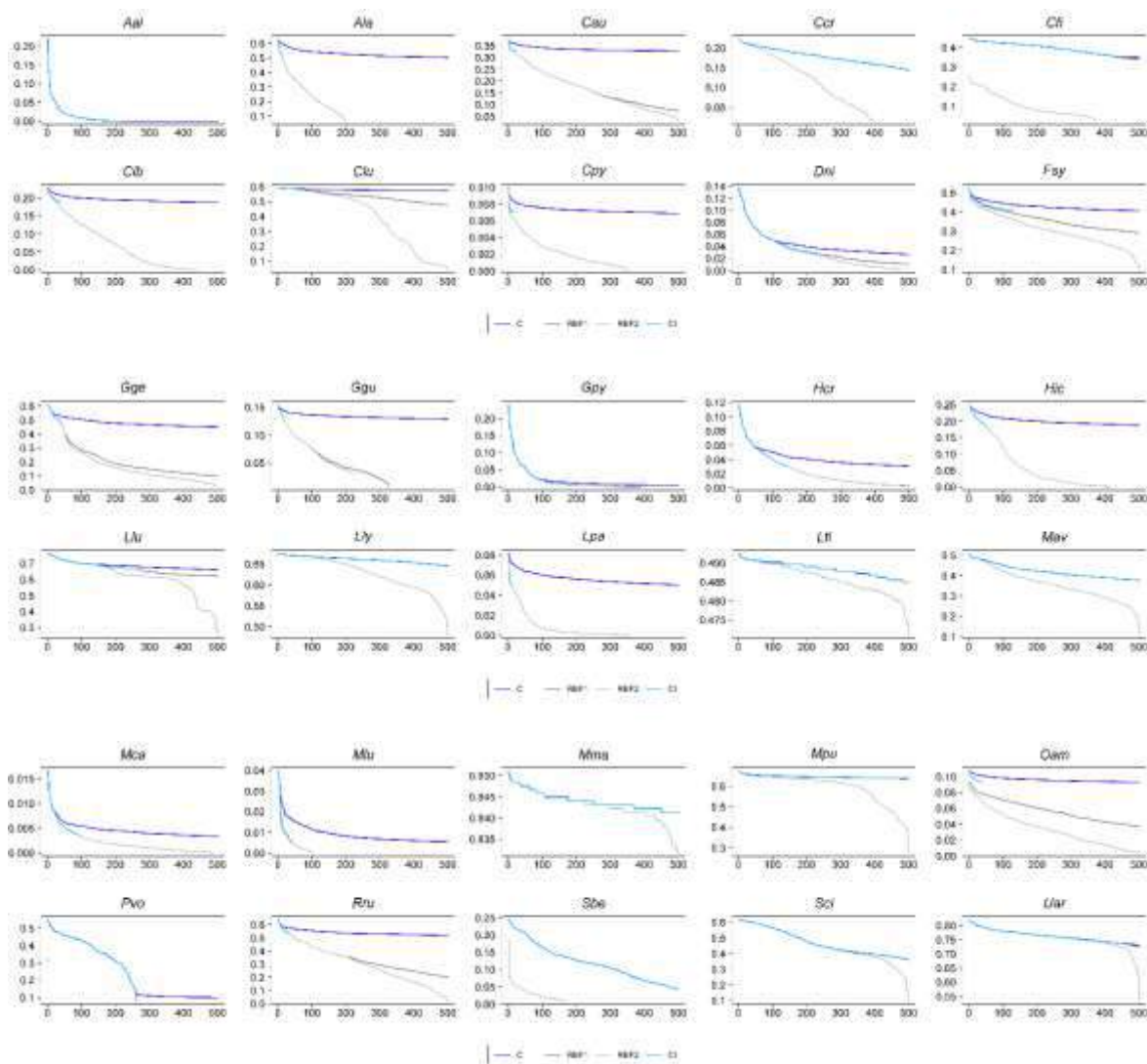


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RCP6.0/D2

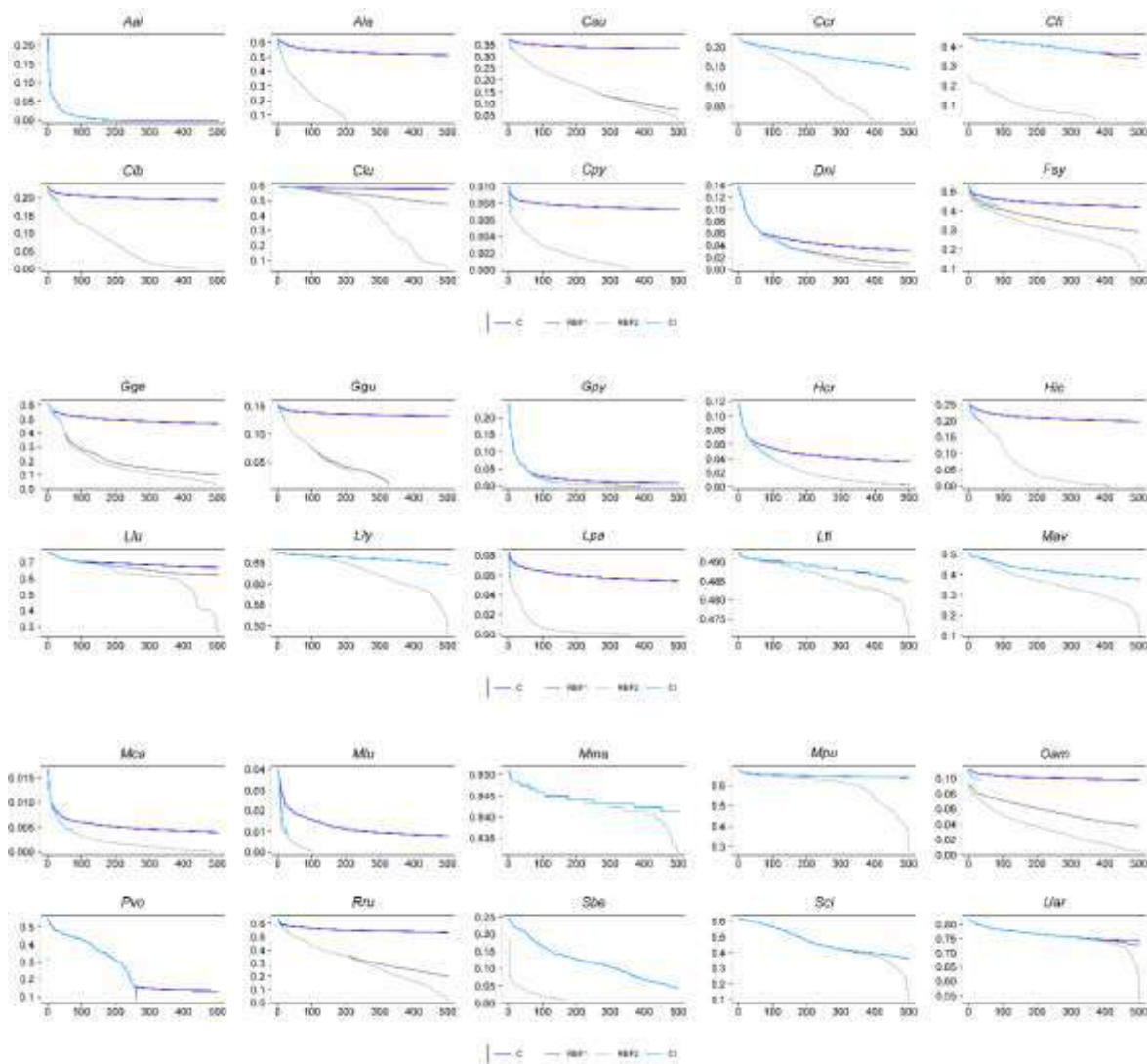


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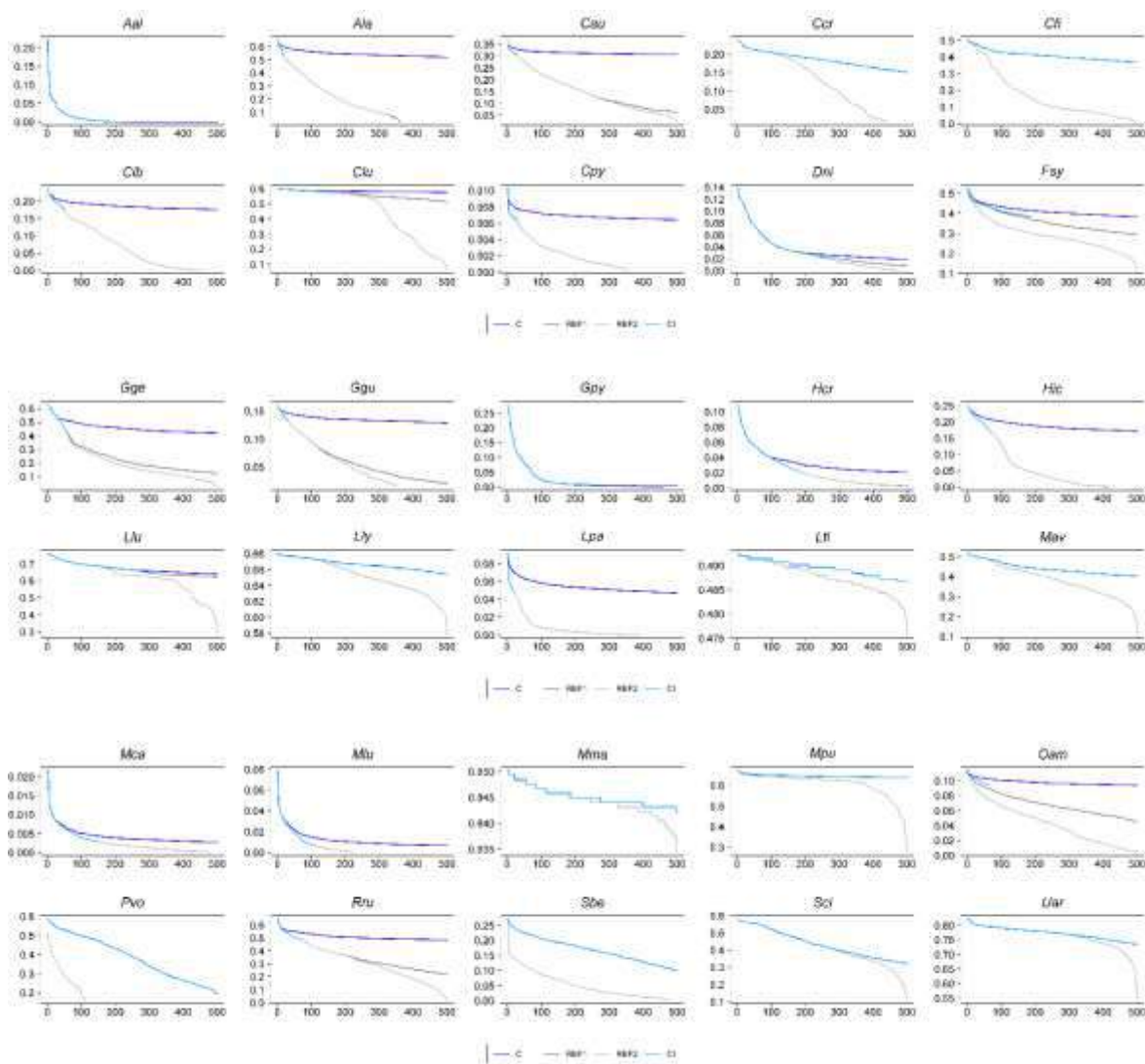
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RCP6.0/D4



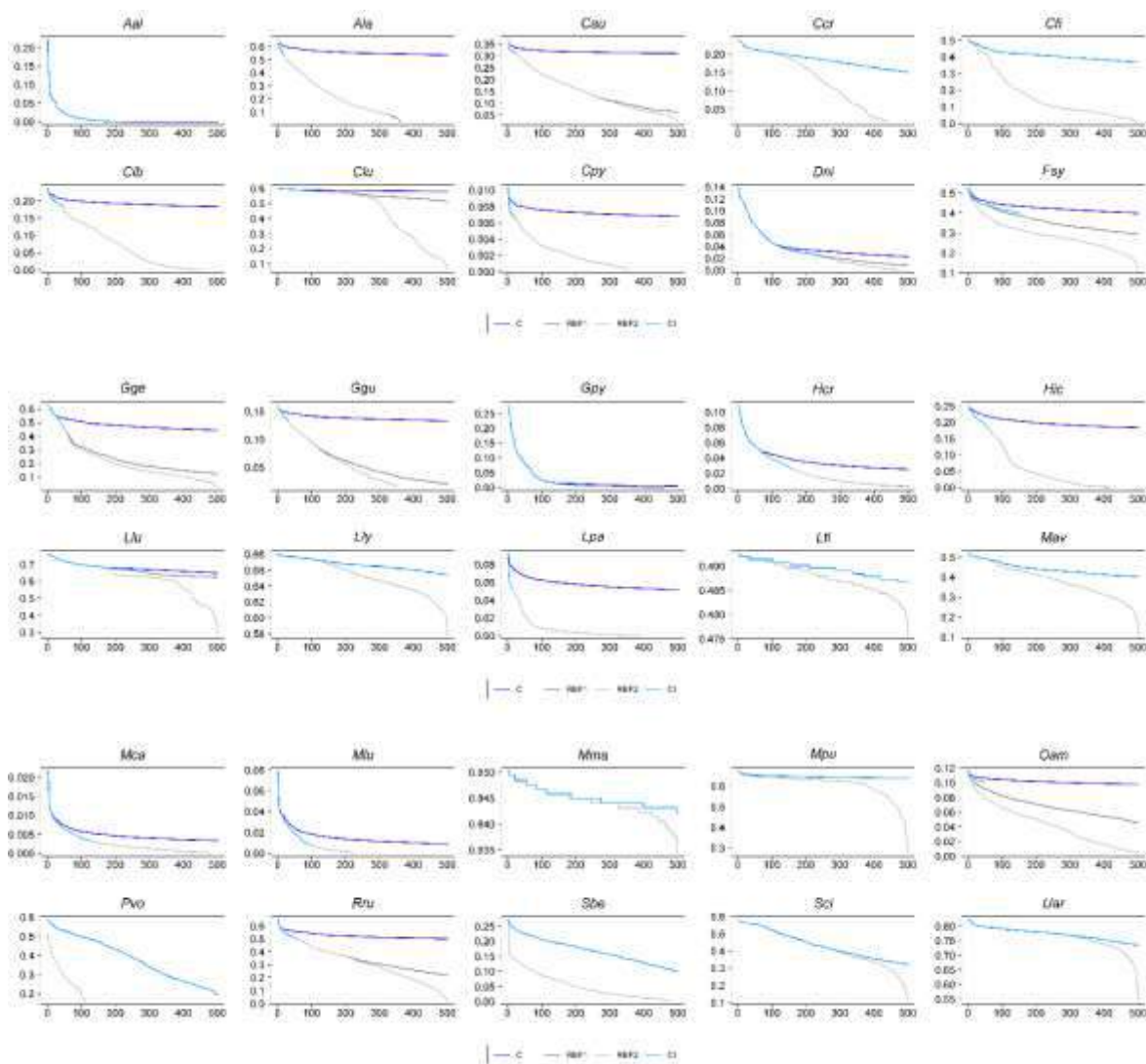
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RCP4.5/D1



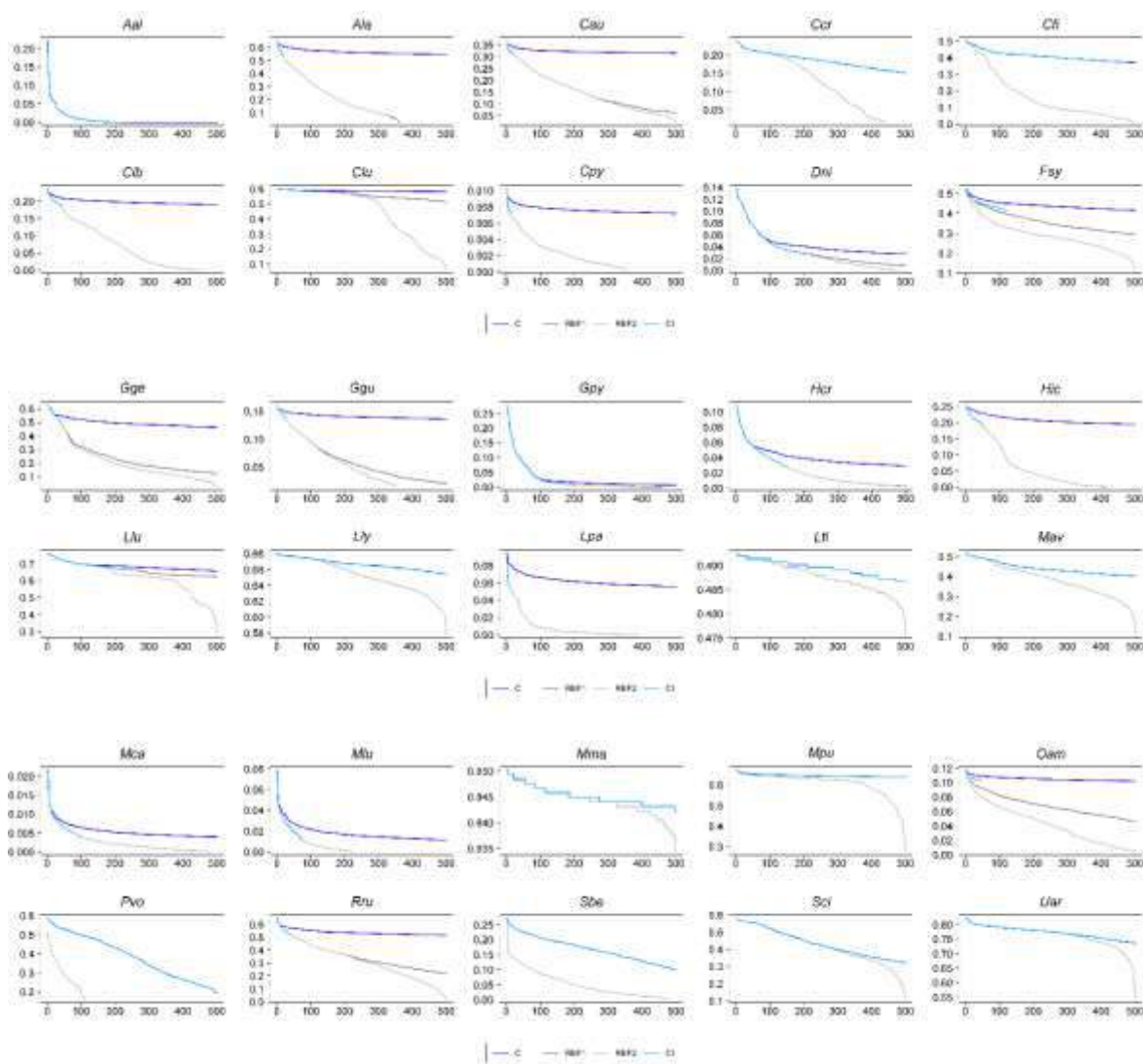
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RCP4.5/D2



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RCP4.5/D3



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RCP4.5/D4

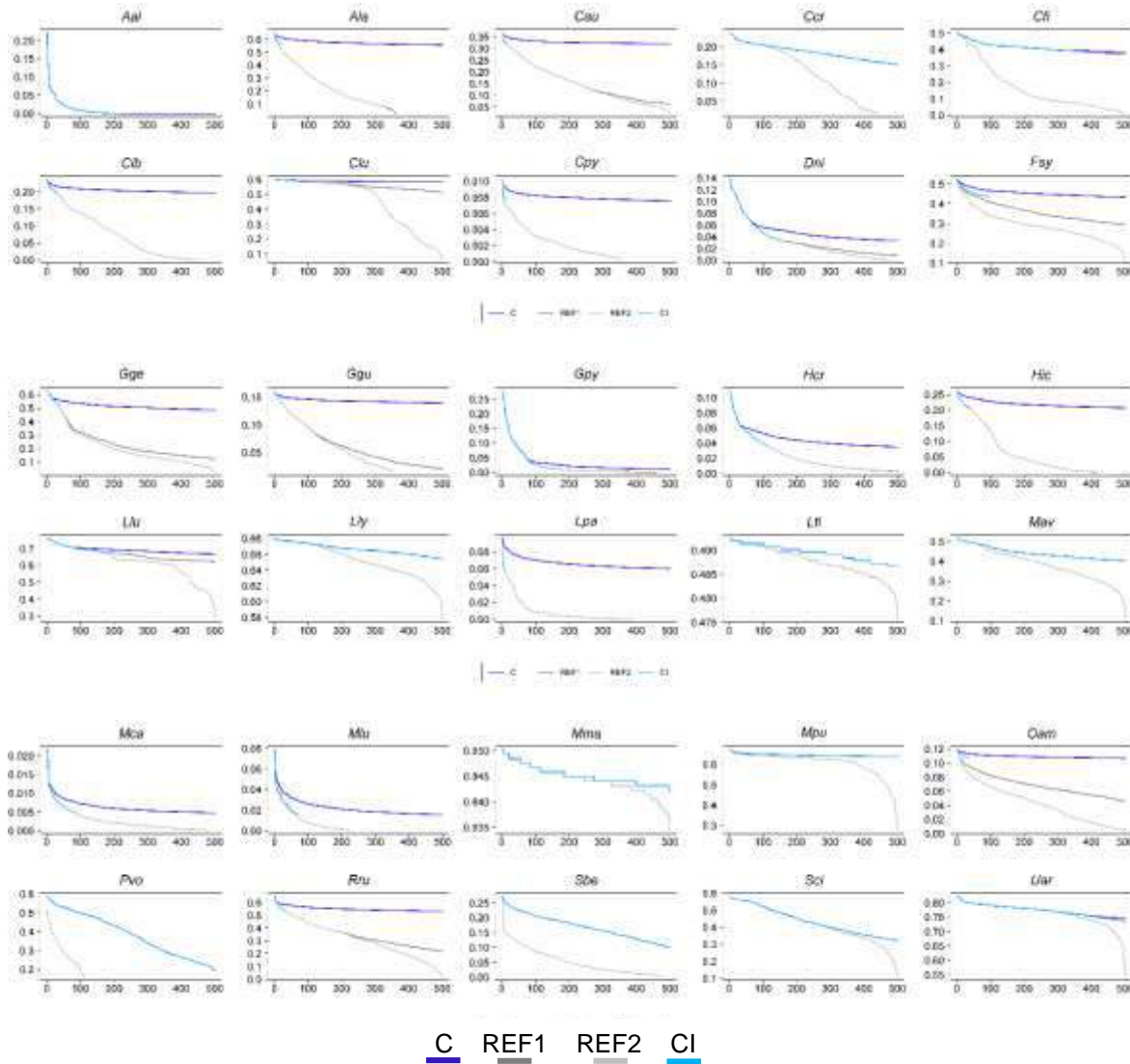


Figure S13 - Persistence scores of species in the single SATs highlighted in **C^s**, **CI^s** and two referential SAT sets: **REF1** refers to stable SATs fixed in the sites referenced for the baseline period in **C^s**; **REF2** represents the k number of stable SATs retrieving the largest persistence scores (k equals the number of SATs in **C^s**).

Aal: *Atelerix algirus*; **Ala**: *Alopex lagopus*; **Cau**: *Canis aureus*; **Ccr**: *Cricetus cricetus*; **Cfi**: *Castor fiber*; **Cib**: *Capra ibex*; **Clu**: *Canis lupus*; **Cpy**: *Capra pyrenaica*; **Dni**: *Dryomys nitedula*; **Fsi**: *Felis silvestris*; **Gge**: *Genetta genetta*; **Ggu**: *Gulo gulo*; **Gpy**: *Galemys pyrenaicus*; **Hcr**: *Hystrix cristata*; **Hic**: *Hespestes ichneumon*; **Llu**: *Lutra lutra*; **Lly**: *Lynx lynx*; **Lpa**: *Lynx pardinus*; **Lti**: *Lepus timidus*; **Mav**: *Muscardinus avellanarius*; **Mca**: *Microtus cabreriae*; **Mlu**: *Mustela lutreola*; **Mma**: *Martes martes*; **Mpu**: *Mustela putorius*; **Oam**: *Ovis ammon*; **Pvo**: *Pteromys volans*; **Rru**: *Rupicapra rupicapra*; **Sbe**: *Sicista betulina*; **Sci**: *Spermophilus citellus*; **Uar**: *Ursus arctos*.

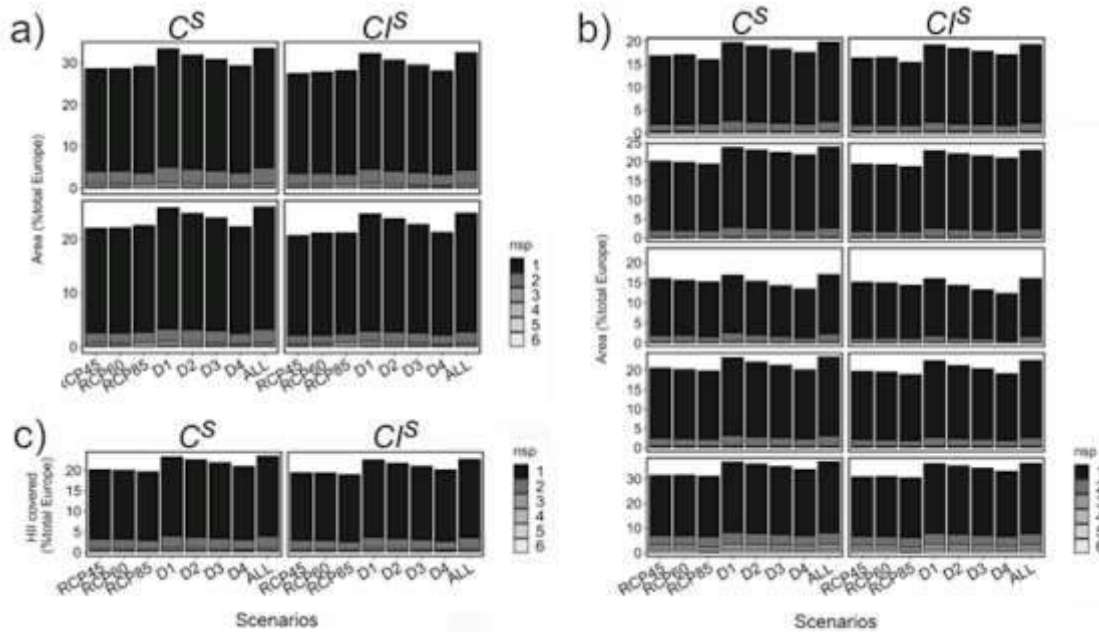


Figure S14 - The percentage of the European area covered by **a)** conservation areas (Natura 2000 sites, N2k, and nationally-designated protected areas, PAs); **b)** and land uses (Urb: urban areas; Arab: arable lands; Grass: grassland; For: forest; Crop: cropland) that intersects SATs from the C^s and C^l sets used by a given number of species (*nsp*), at some period of time (baseline, 2020, 2050 and 2080); **c)** the percentage of total habitat disturbance in Europe (measured using the Human Footprint Index, *hfi*) that intersects SATs from the C^s and C^l sets used by a given number of species (*nsp*), at some period of time (baseline, 2020, 2050 and 2080). Values refer to averages taken for RCP4.5, RCP6.0 and RCP8.5 (among dispersal runs), for each dispersal scenario, D1, D2, D3 and D4 (among climate scenarios) and among the 12 RCP x dispersal scenarios (ALL)

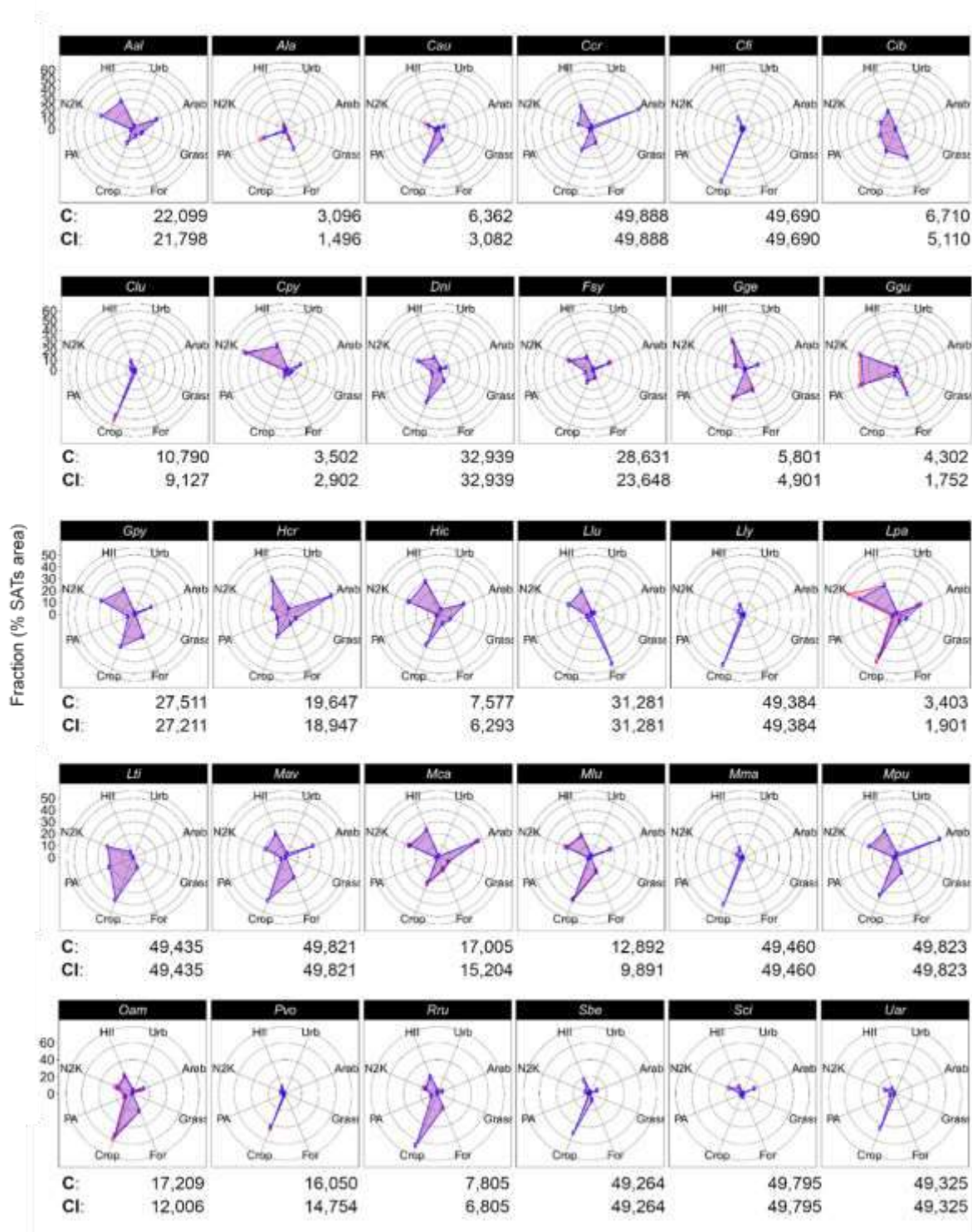


Figure S15 – Percent-coverage of SATs in C^* (dark blue polygons) and C/I^* (red polygons) with distinct land use classes (Urb: urban areas; Arab: arable lands; Grass: grasslands; For: forest lands; Crop: croplands) conservation area types (Natura 2000, N2K: and nationally-designated protected areas, PAs) and human footprint index scores (HII). Values respect the RCP8.5 x D1 scenario. Values after C^* and C/I^* refer to the total extent of SATs (in km-sq).

Aal: *Atelerix algirus*; *Ala*: *Alopex lagopus*; *Cau*: *Canis aureus*; *Ccr*: *Cricetus cricetus*; *Cfi*: *Castor fiber*; *Cib*: *Capra ibex*; *Clu*: *Canis lupus*; *Cpy*: *Capra pyrenaica*; *Dni*: *Dryomys nitedula*; *Fsi*: *Felis silvestris*; *Gge*: *Genetta genetta*; *Ggu*: *Gulo gulo*; *Gpy*: *Galemys pyrenaica*; *Hcr*: *Hystrix cristata*; *Hic*: *Hesperestes ichneumon*; *Llu*: *Lutra lutra*; *Lly*: *Lynx lynx*; *Lpa*: *Lynx pardinus*; *Lti*: *Lepus timidus*; *Mav*: *Muscardinus avellanarius*; *Mca*: *Microtus cabrerensis*; *Mlu*: *Mustela lutreola*; *Mma*: *Martes martes*; *Mpu*: *Mustela putorius*; *Oam*: *Ovis ammon*; *Pvo*: *Pteromys volans*; *Rru*: *Rupicapra rupicapra*; *Sbe*: *Sicista betulina*; *Sci*: *Spermophilus citellus*; *Uar*: *Ursus arctos*.



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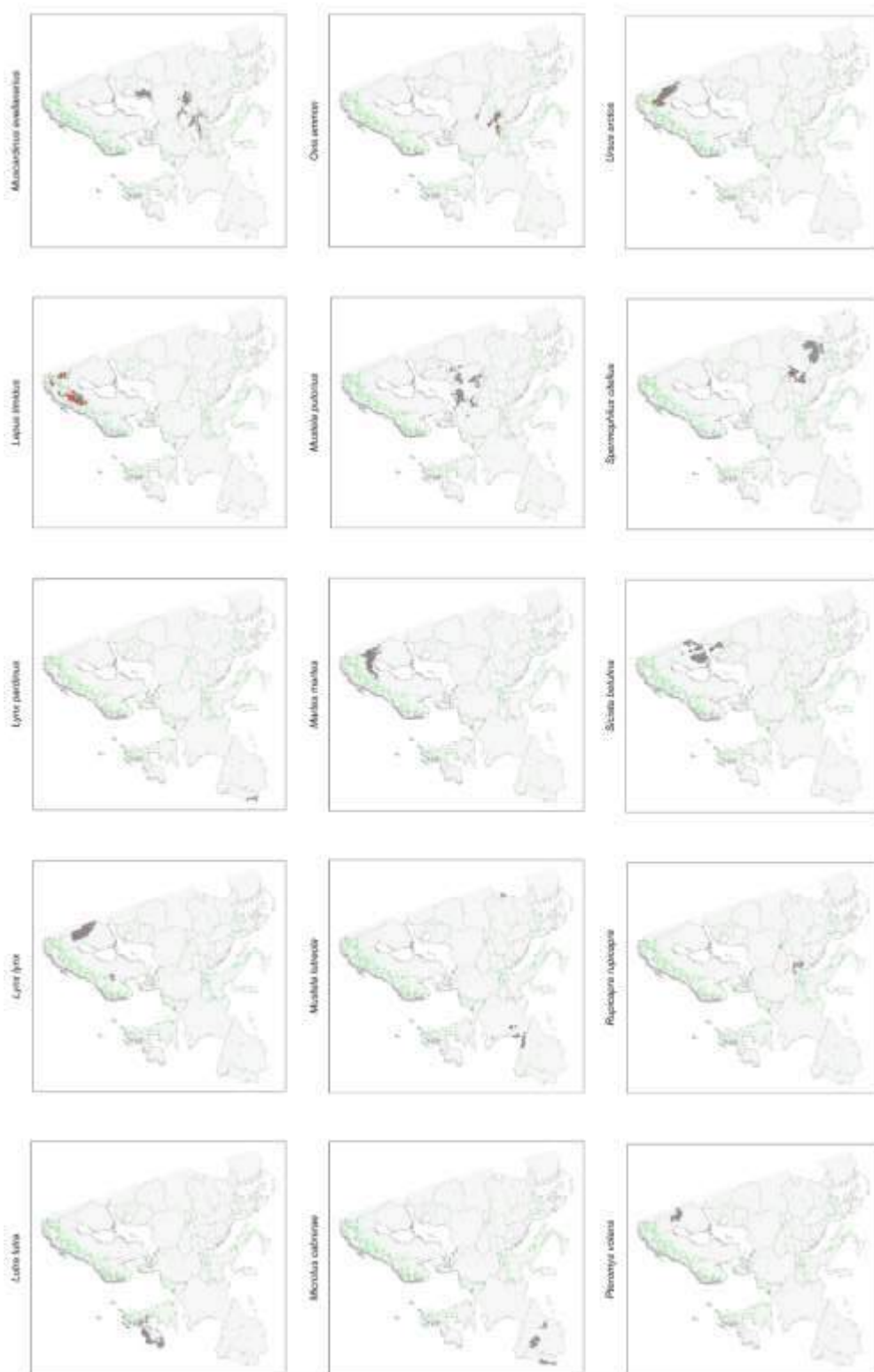


Figure S16a - The overlap of C_s SATs of each species with nationally-designated protected areas (PAs) under the RCP 8.5 x D1 scenario. Green sites refer to PAs which do not overlap SATs; Grey sites refer to SAT sites (among the four time periods) which do not overlap PAs; red sites are SAT sites overlapping PAs. For amount overlap values see Fig S15.



(continued)

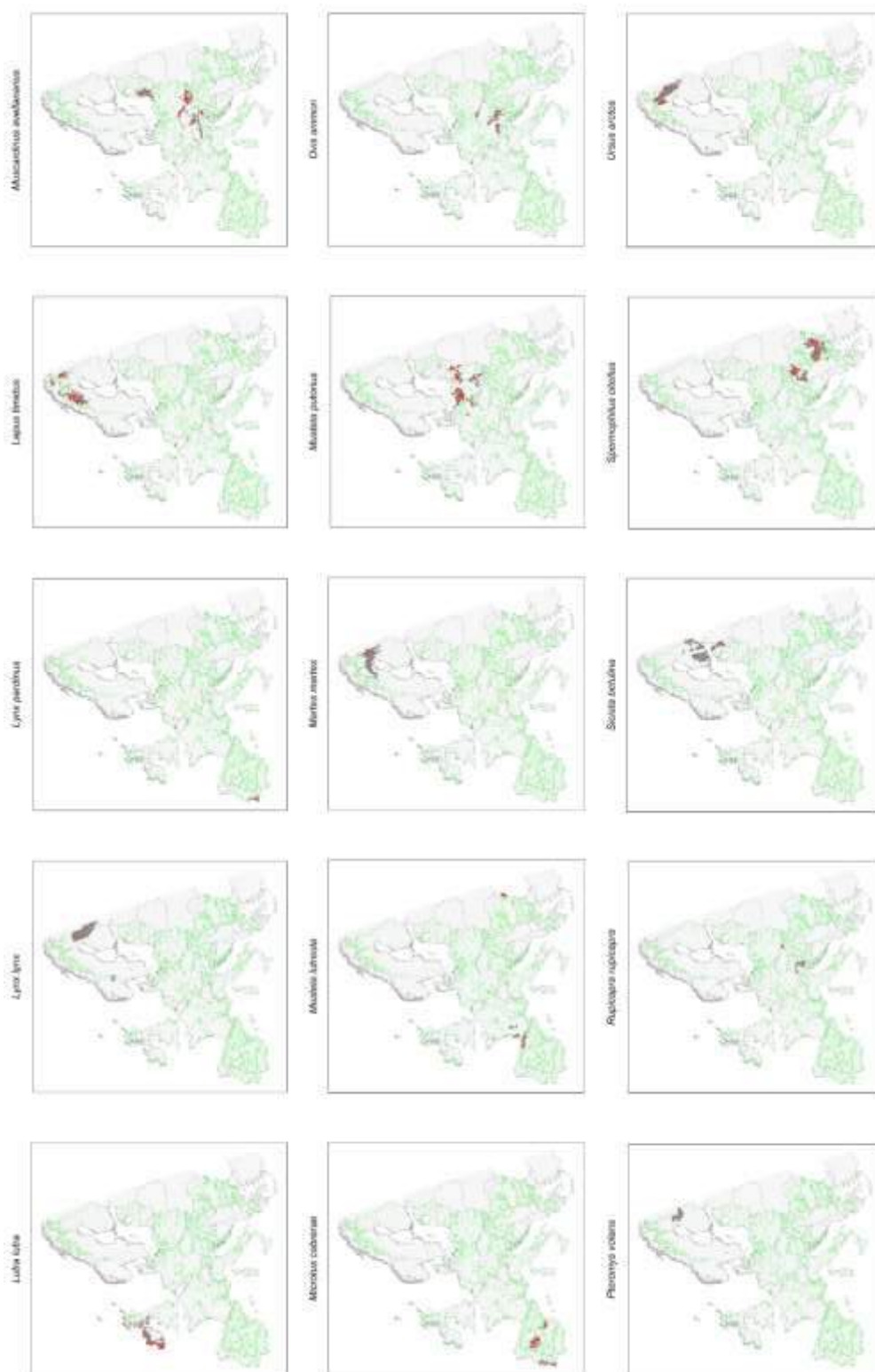
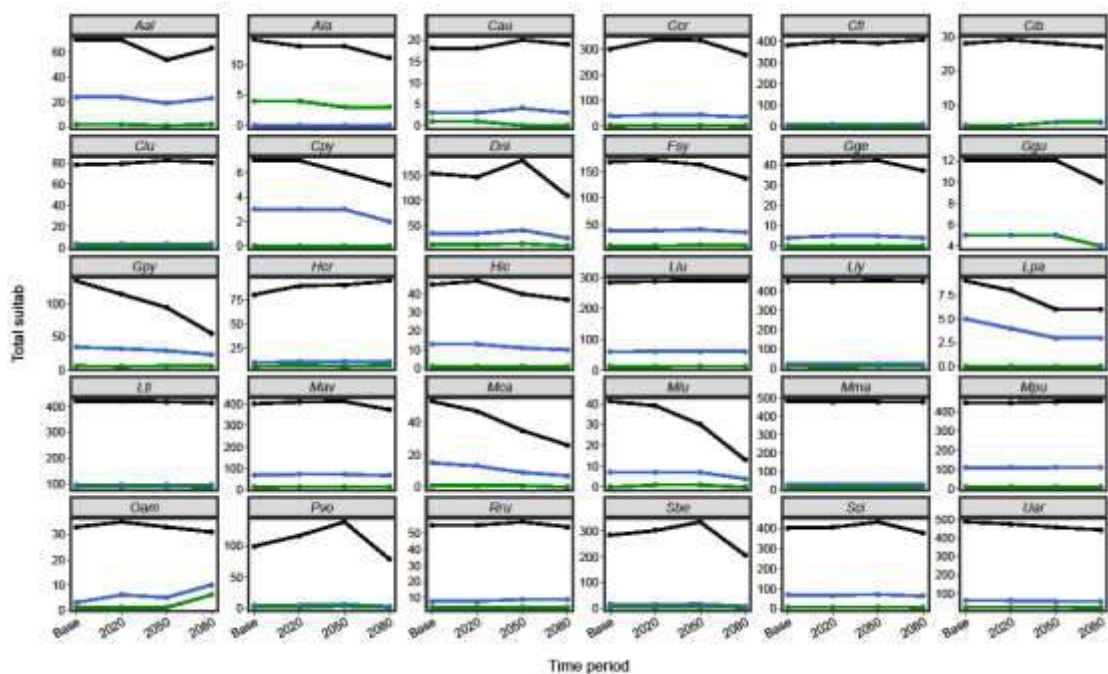
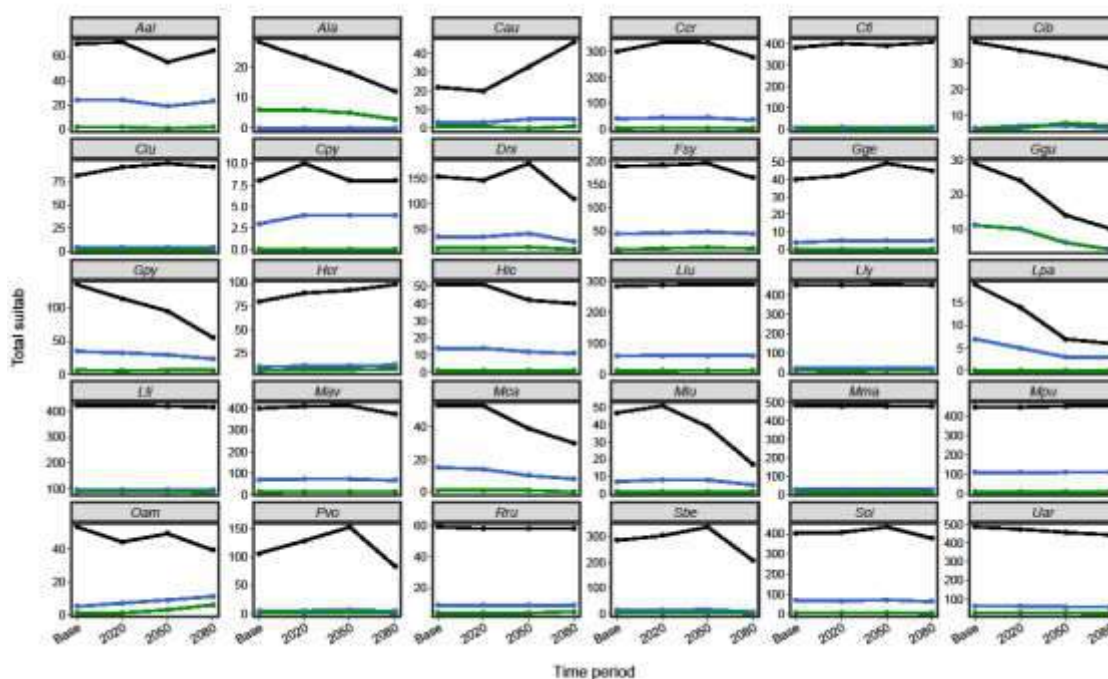


Figure S16b - The overlap of C^w SATs of each species with Natura 2000 (N2k) under the RCP 8.5 x D1 scenario. Green sites refer to PAs which do not overlap SATs; Grey sites refer to SAT sites (among the four time periods) which do not overlap PAs; red sites are SAT sites overlapping PAs. For amount overlap values see Fig S15.



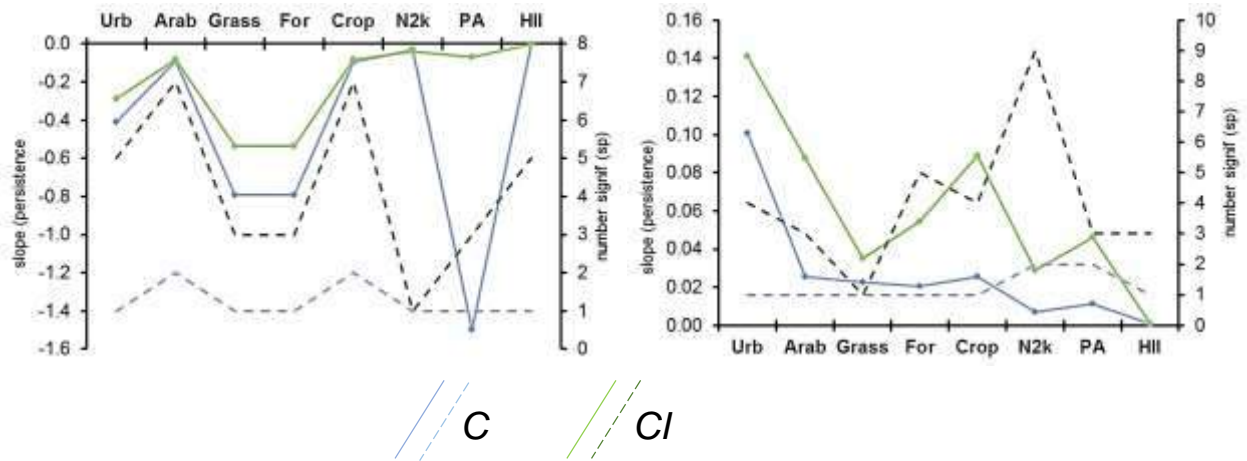
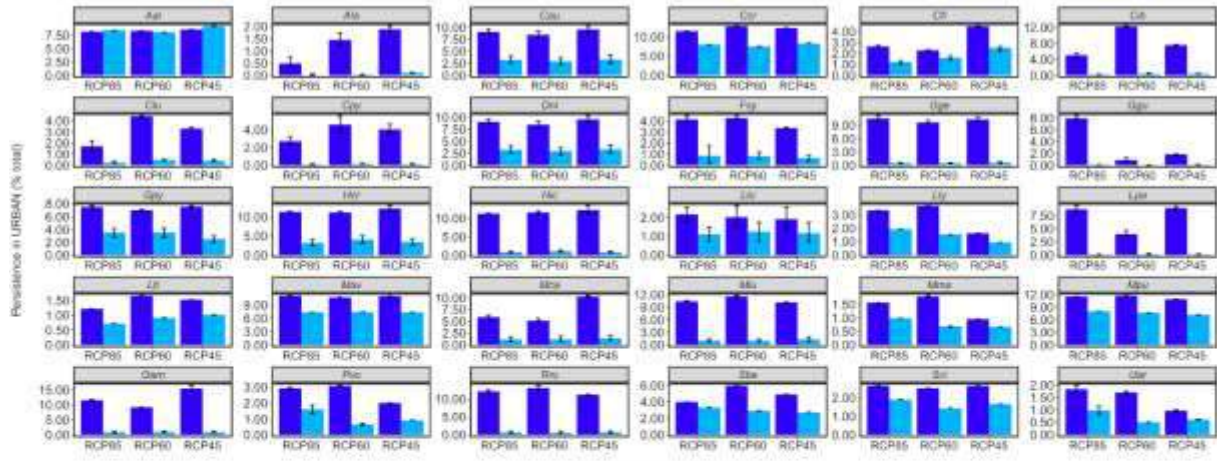
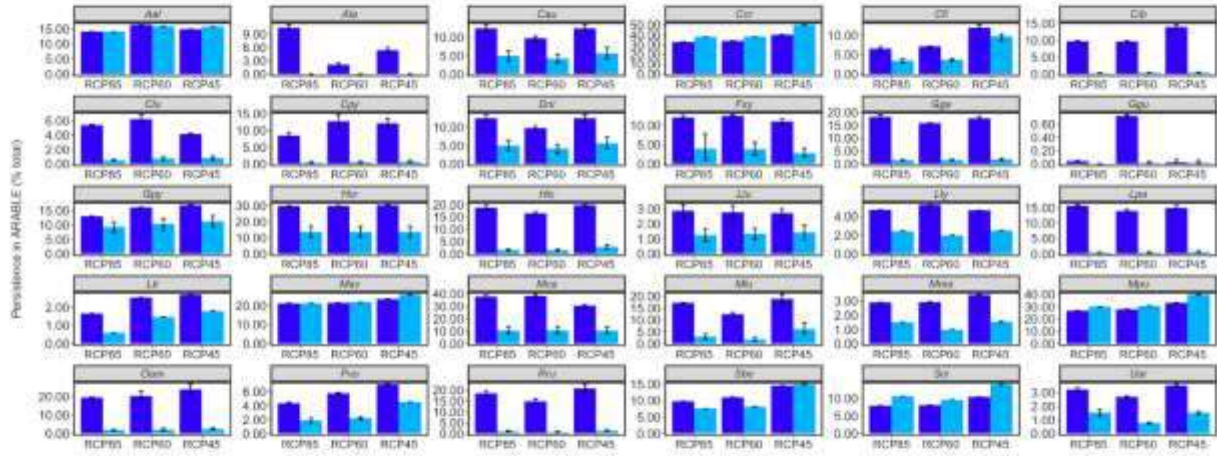


Figure S18 - Summary results (slopes, β_{pers}) of the univariate regression models of land uses (Urb: urban areas; Arab: arable lands; Grass: grasslands; For: forest lands; Crop: crop lands) and conservation area (Natura 2000, N2k; nationally-designated protected areas, PAs) coverage and habitat disturbance (HII: the human footprint index) against the summed persistence scores of species in the SATs in C^s and C^I ; crossing each site. Graphs on the left/right report the average statistically significant negative/positive slopes (continuous lines, left y-axes) and the respective number of species (dashed lines, right y-axes). Slopes are weighted averages based on the significant relationships among the 30 species and the 12 tested scenarios.

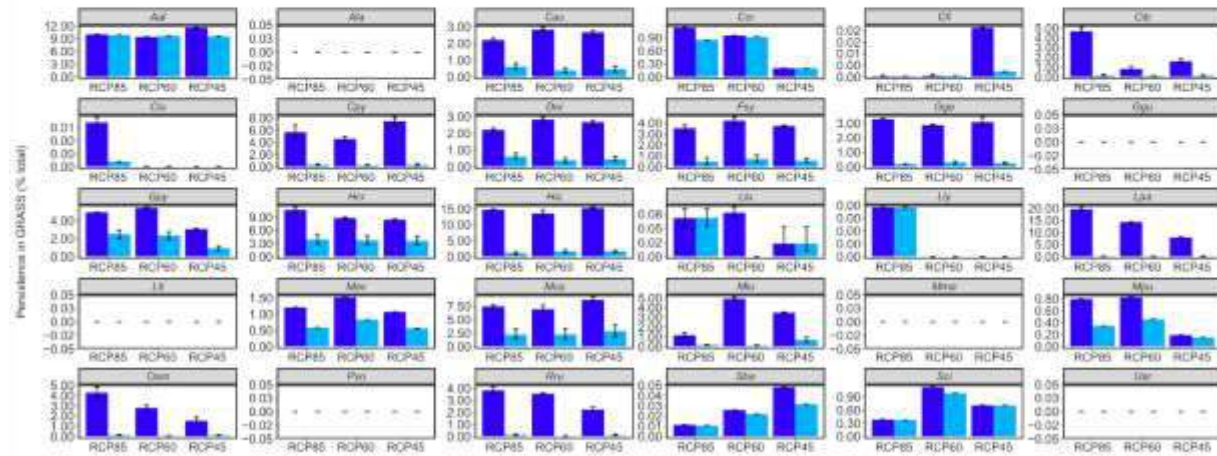
Urban lands



Arable lands



Grasslands



Climate scenarios

(continued)

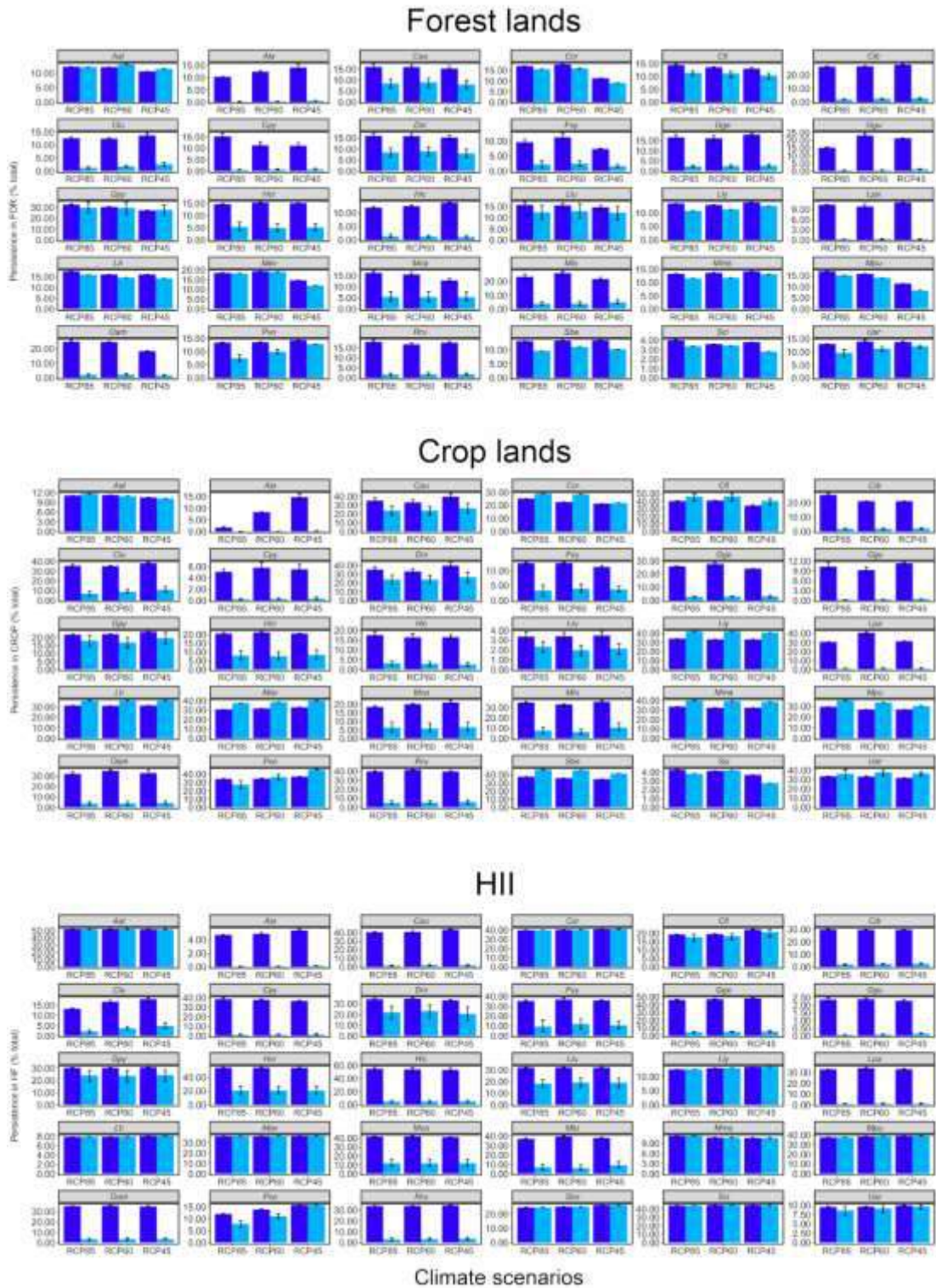


Figure S19 - The percentage of overall persistence scores of each species in **C*** SATs (dark blue) and in the respective **C#** SAT-sets (light blue) encompassed by several land uses and HII under RCP4.5, RCP6.0 and RCP8.5. Error bars refer to variability among dispersal scenarios.

Aal: *Atelerix algirus*; **Ala:** *Alopex lagopus*; **Cau:** *Canis aureus*; **Ccr:** *Cricetus cricetus*; **Cfi:** *Castor fiber*; **Cib:** *Capra ibex*; **Clu:** *Canis lupus*; **Cpy:** *Capra pyrenaica*; **Dni:** *Dryomys nitedula*; **Fsi:** *Felis silvestris*; **Gge:** *Genetta genetta*; **Ggu:** *Gulo gulo*; **Gpy:** *Galemys pyrenaicus*; **Hcr:** *Hystrix cristata*; **Hic:** *Hesperetes ichneumon*; **Llu:** *Lutra lutra*; **Lly:** *Lynx lynx*; **Lpa:** *Lynx pardinus*; **Lti:** *Lepus timidus*; **Mav:** *Muscardinus avellanarius*; **Mca:** *Microtus cabreræ*; **Mlu:** *Mustela lutreola*; **Mma:** *Martes martes*; **Mpu:** *Mustela putorius*; **Oam:** *Ovis ammon*; **Pvo:** *Pteromys volans*; **Rru:** *Rupicapra rupicapra*; **Sbe:** *Sicista betulina*; **Sci:** *Spermophilus citellus*; **Uar:** *Ursus arctos*.

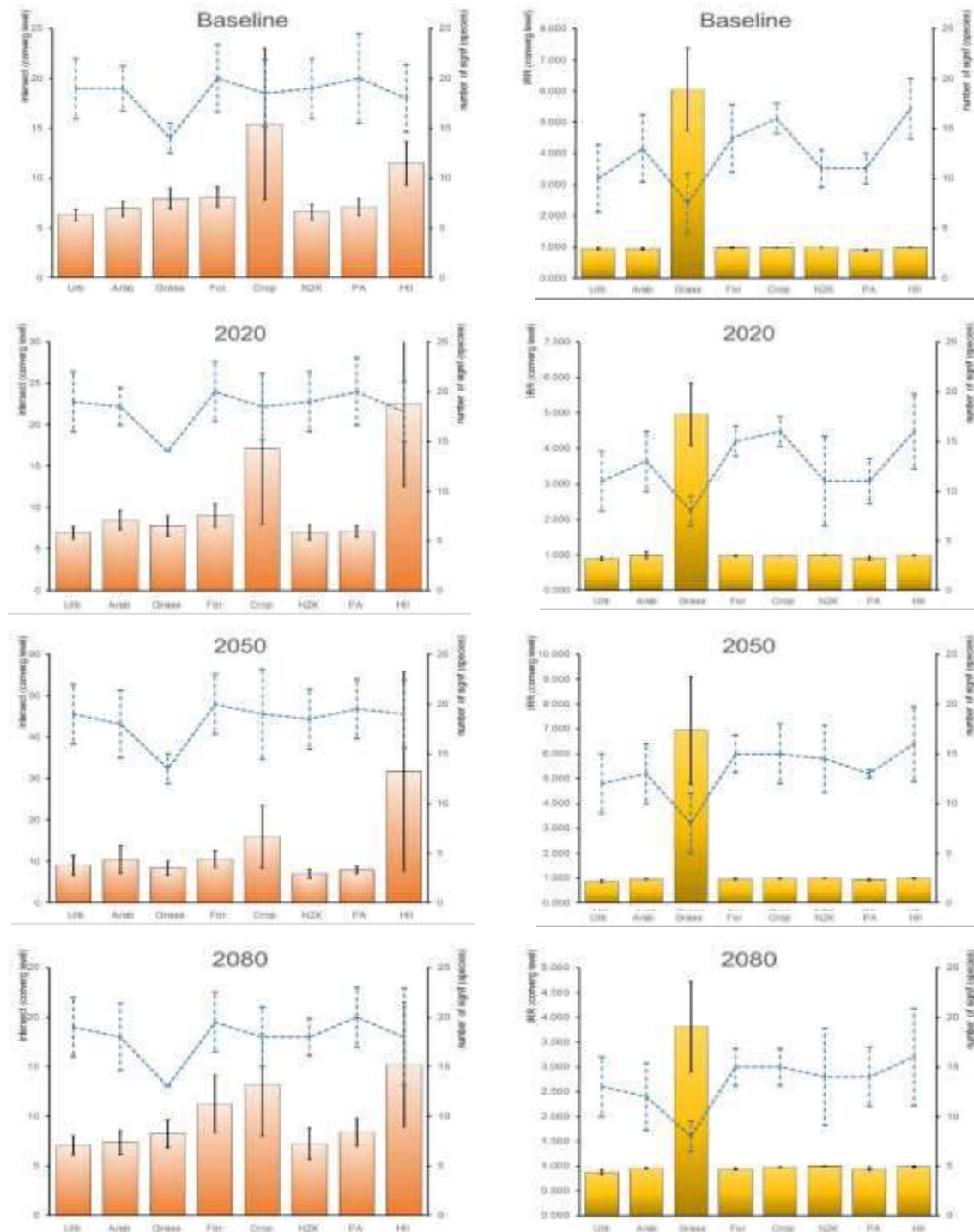


Figure S20 - Summary of zero-truncated univariate Poisson models relating area coverage of each land use (Urb: urban areas; Arab: arable lands; Grass: grasslands; For: forest lands; Crop: croplands) and conservation areas (Natura 2000, N2k; nationally designated protected areas, PAs) and habitat disturbance (measured with the Human Footprint Index, HII) in sites crossed by SATs and the respective number of convergent SATs (convergence level) in **C***. Bars on the left (orange colorings, left axis) reflect the average intersect of the models (i.e. the average number of SATs crossing each site when each factor is zero). Bars on the right (yellow colorings, left axis) reflect the average incidence ratio rate (IRR) of the models (i.e. the average increase on the number of SATs crossing each site, with one-unit increase of each factor, i.e. one-percent coverage or one HII score). Error lines represent the standard errors of intersect and IRR values obtained among the three RCP x four dispersal scenarios. The dashed lines (right axes) inform on the median number of species to which intersect and IRR are statistically significant. The error lines in dashed lines represent 1.5 the interquartile range on the significant number of species obtained among the three RCP x four dispersal scenarios. Analyses were undertaken for baseline, 2020, 2050 and 2080 time periods.

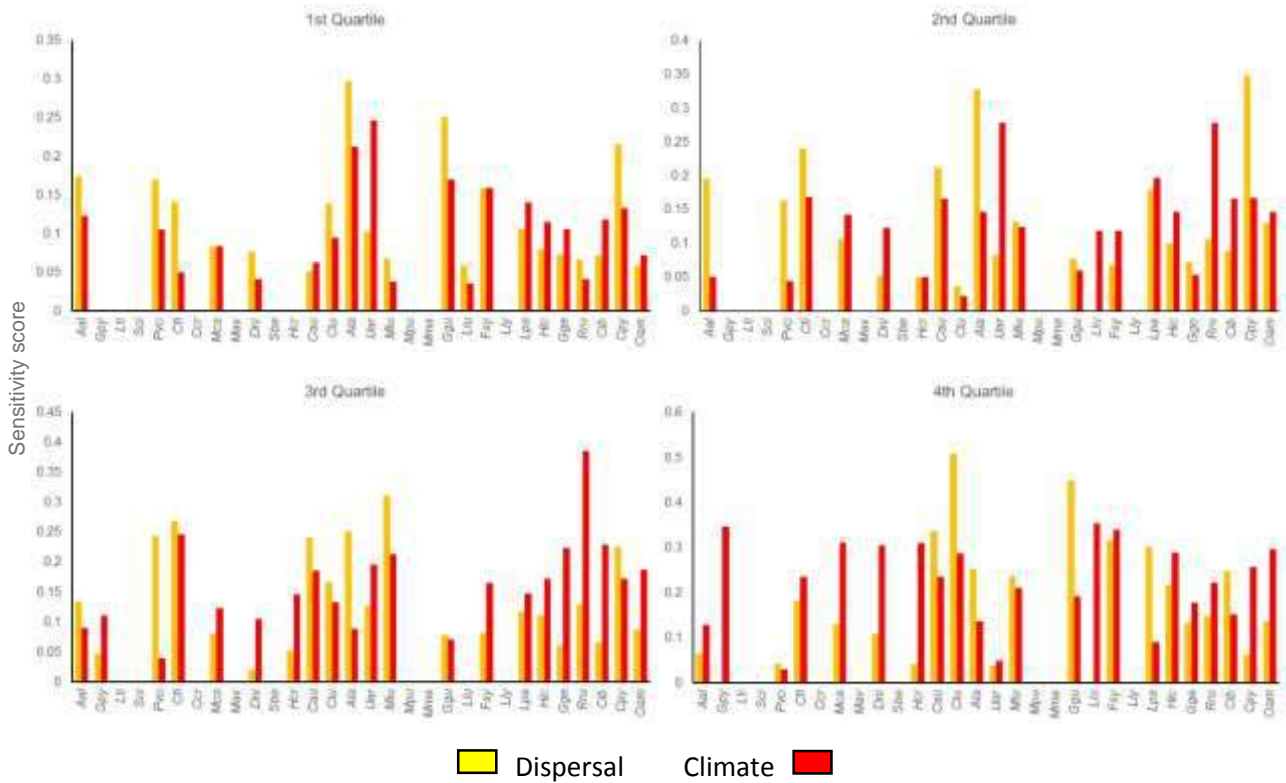


Figure S21 - The sensitivity of convergence levels of C^s SATs of each species to variation of dispersal scenarios (yellow bars) and RCPs (red bars). The distribution of convergence levels within the maps of obtained for each species was assessed using quartile classes. The sensitivity scores attributed to the dispersal/and climate tests (yellow/red bars) were obtained by averaging among the climate and dispersal scenarios the coefficients of variation (CV) of converge levels.

Aal: *Atelerix algerius*; **Ala:** *Alopex lagopus*; **Cau:** *Canis aureus*; **Ccr:** *Cricetus cricetus*; **Cfi:** *Castor fiber*; **Cib:** *Capra ibex*; **Clu:** *Canis lupus*; **Cpy:** *Capra pyrenaica*; **Dni:** *Dryomys nitedula*; **Fsi:** *Felis silvestris*; **Gge:** *Genetta genetta*; **Ggu:** *Gulo gulo*; **Gpy:** *Galemys pyrenaicus*; **Hcr:** *Hystrix cristata*; **Hic:** *Hesperstes ichneumon*; **Llu:** *Lutra lutra*; **Lly:** *Lynx lynx*; **Lpa:** *Lynx pardinus*; **Lti:** *Lepus timidus*; **Mav:** *Muscardinus avellanarius*; **Mca:** *Microtus cabreræ*; **Mlu:** *Mustela lutreola*; **Mma:** *Martes martes*; **Mpu:** *Mustela putorius*; **Oam:** *Ovis ammon*; **Pvo:** *Pteromys Volans*; **Rru:** *Rupicapra rupicapra*; **Sbe:** *Sicista betulina*; **Sci:** *Spermophilus citellus*; **Uar:** *Ursus arctos*.

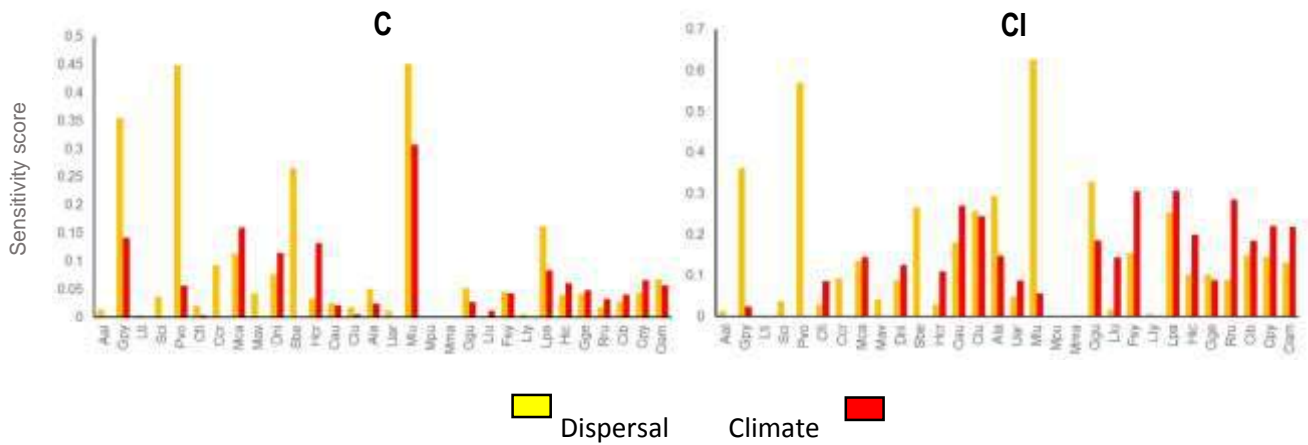


Figure S23 - The sensitivity of species' persistence scores in distinct SAT sets (C^s and C^I) to variation of dispersal scenarios (yellow bars) and RCPs (red bars). The sensitivity scores attributed to the dispersal/and climate tests (yellow/red bars) were obtained by averaging among climate and dispersal scenarios the coefficients of variation (CV) of persistence.

Aal: *Atelerix algirus*; **Ala:** *Alopex lagopus*; **Cau:** *Canis aureus*; **Ccr:** *Cricetus cricetus*; **Cfi:** *Castor fiber*; **Cib:** *Capra ibex*; **Clu:** *Canis lupus*; **Cpy:** *Capra pyrenaica*; **Dni:** *Dryomys nitedula*; **Fsi:** *Felis silvestris*; **Gge:** *Genetta genetta*; **Ggu:** *Gulo gulo*; **Gpy:** *Galemys pyrenaicus*; **Hcr:** *Hystrix cristata*; **Hic:** *Hesperetes ichneumon*; **Llu:** *Lutra lutra*; **Lly:** *Lynx lynx*; **Lpa:** *Lynx pardinus*; **Lti:** *Lepus timidus*; **Mav:** *Muscardinus avellanarius*; **Mca:** *Microtus cabreræ*; **Mlu:** *Mustela lutreola*; **Mma:** *Martes martes*; **Mpu:** *Mustela putorius*; **Oam:** *Ovis ammon*; **Pvo:** *Pteromys Volans*; **Rru:** *Rupicapra rupicapra*; **Sbe:** *Sicista betulina*; **Sci:** *Spermophilus citellus*; **Uar:** *Ursus arctos*.

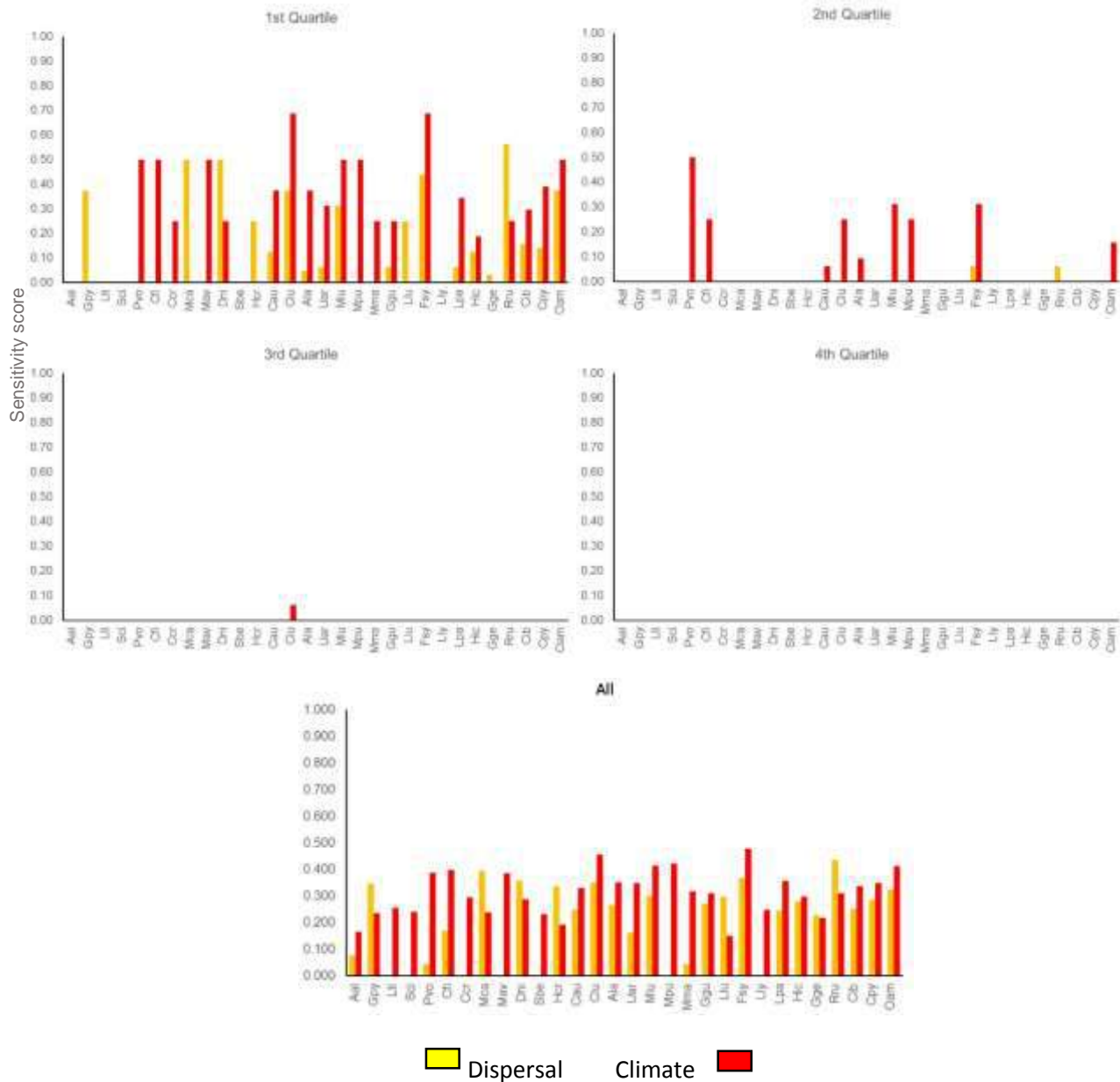


Figure S24 - The sensitivity of SAT locations (C^s) to variation of dispersal scenarios (yellow bars) and RCPs (red bars). The location was assessed by quartile classes (1st, 2nd, 3rd and 4th Quartile) for the whole values (All) of the relative frequency appearance of SAT sites in the 12 solutions defined by climate x dispersal scenarios. The sensitivity scores attributed to the dispersal/and climate tests (yellow/red bars) were obtained by averaging among the climate and dispersal scenarios the coefficients of variation (CV) of relative selection frequency.

Aal: *Atelerix algirus*; **Ala:** *Alopex lagopus*; **Cau:** *Canis aureus*; **Ccr:** *Cricetus cricetus*; **Cfi:** *Castor fiber*; **Cib:** *Capra ibex*; **Clu:** *Canis lupus*; **Cpy:** *Capra pyrenaica*; **Dni:** *Dryomys nitedula*; **Fsi:** *Felis silvestris*; **Gge:** *Genetta genetta*; **Ggu:** *Gulo gulo*; **Gpy:** *Galemys pyrenaicus*; **Hcr:** *Hystrix cristata*; **Hic:** *Hesperestes ichneumon*; **Llu:** *Lutra lutra*; **Lly:** *Lynx lynx*; **Lpa:** *Lynx pardinus*; **Lti:** *Lepus timidus*; **Mav:** *Muscardinus avellanarius*; **Mca:** *Microtus cabrerarum*; **Mlu:** *Mustela lutreola*; **Mma:** *Martes martes*; **Mpu:** *Mustela putorius*; **Oam:** *Ovis ammon*; **Pvo:** *Pteromys Volans*; **Rru:** *Rupicapra rupicapra*; **Sbe:** *Sicista betulina*; **Sci:** *Spermophilus citellus*; **Uar:** *Ursus arctos*.