

Description of Köppen-Geiger climate symbols and defining criteria (Peel et al., 2007; Kottek et al. 2006; Rubel et al., 2017)

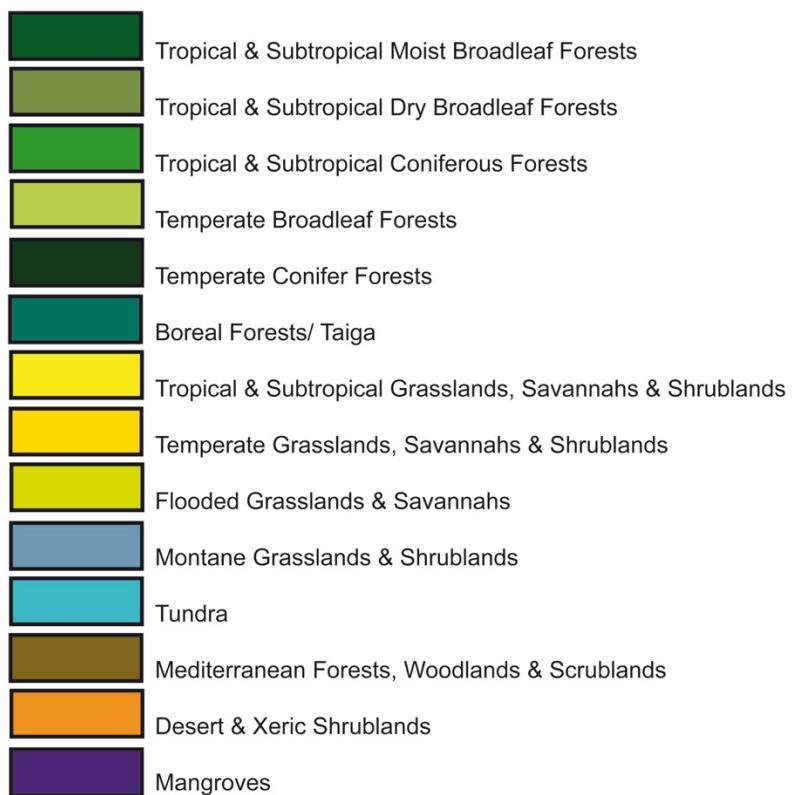
1st	2nd	3rd	Description and criteria
A			equatorial / tropical ($T_{cold} \geq 18^\circ C$)
	f		rainforest, fully humid ($P_{dry} \geq 60\text{mm}$)
	m		monsoonal (not Af & $P_{dry} \geq 100 - MAP/25$)
	s		savannah with dry summer ($P_{sdry} < 60\text{ mm}$)
	w		savannah with dry winter ($P_{wdry} < 60\text{ mm}$)
B			arid ($MAP < 10 \times P_{threshold}$)
	W		desert ($MAP < 5 \times P_{threshold}$)
	S		steppe ($MAP \geq 5 \times P_{threshold}$)
		h	hot arid ($MAT \geq 18^\circ C$)
		k	cold arid ($MAT < 18^\circ C$)
C			warm temperate/temperate ($T_{hot} > 10^\circ C$ & $0^\circ C < T_{cold} < 18^\circ C$)
D			snow / cold ($T_{hot} > 10^\circ C$ & $T_{cold} \leq 0^\circ C$)
	s		summer dry ($P_{sdry} < 40$ & $P_{sdry} < P_{wwet}/3$)
	w		winter dry ($P_{wdry} < P_{swet}/10$)
	f		fully humid / without a dry season (not s or w)
		a	hot summer ($T_{hot} \geq 22^\circ C$)
		b	warm summer (not a & $1 \leq T_{mon10} < 4$)
		c	cool / cold summer (not a or b & $T_{mon10} \geq 4$)
		d	extremely continental / very cold winter (not a or b & $T_{cold} < -38^\circ C$)
E			polar ($T_{hot} < 10^\circ C$)
	T		polar tundra ($T_{hot} \leq 10^\circ C$)
	F		permanent frost

MAP = mean annual precipitation, MAT = mean annual temperature, T_{hot} = temperature of the hottest month, T_{cold} = temperature of the coldest month, T_{mon10} = number of months where the temperature is above $10^\circ C$, P_{dry} = precipitation of the driest month, P_{sdry} = precipitation of the driest month in summer, P_{wdry} = precipitation of the driest month in winter, P_{swet} = precipitation of the wettest month in summer, P_{wwet} = precipitation of the wettest month in winter, $P_{threshold}$ = varies according to the following rules (if 70% of MAP occurs in winter then $P_{threshold} = 2 \times MAT$, if 70% of MAP occurs in summer then $P_{threshold} = 2 \times MAT + 28$, otherwise $P_{threshold} = 2 \times MAT + 14$). Summer (winter) is defined as the warmer (cooler) six months period of ONDJFM and AMJJAS.

Köppen-Geiger climate map color coding



Biome map color coding using the Biome categories of Olson et al. (2001)

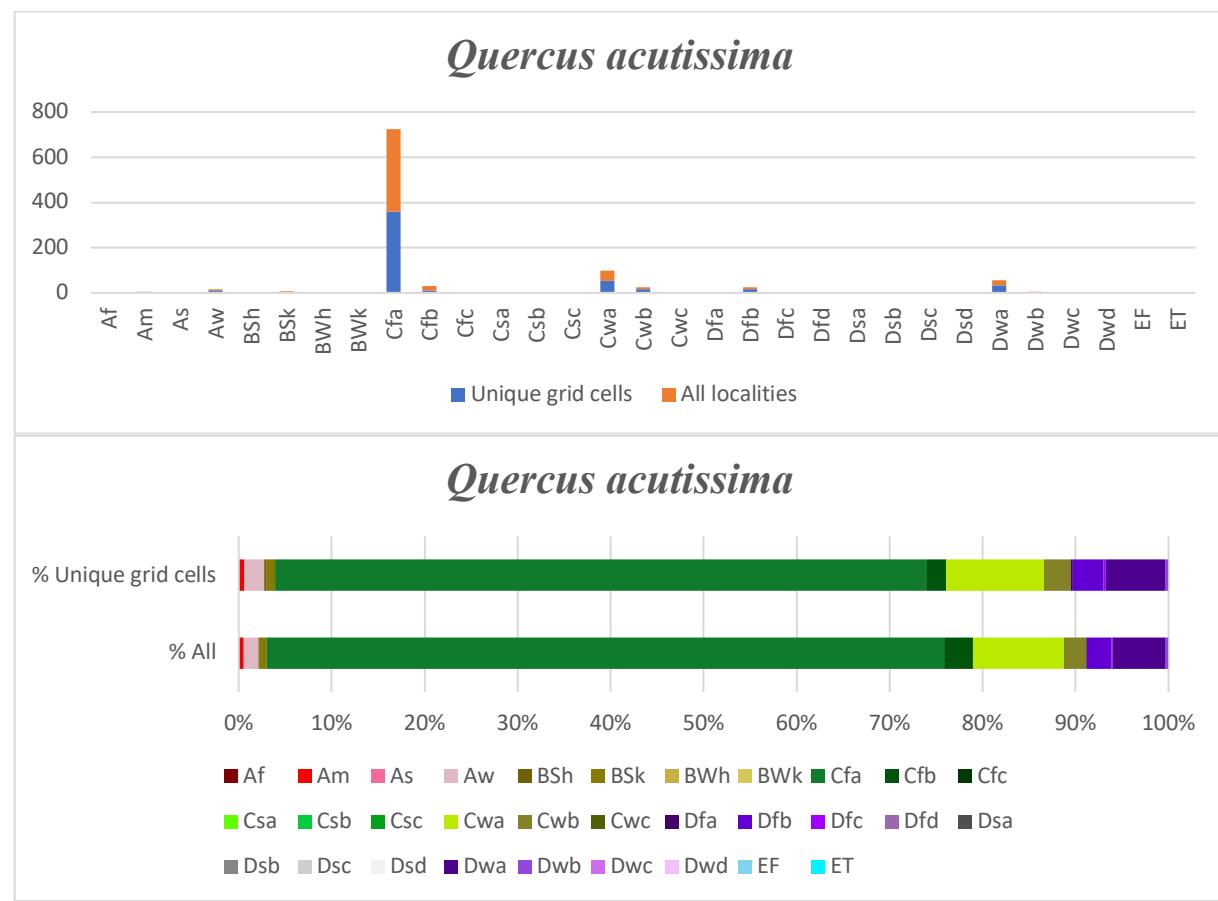
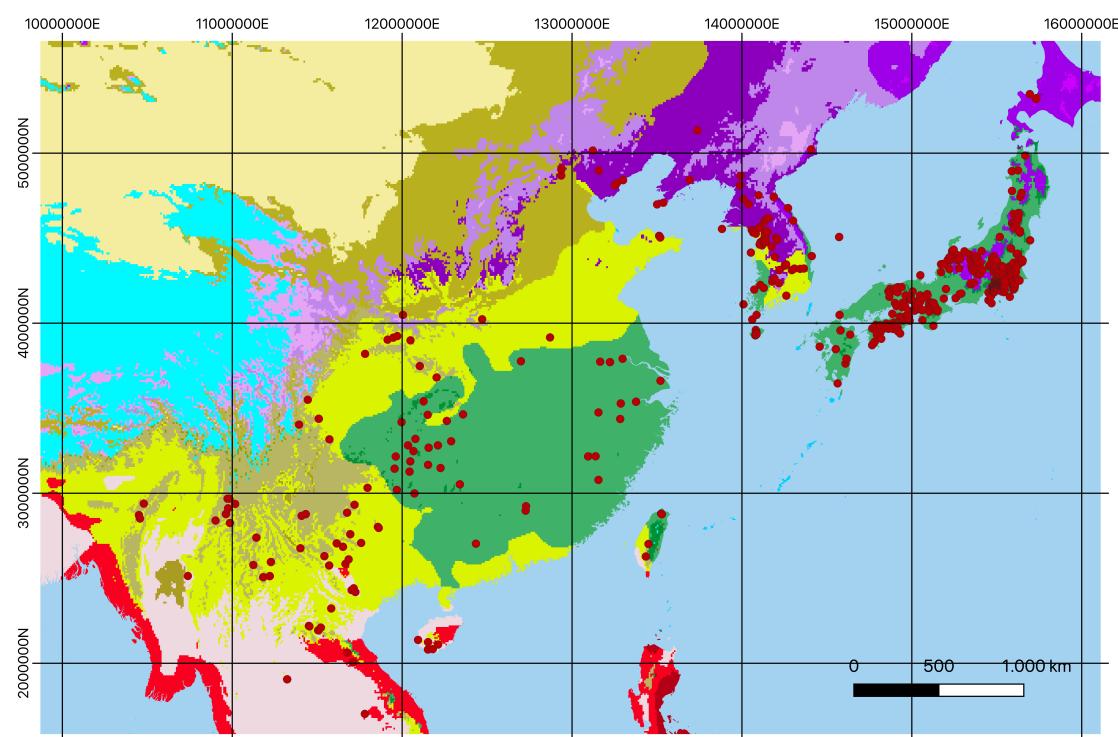


Quercus Sect. Cerris

Quercus Section Cerris

KÖPPEN SIGNATURES – *Quercus acutissima* Carruth., 1861

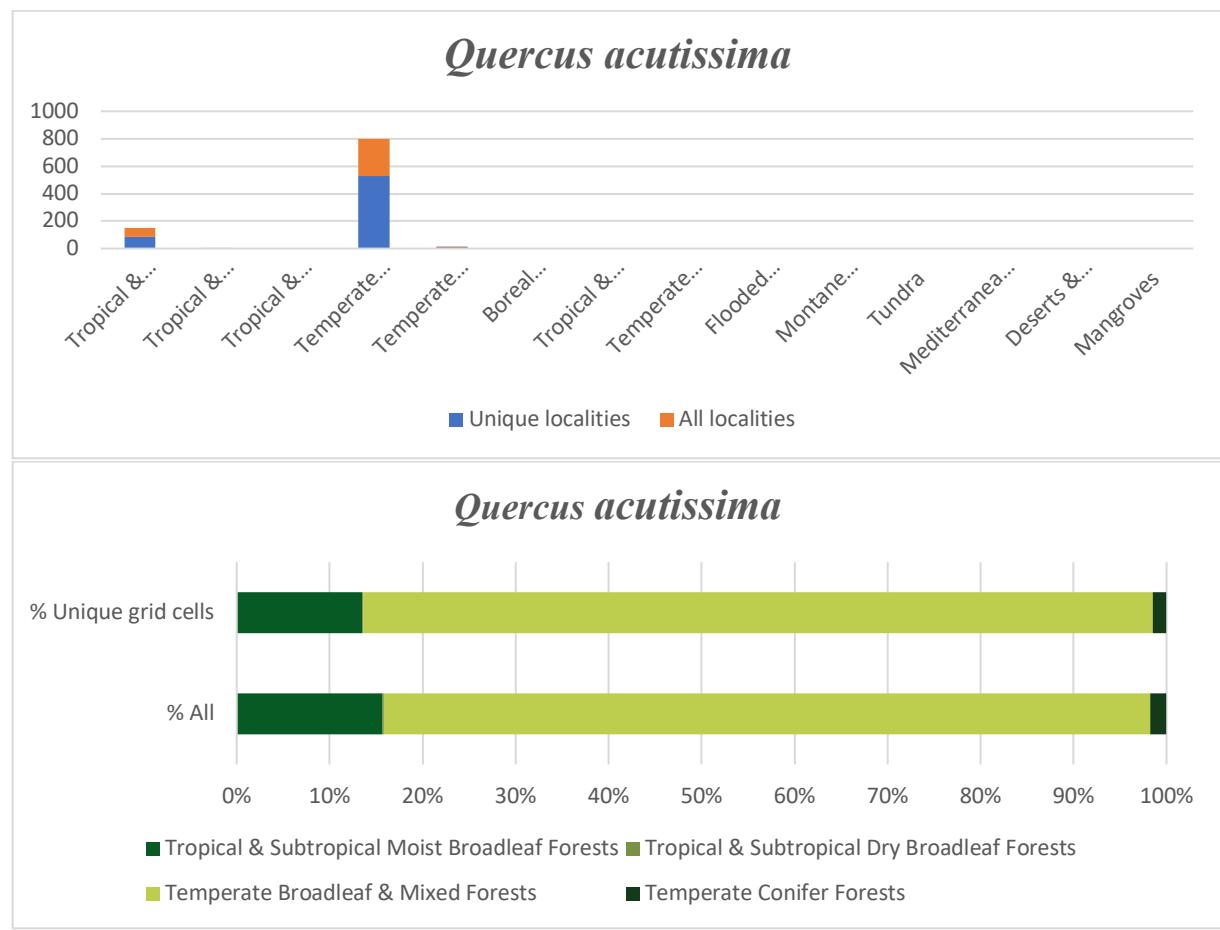
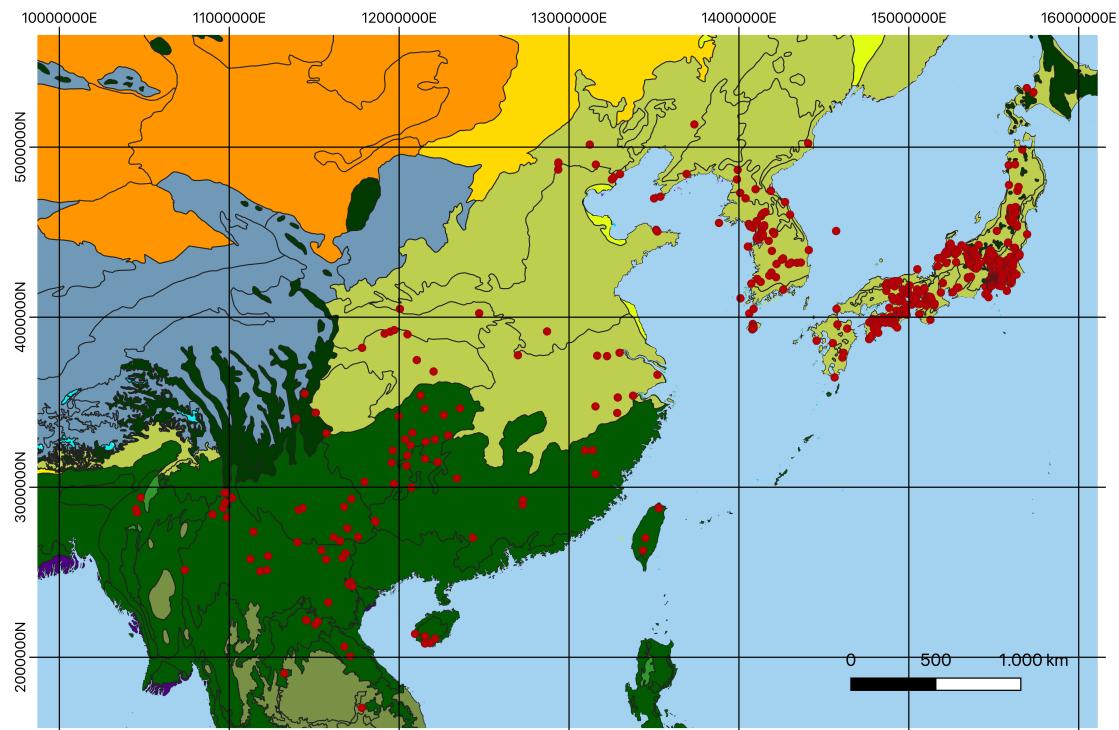
GBIF localities of *Quercus acutissima* (preserved specimen)



All localities (n = 995); unique grid cells (n = 514)

BIOMES – *Quercus acutissima* Carruth., 1861

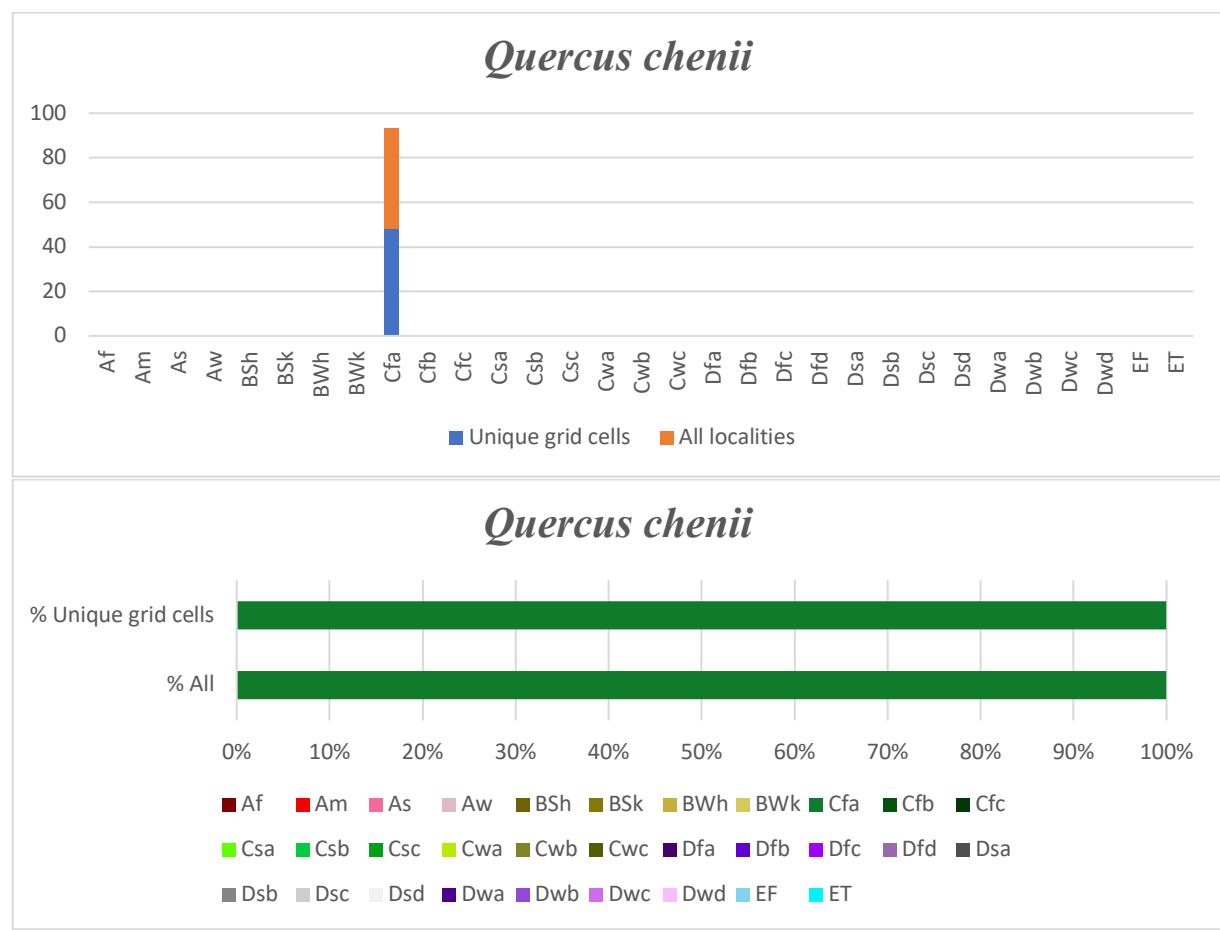
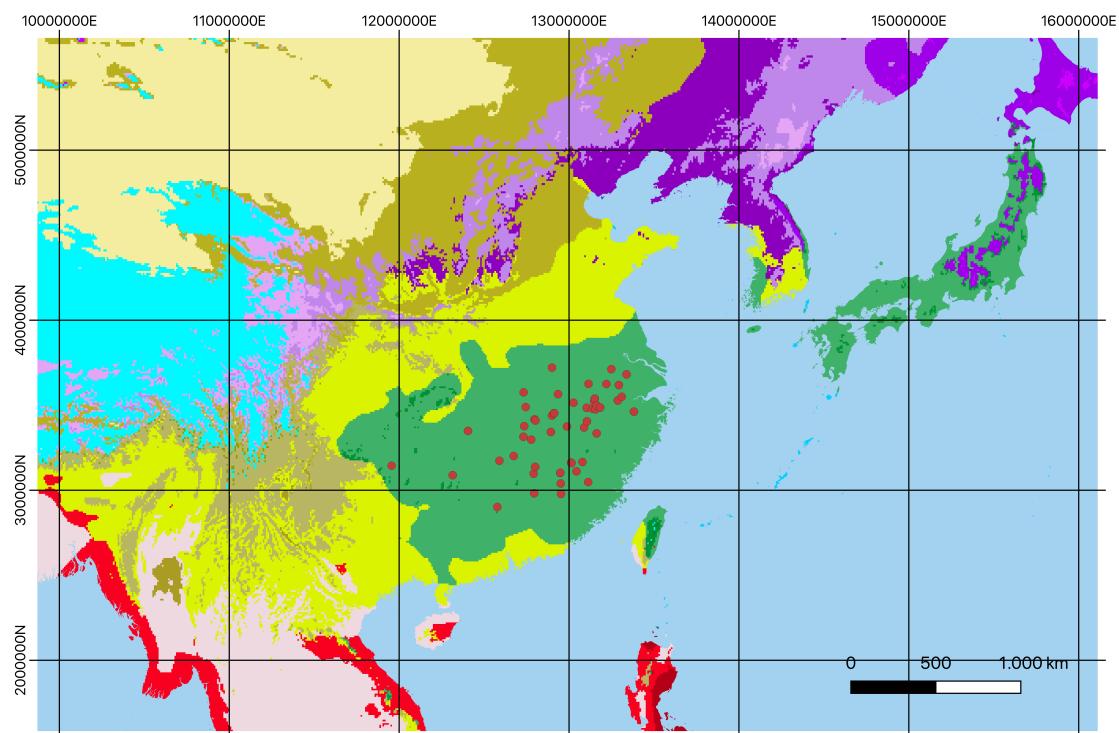
GBIF localities of *Quercus acutissima* (preserved specimen)



All localities (n = 995); unique localities (n = 514)

KÖPPEN SIGNATURES – *Quercus chenii* Nakai, 1924

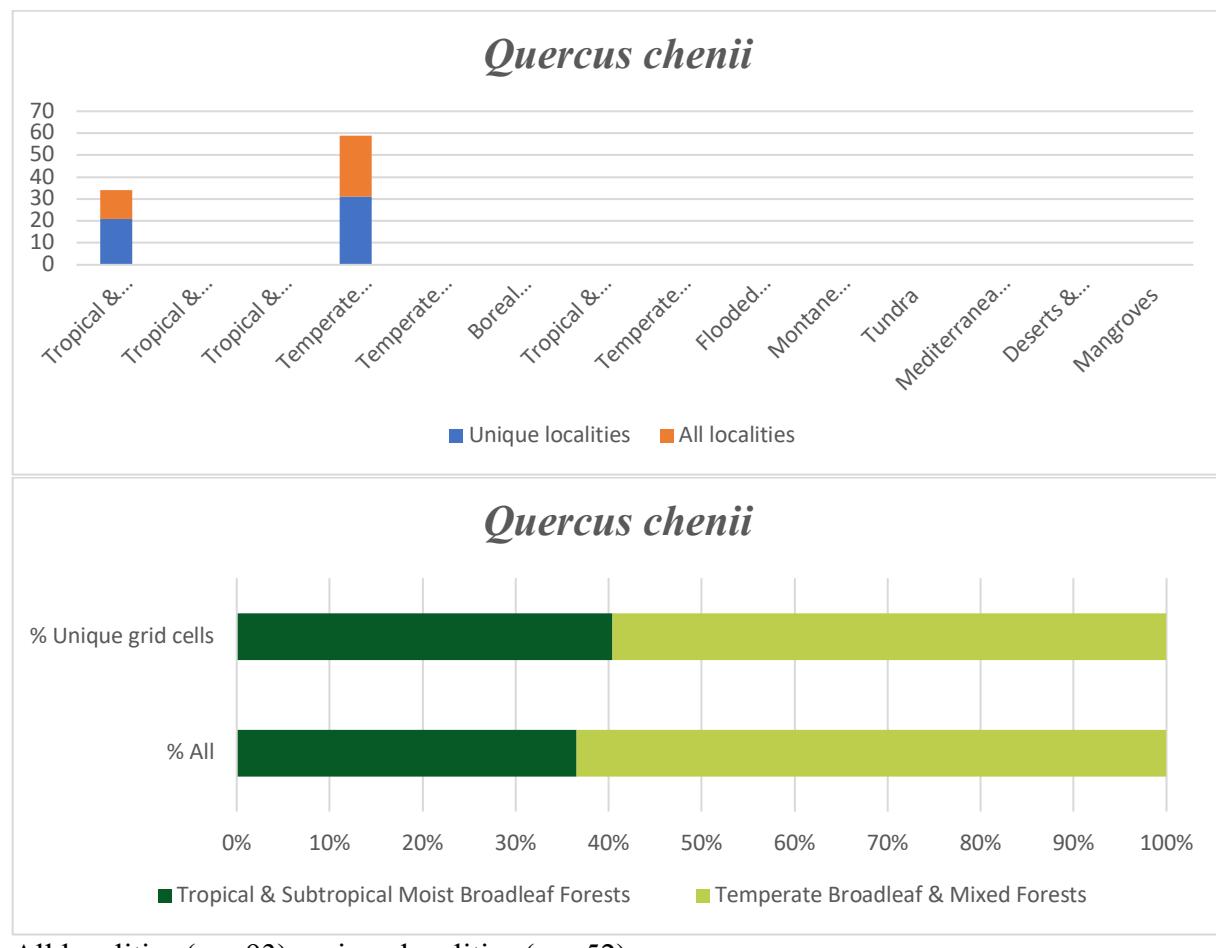
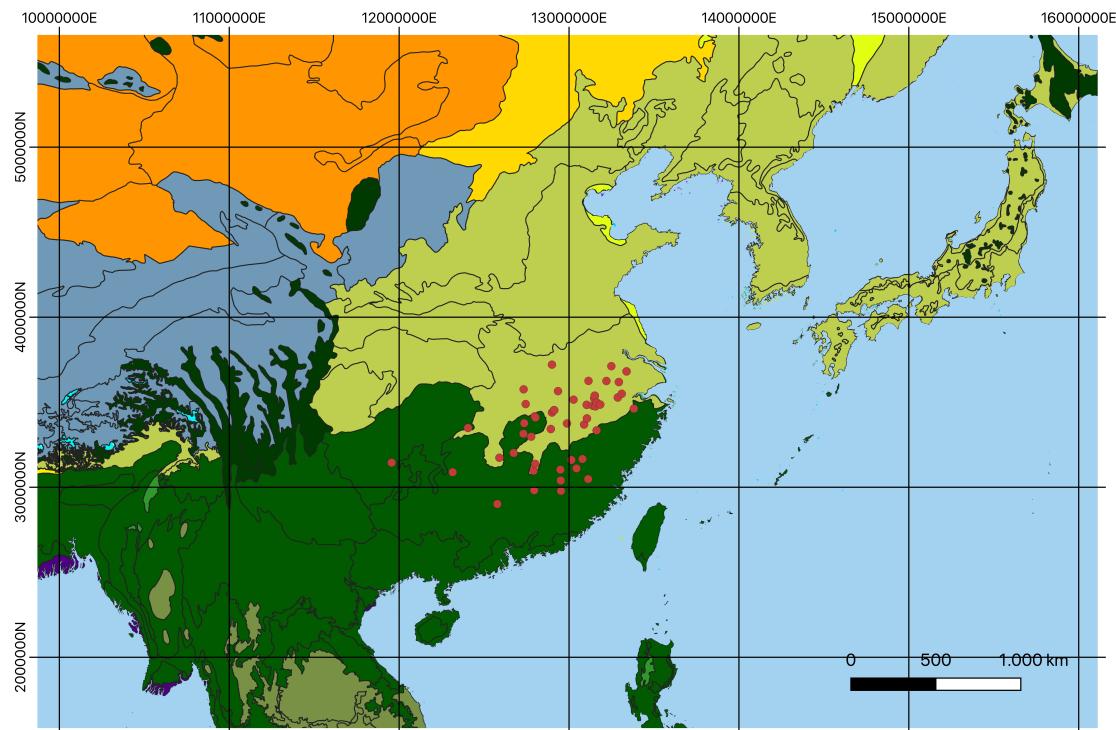
GBIF localities of *Quercus chenii* (preserved specimen)



All localities (n = 93); unique grid cells (n = 48)

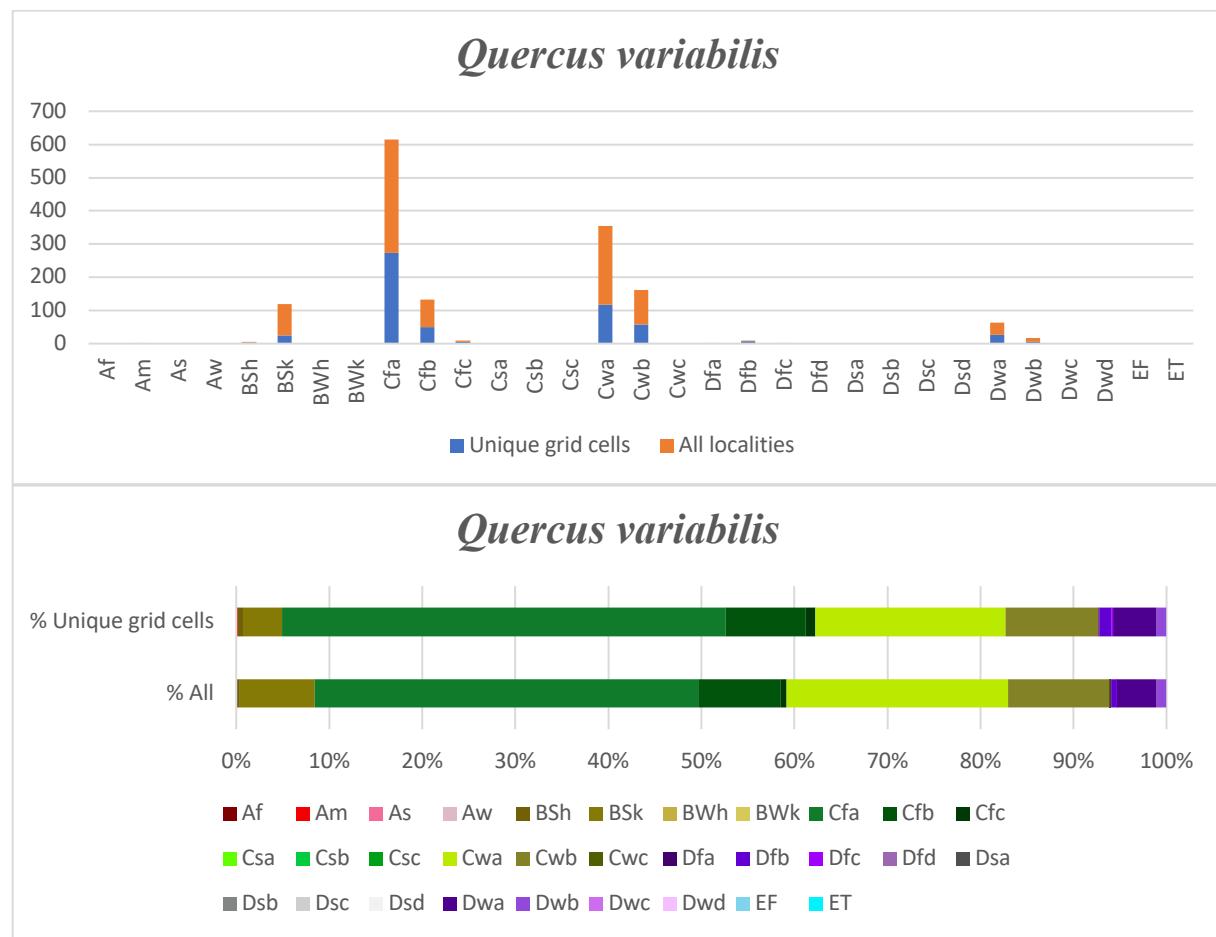
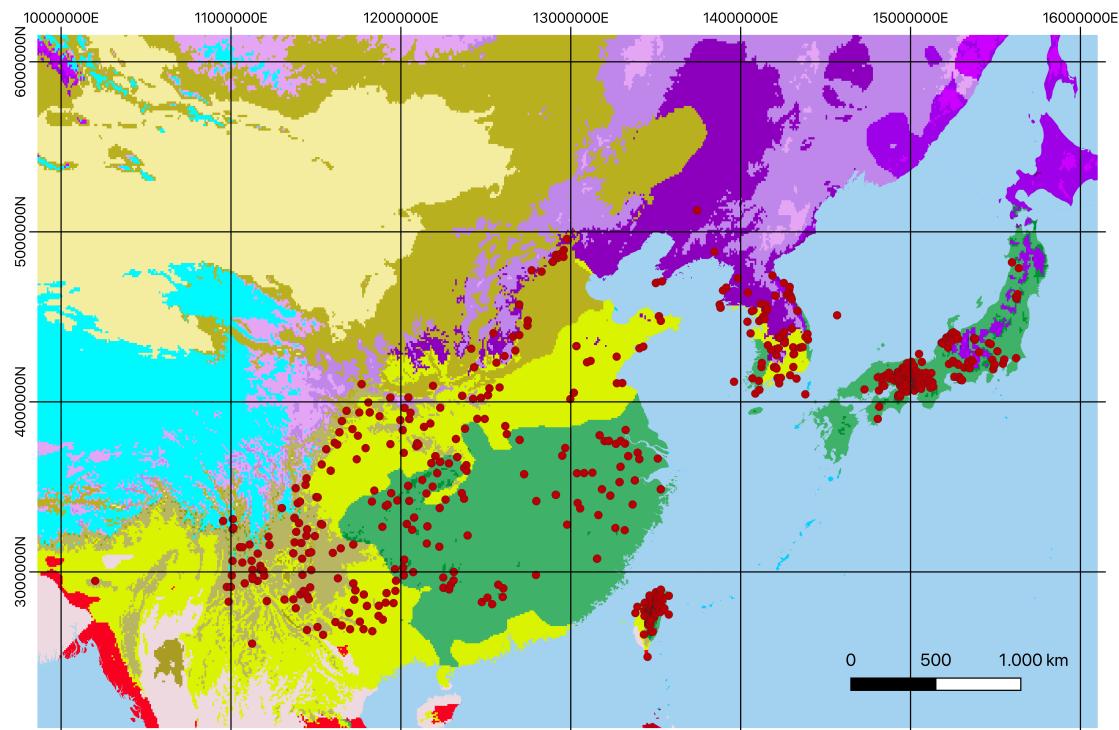
BIOMES – *Quercus chenii* Nakai, 1924

GBIF localities of *Quercus chenii* (preserved specimen)



All localities (n = 93); unique localities (n = 52)

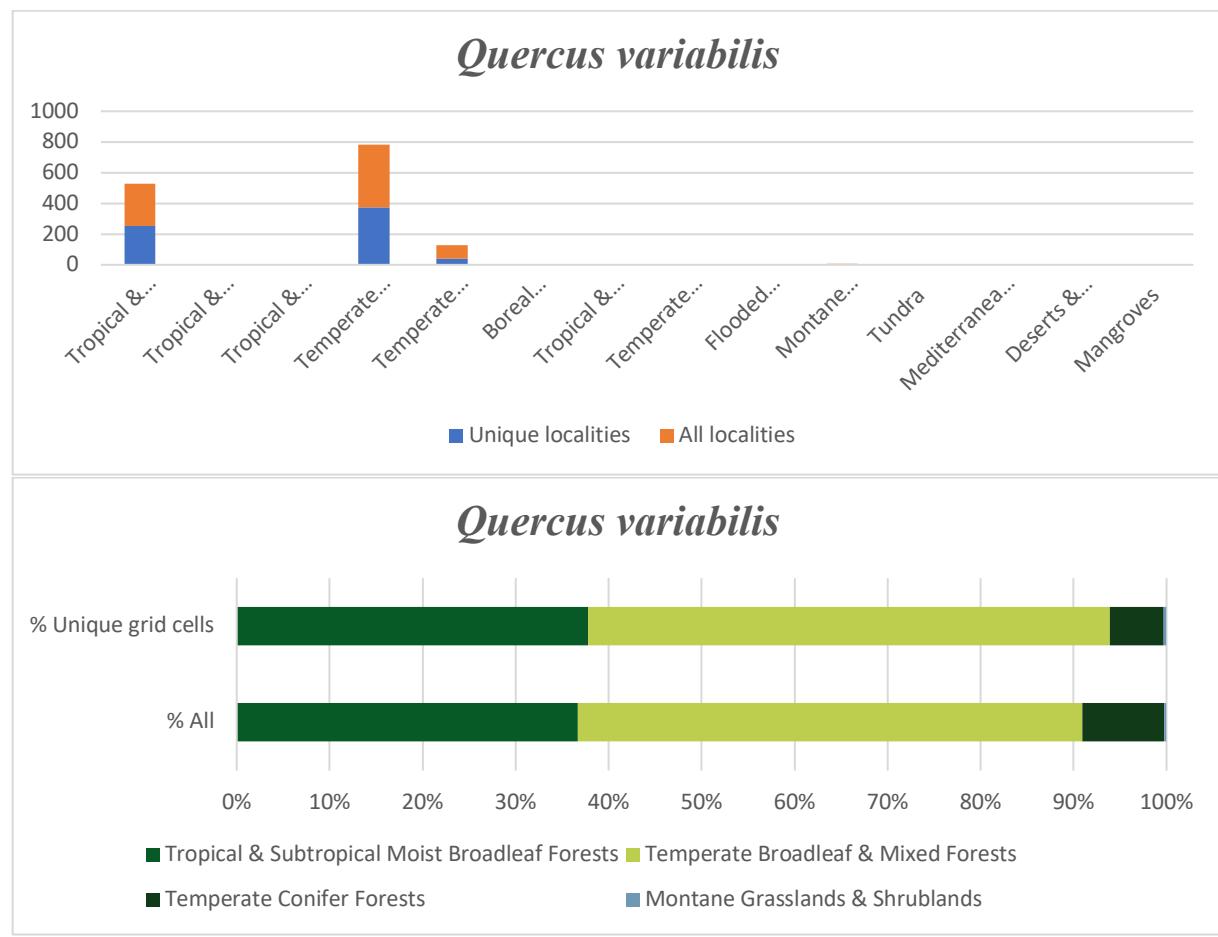
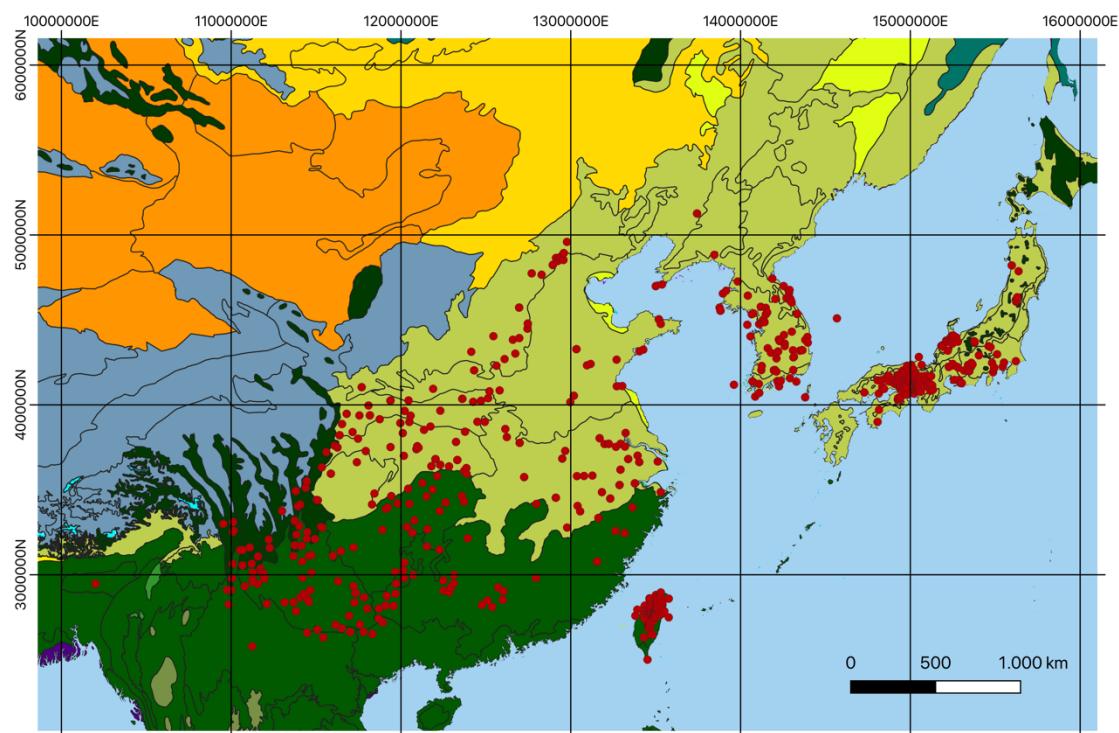
KÖPPEN SIGNATURES – *Quercus variabilis* Blume, 1851
 GBIF localities of *Quercus variabilis* (preserved specimen)



All localities (n = 1491); unique grid cells (n = 566)

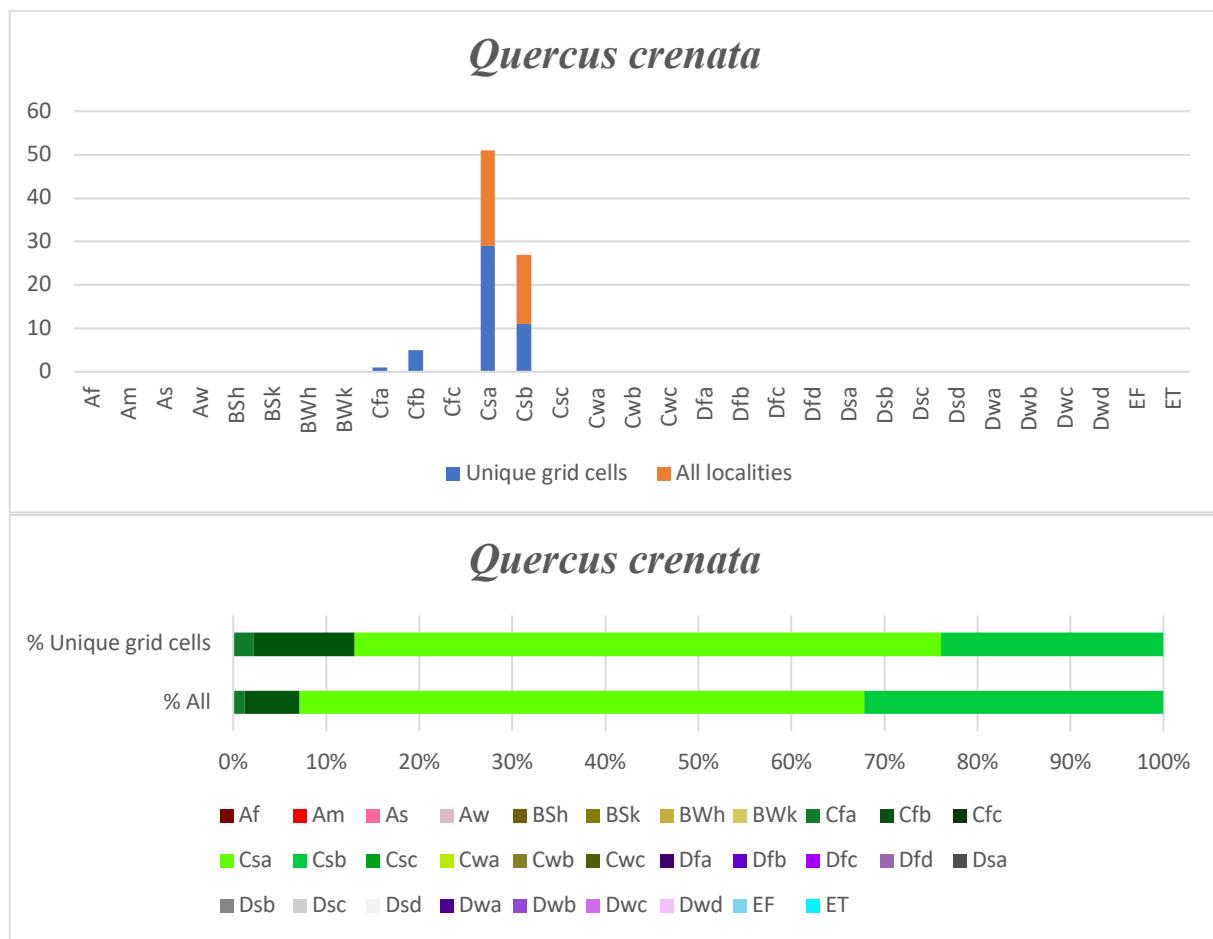
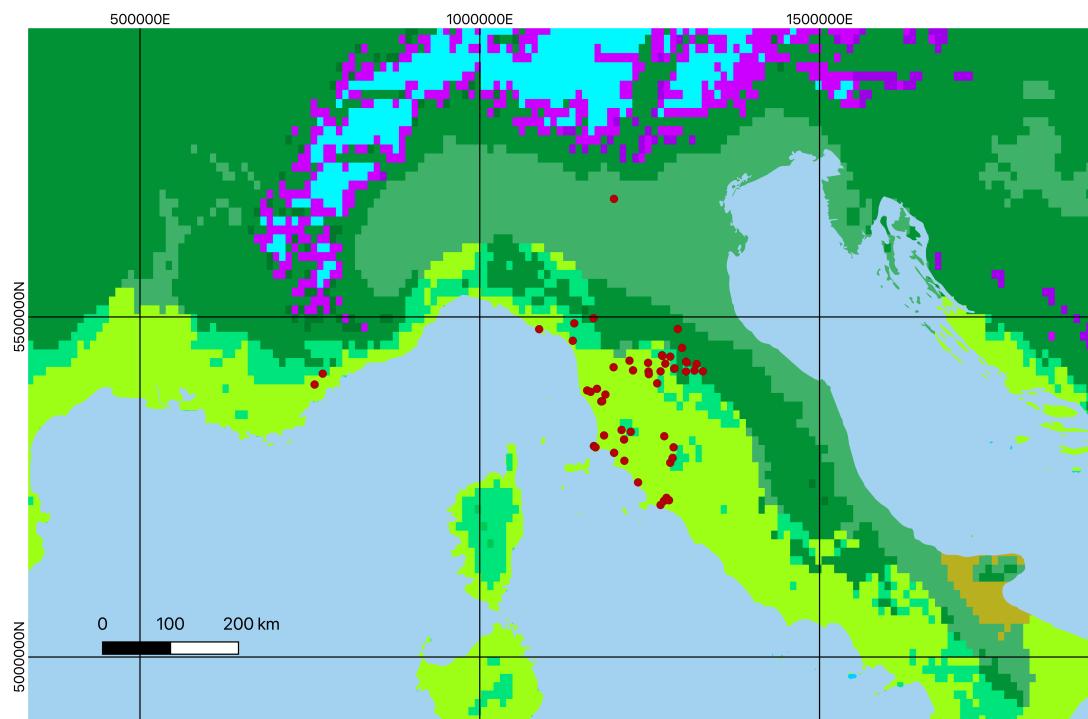
BIOMES – *Quercus variabilis* Blume, 1851

GBIF localities of *Quercus variabilis* (preserved specimen)



All localities (n = 1444); unique localities (n = 670)

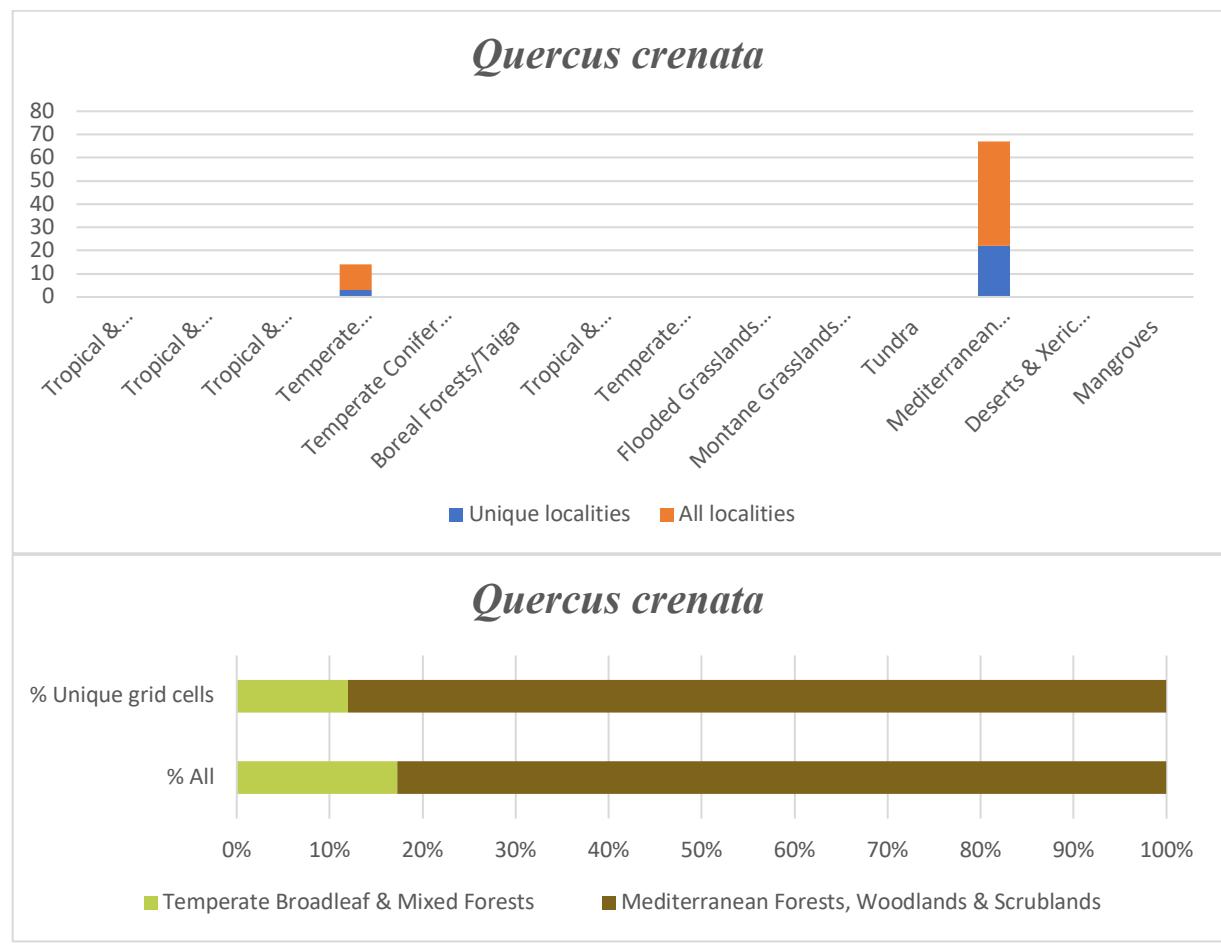
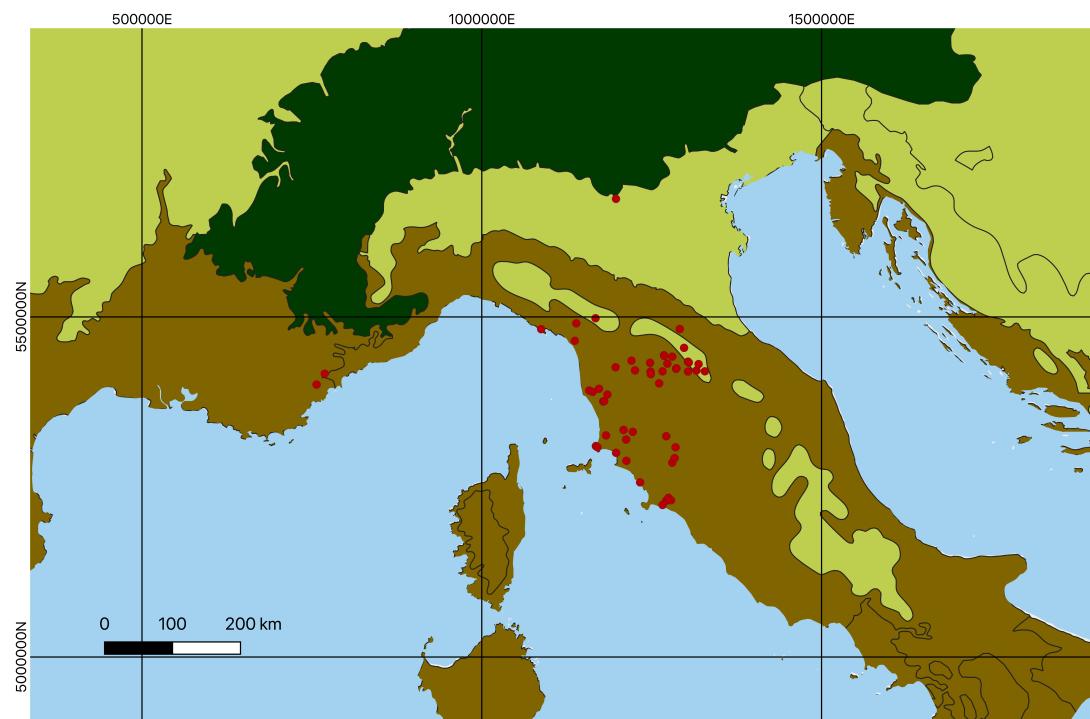
KÖPPEN SIGNATURES – *Quercus crenata* Lam., 1785
 GBIF localities of *Quercus crenata* (preserved specimen)



All localities (n = 84); unique grid cells (n = 46)

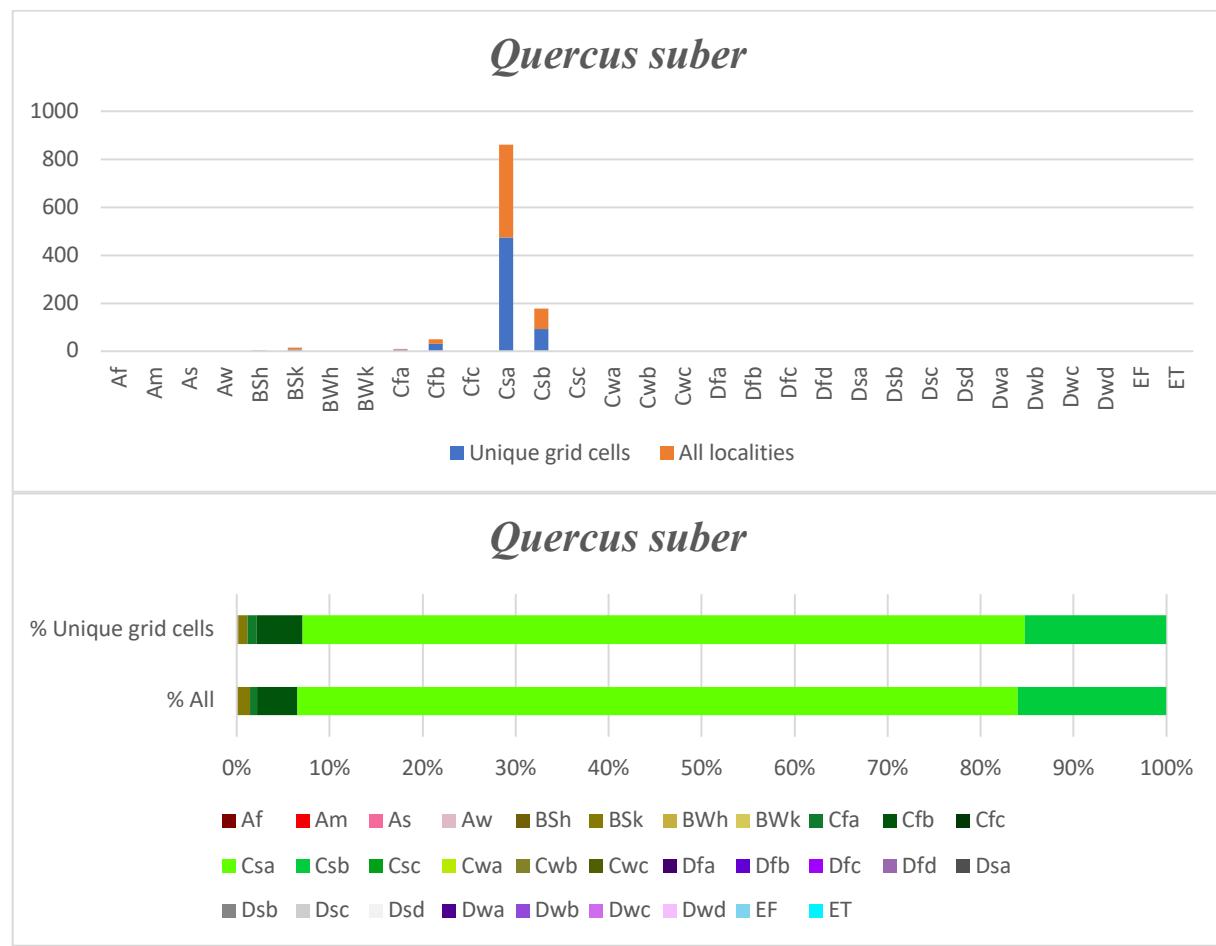
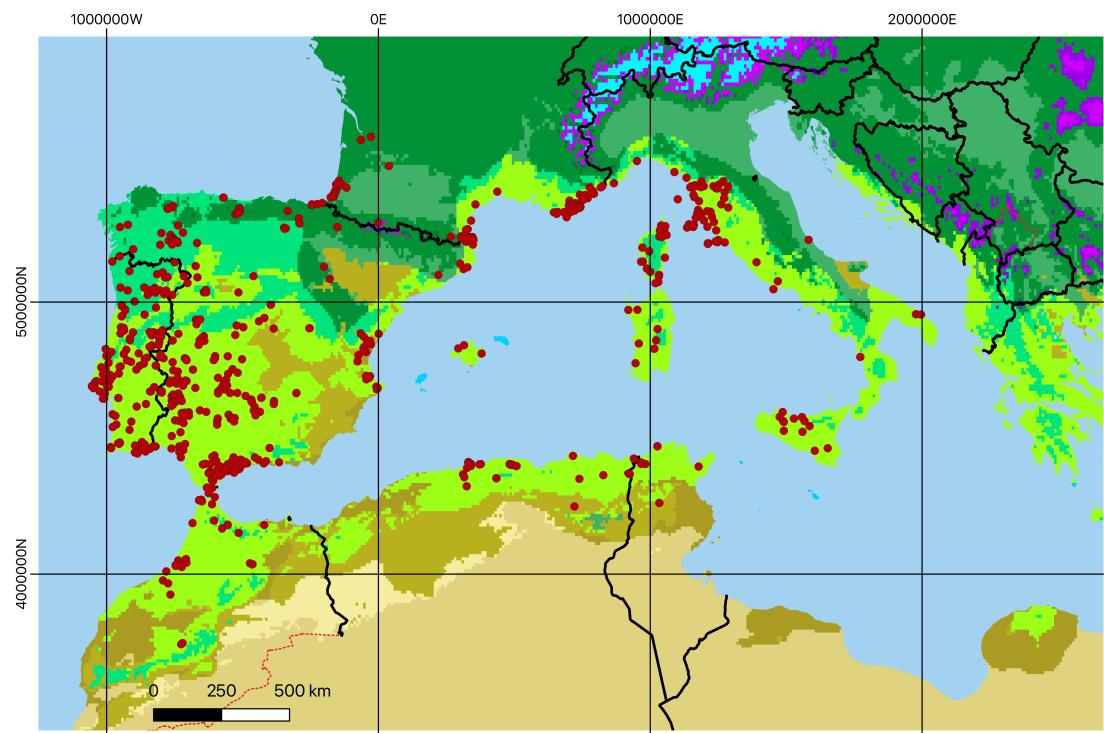
BIOMES – *Quercus crenata* Lam., 1785

GBIF localities of *Quercus crenata* (preserved specimen)



All localities (n = 81); unique localities (n = 25)

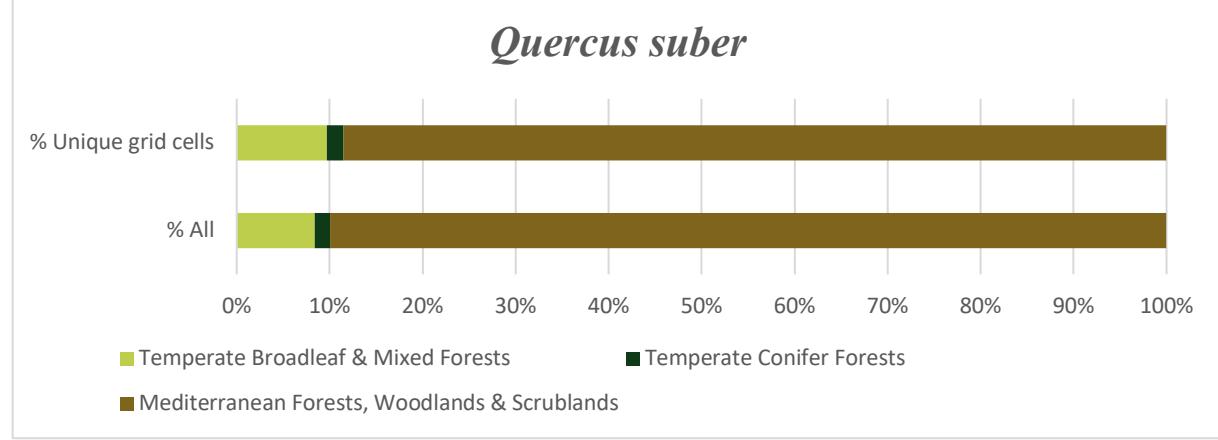
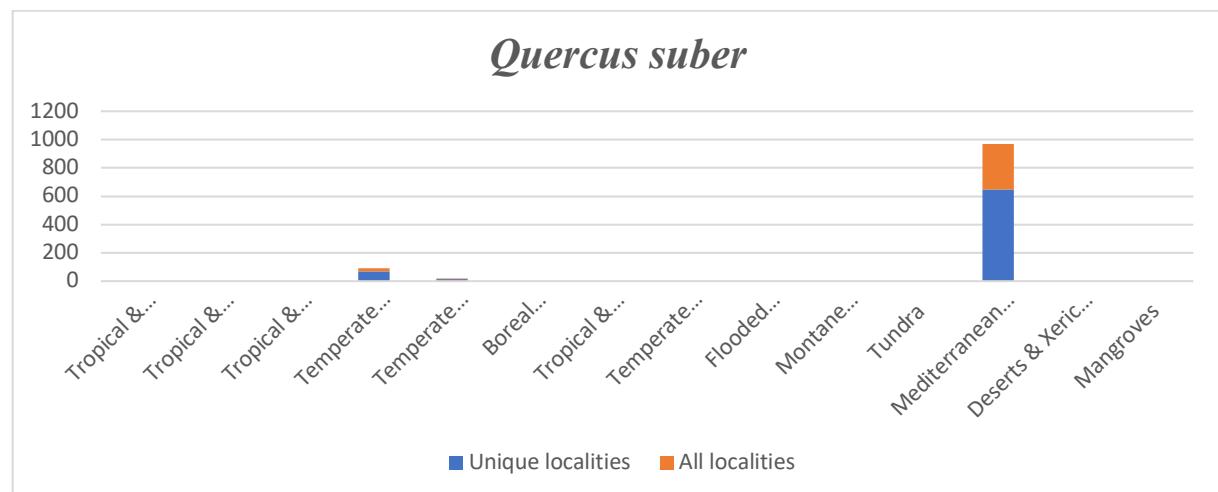
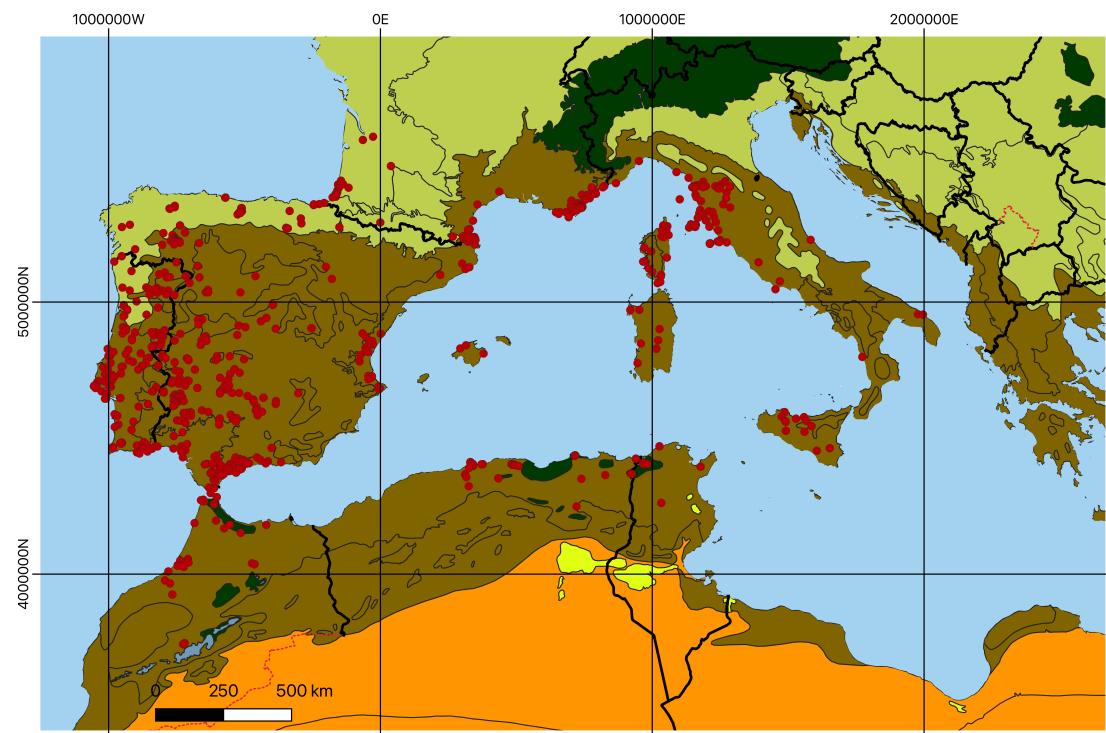
KÖPPEN SIGNATURES – *Quercus suber* L., 1753
 GBIF localities of *Quercus suber* (preserved specimen)



All localities (n = 1113); unique grid cells (n = 610)

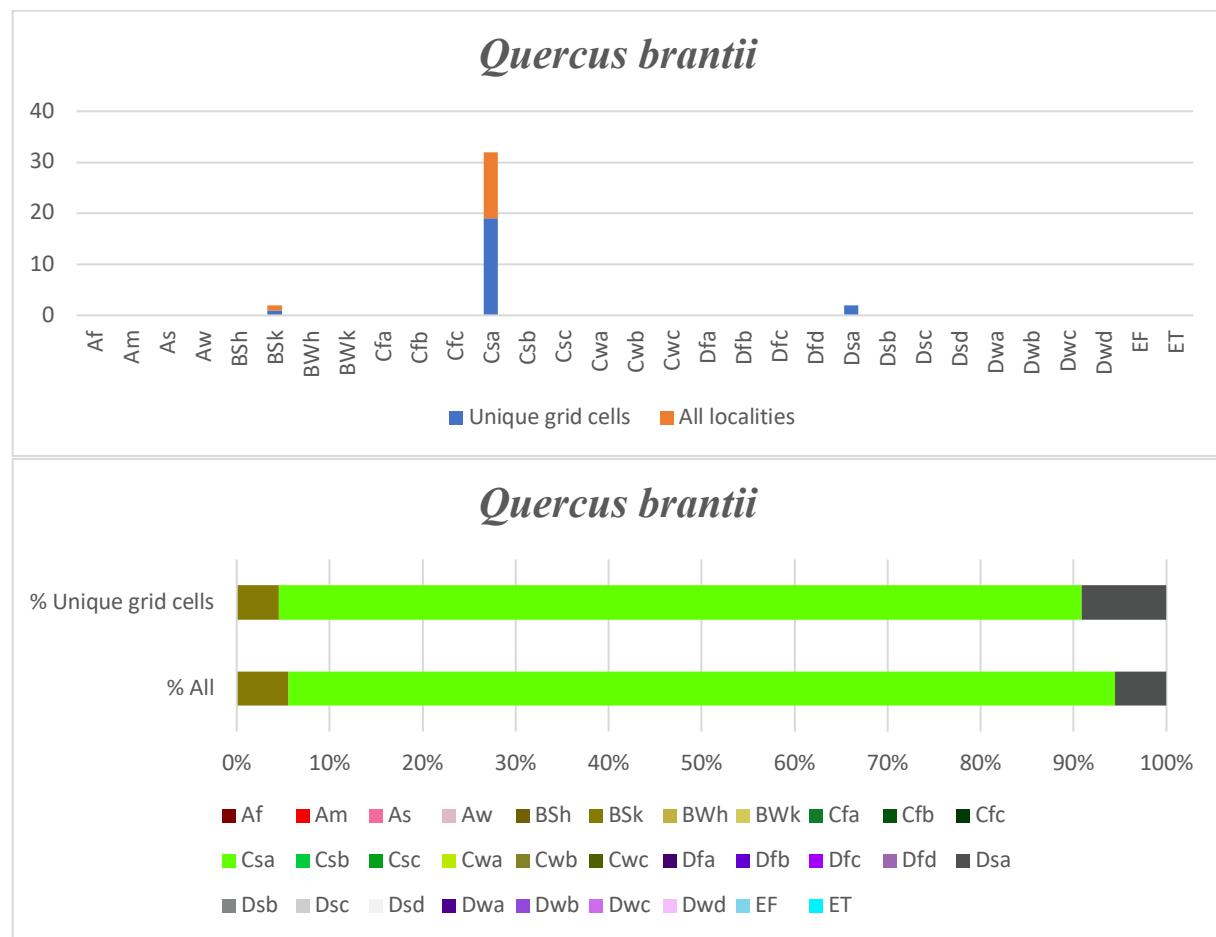
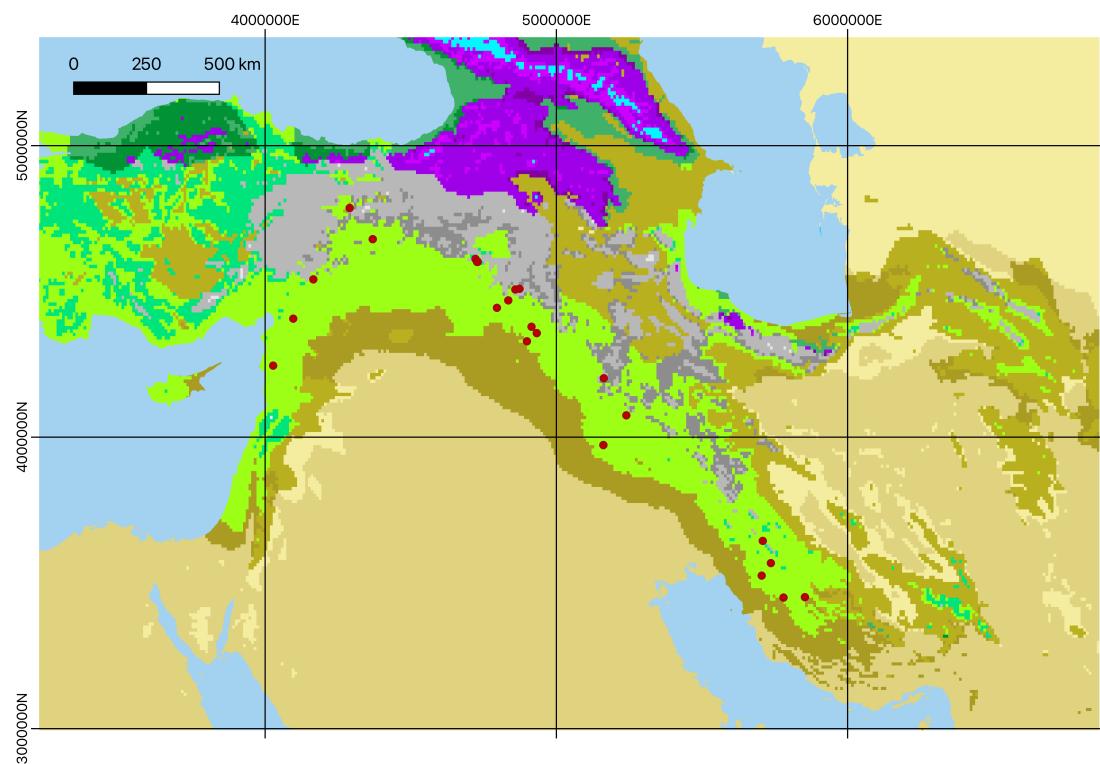
BIOMES – *Quercus suber* L., 1753

GBIF localities of *Quercus suber* (preserved specimen)



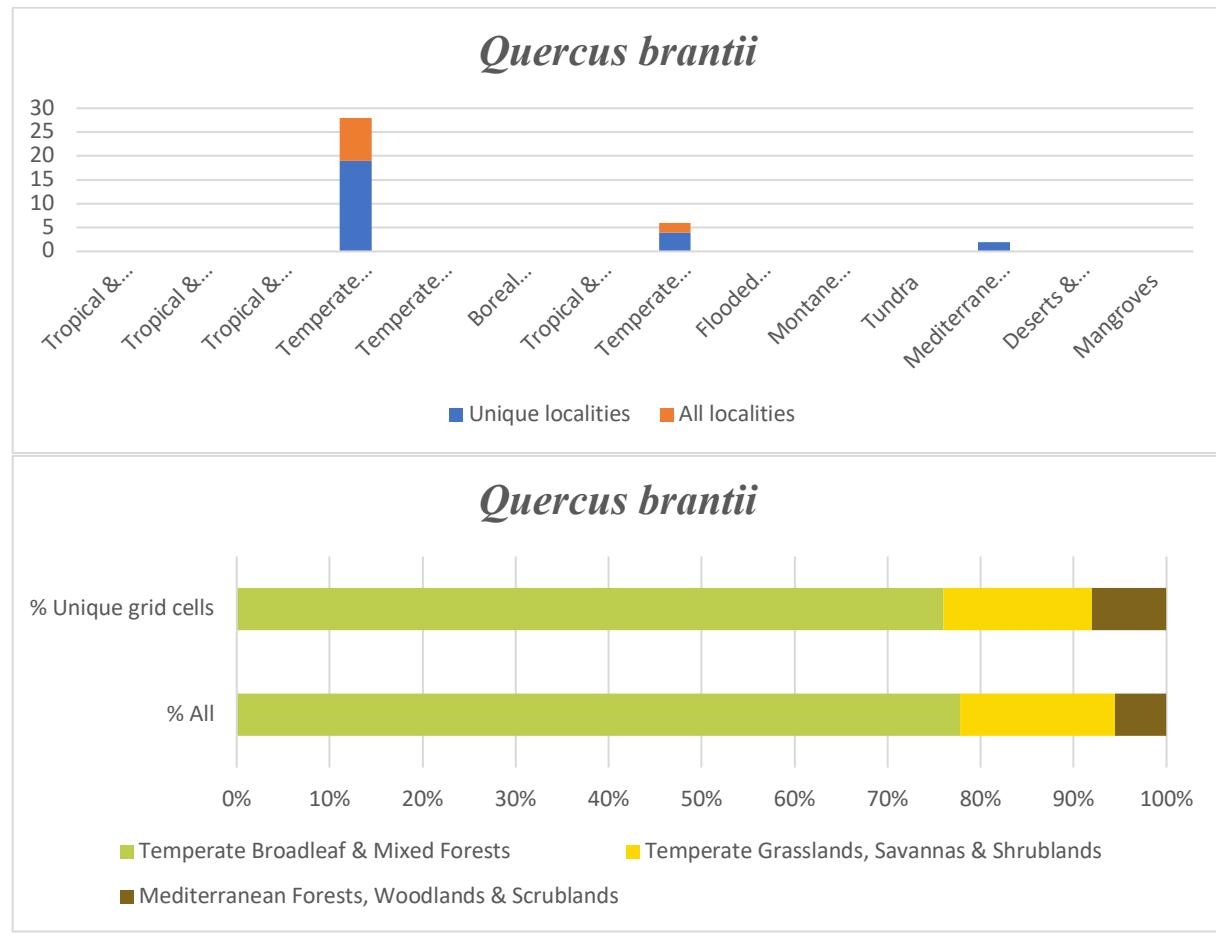
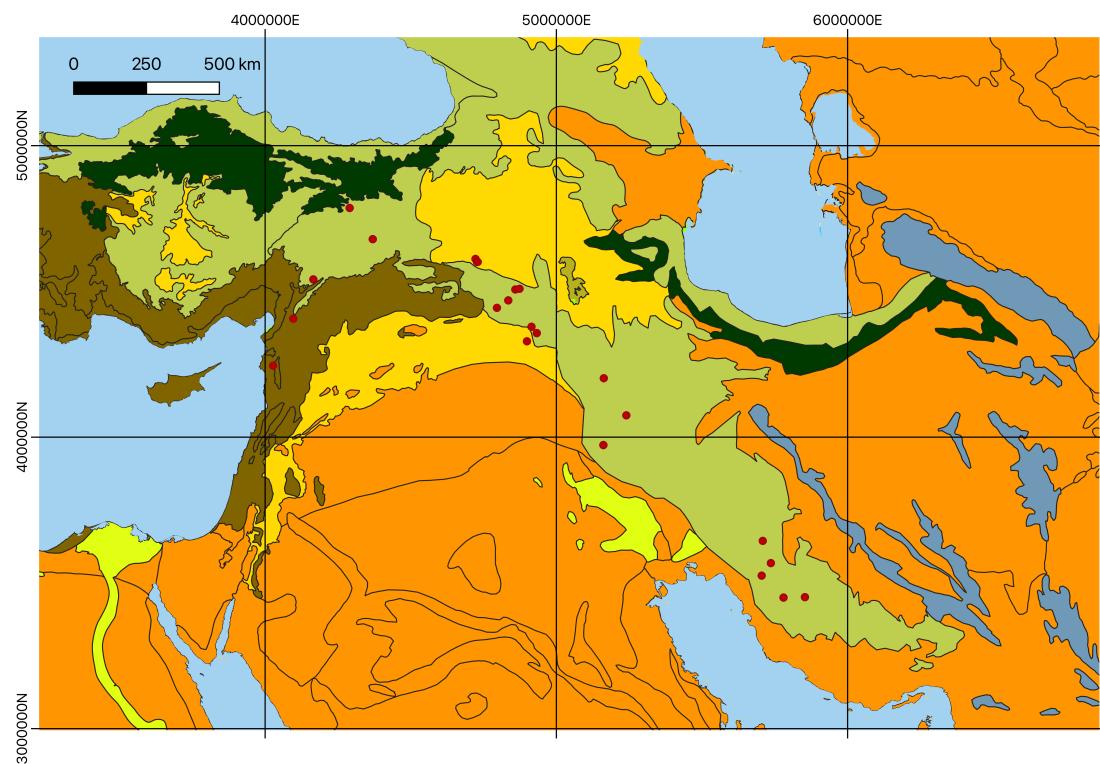
All localities (n = 1076); unique localities (n = 732)

KÖPPEN SIGNATURES – *Quercus brantii* Lindl., 1840
 GBIF localities of *Quercus brantii* (preserved specimen)



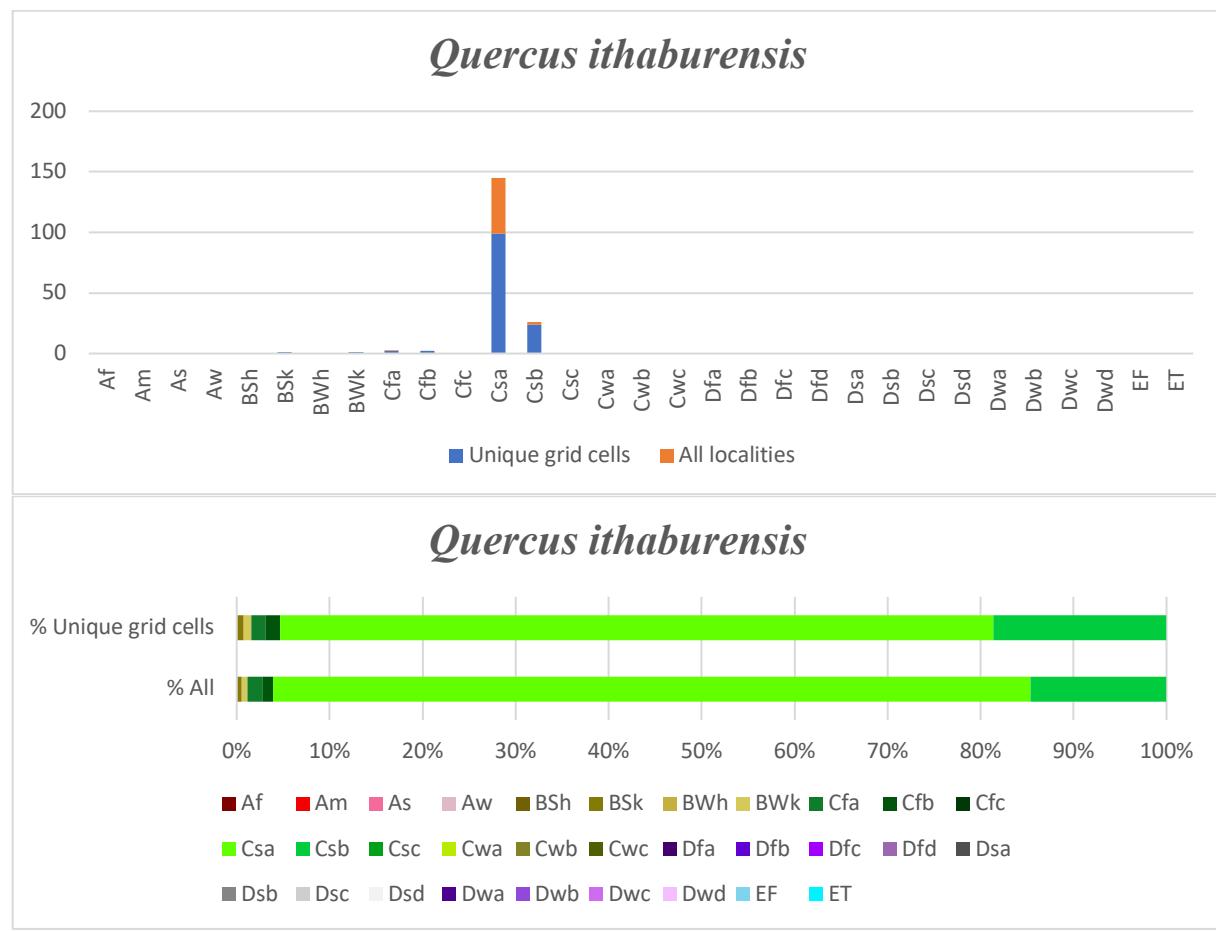
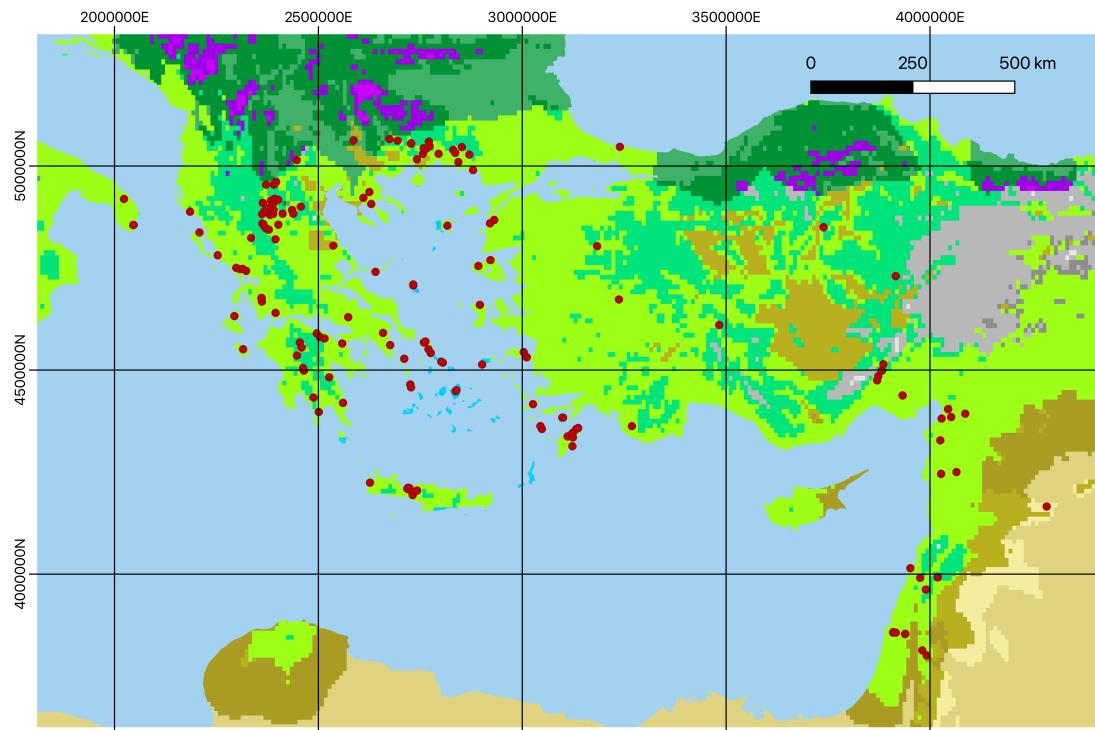
All localities (n = 36); unique grid cells (n = 22)

BIOMES – *Quercus brantii* Lindl., 1840
 GBIF localities of *Quercus brantii* (preserved specimen)



All localities (n = 36); unique localities (n = 25)

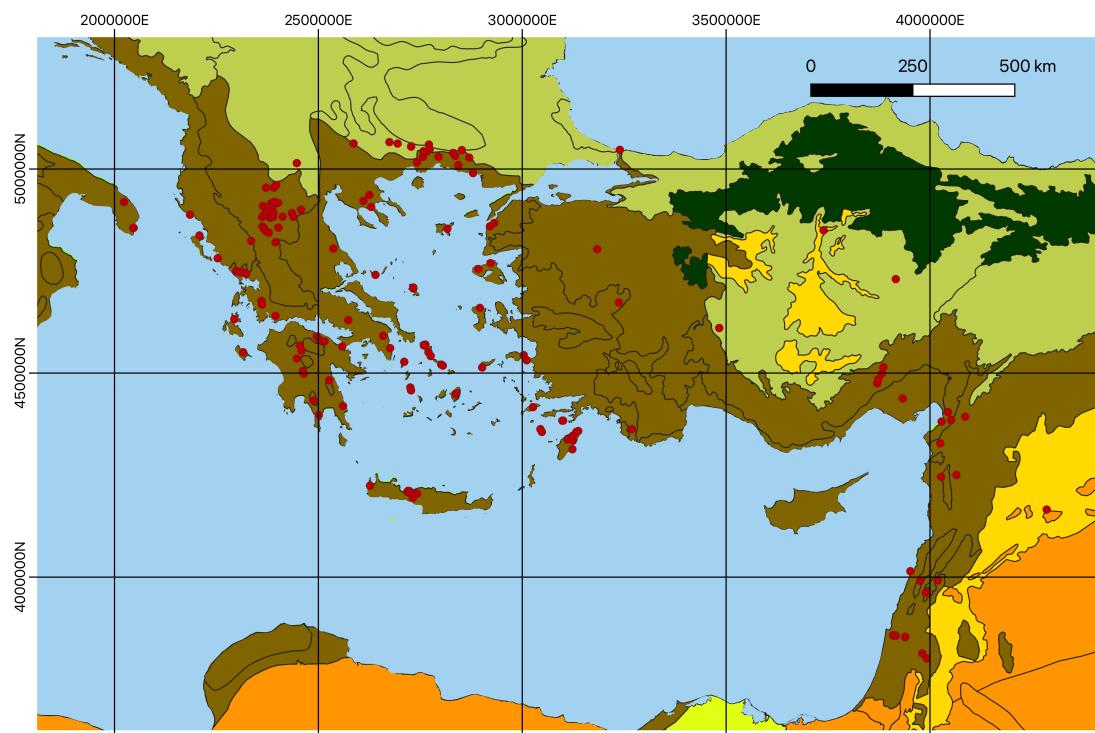
KÖPPEN SIGNATURES – *Quercus ithaburensis* Decne., 1835
 GBIF localities of *Quercus ithaburensis* (preserved specimen)



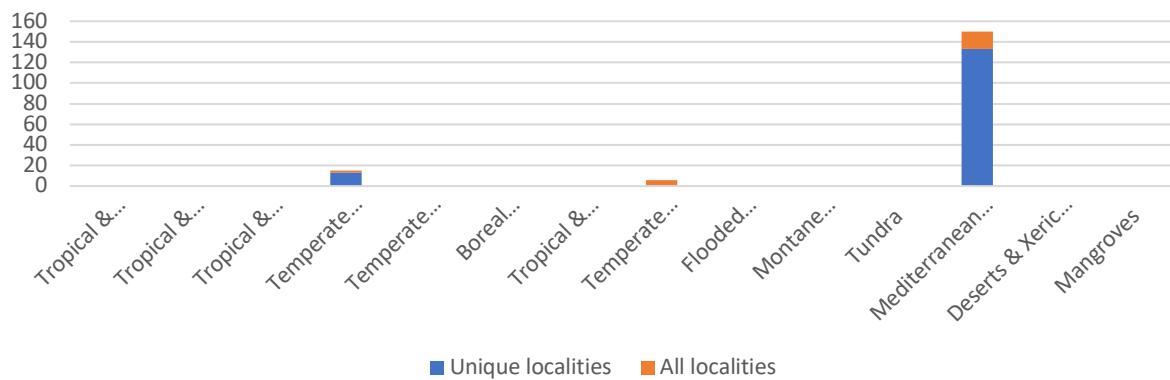
All localities (n = 178); unique grid cells (n = 129)

BIOMES – *Quercus ithaburensis* Decne., 1835

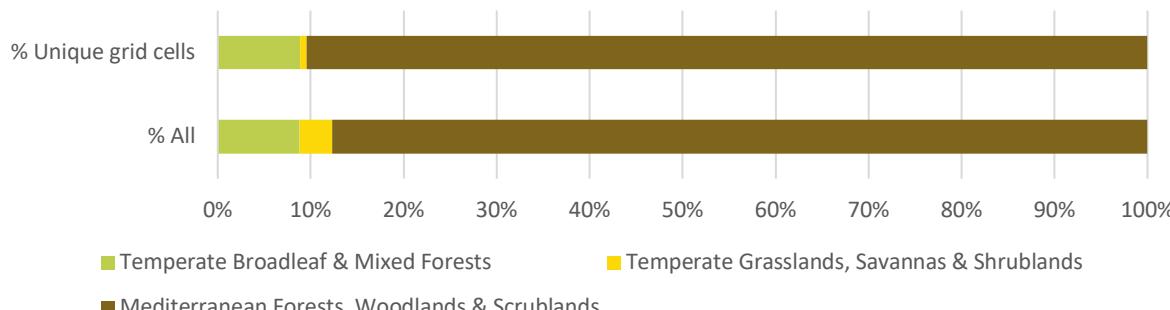
GBIF localities of *Quercus ithaburensis* (preserved specimen)



Quercus ithaburensis



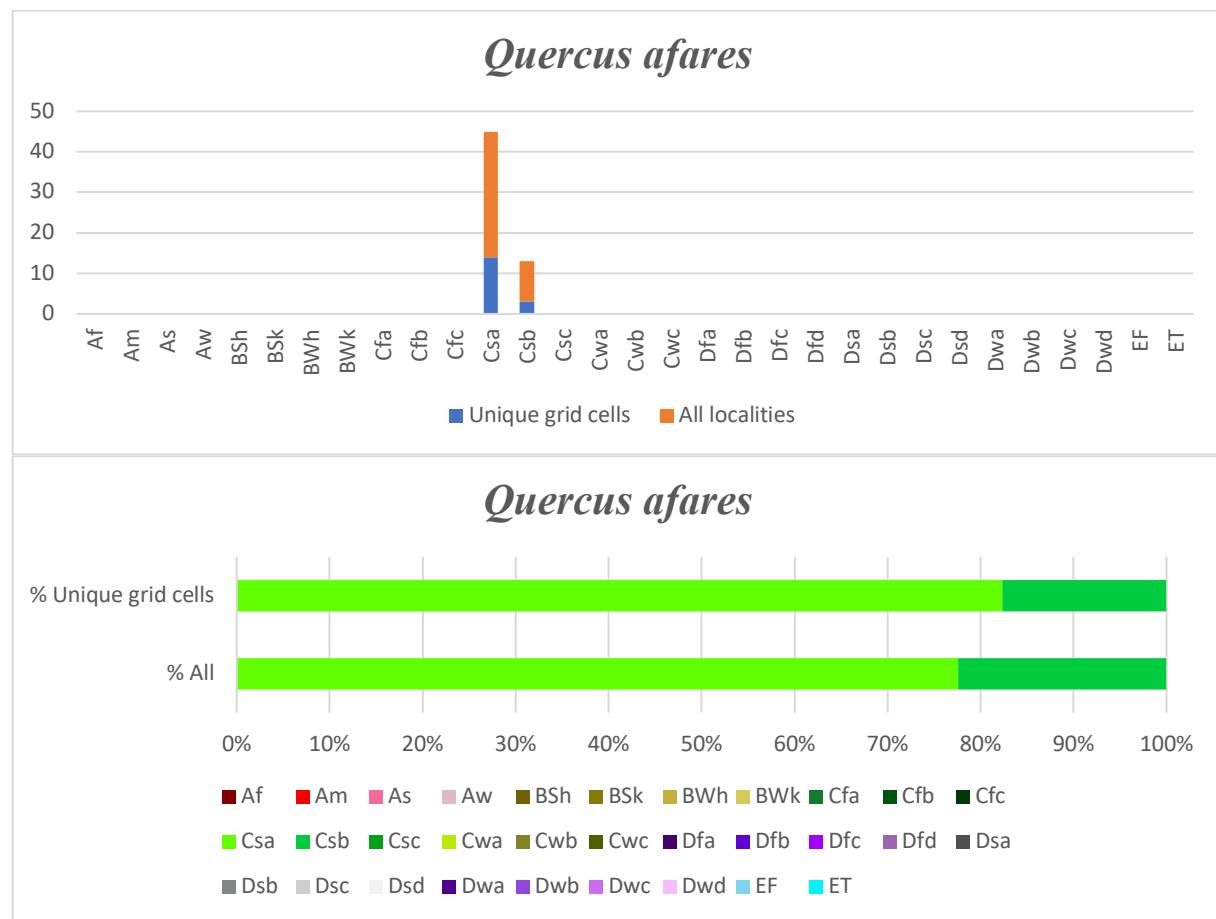
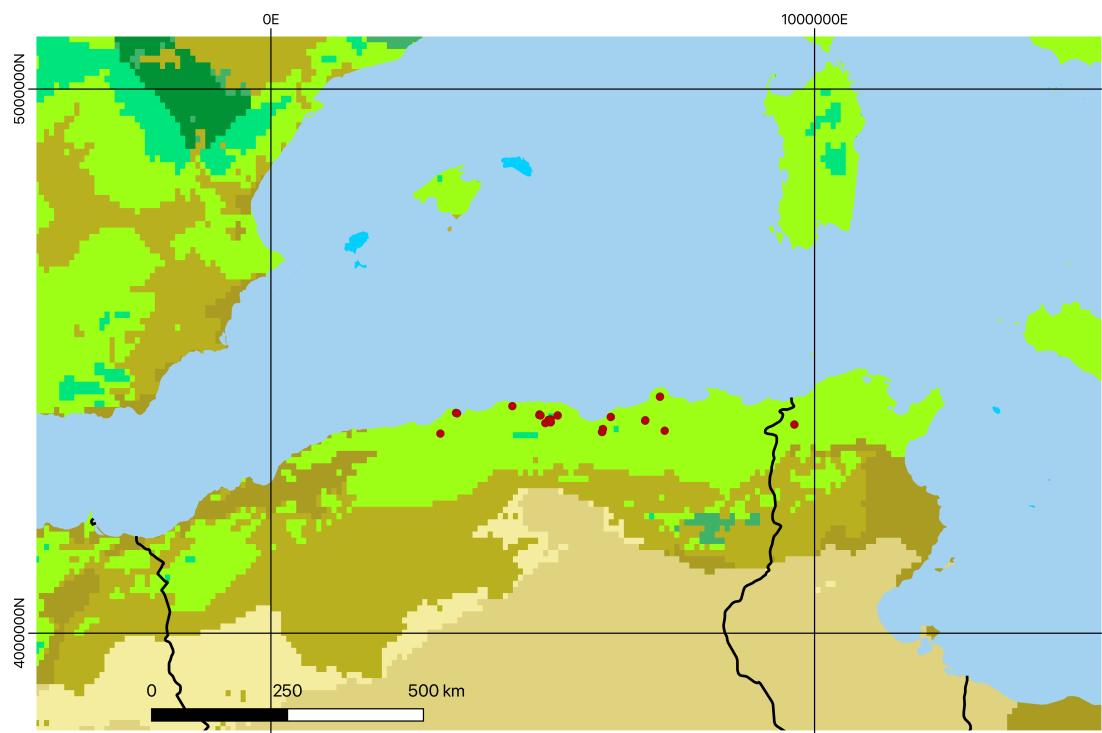
Quercus ithaburensis



All localities (n = 171); unique localities (n = 147)

KÖPPEN SIGNATURES – *Quercus afares* Pomel, 1875

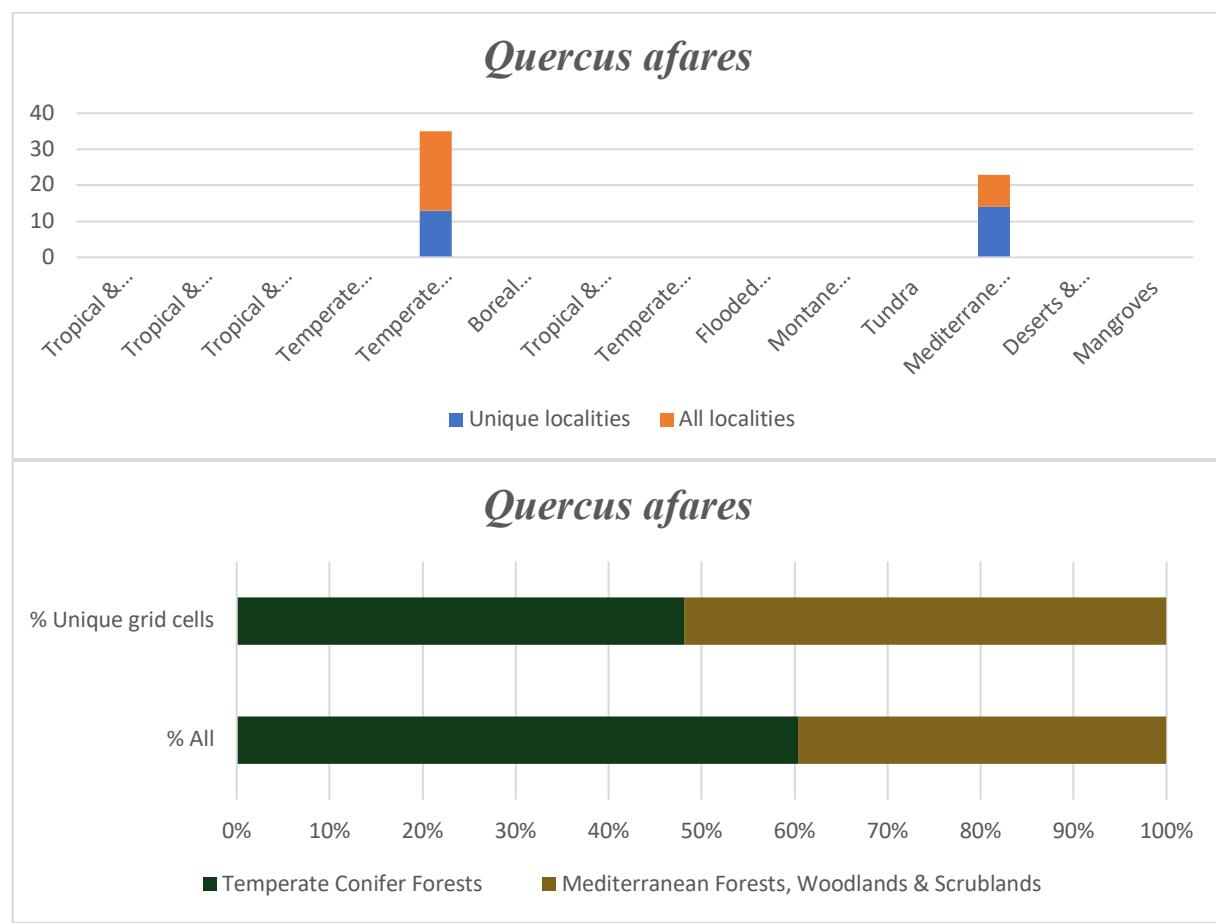
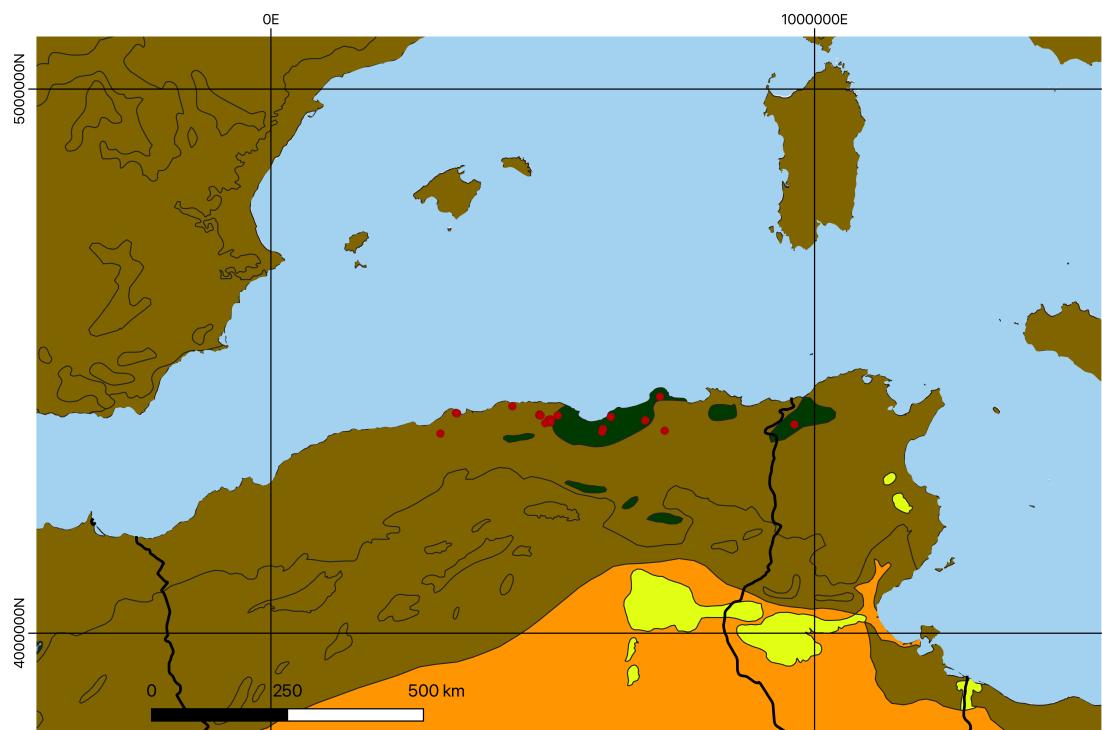
GBIF localities of *Quercus afares* (preserved specimen)



All localities (n = 58); unique grid cells (n = 17)

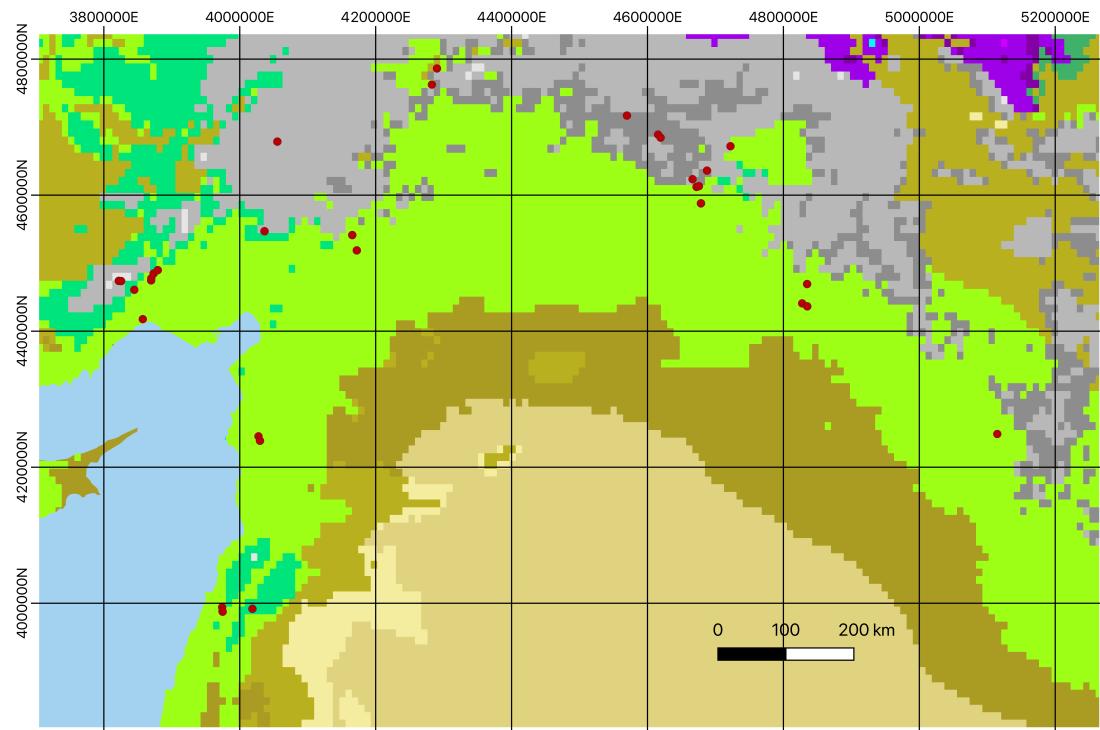
BIOMES – *Quercus afares* Pomel, 1875

GBIF localities of *Quercus afares* (preserved specimen)



All localities (n = 58); unique localities (n = 27)

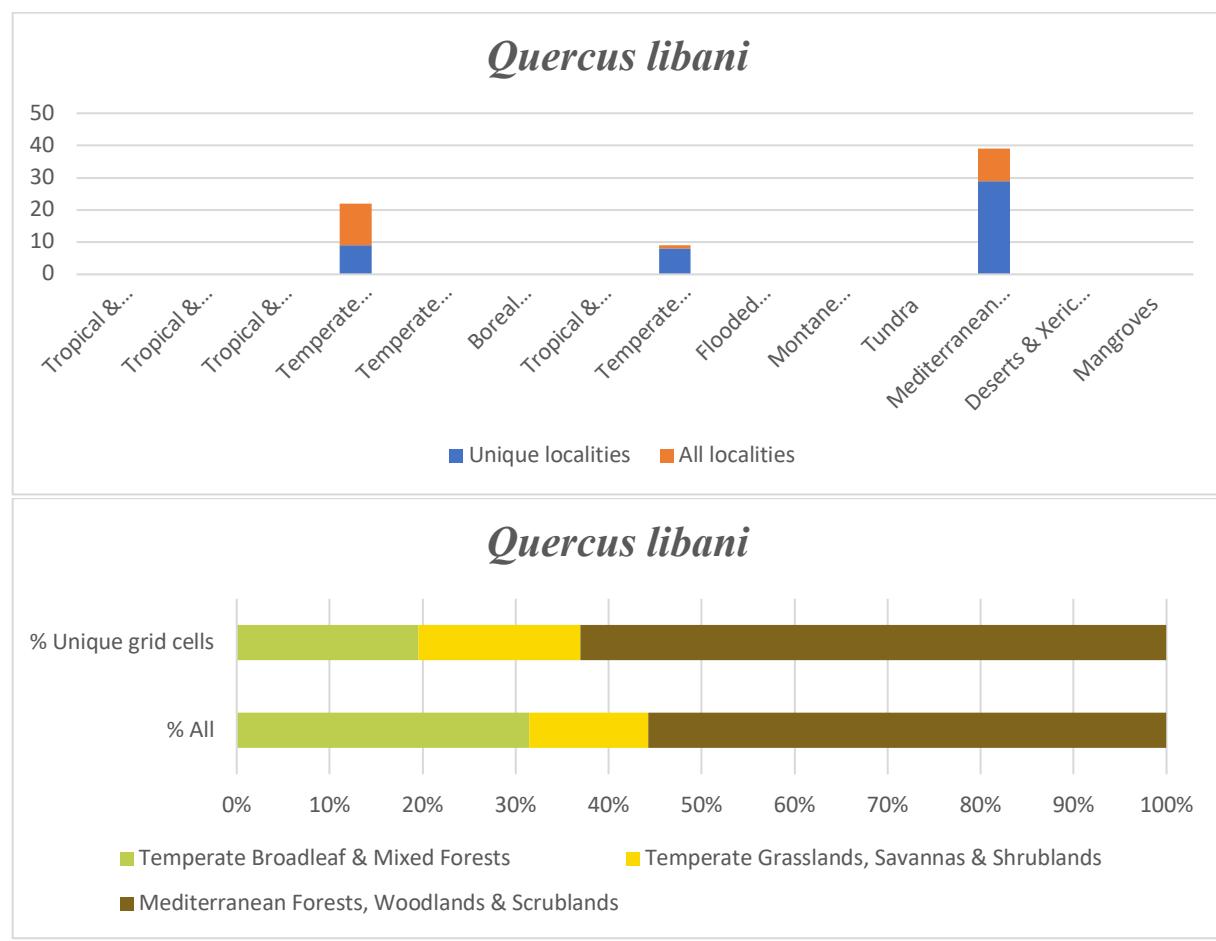
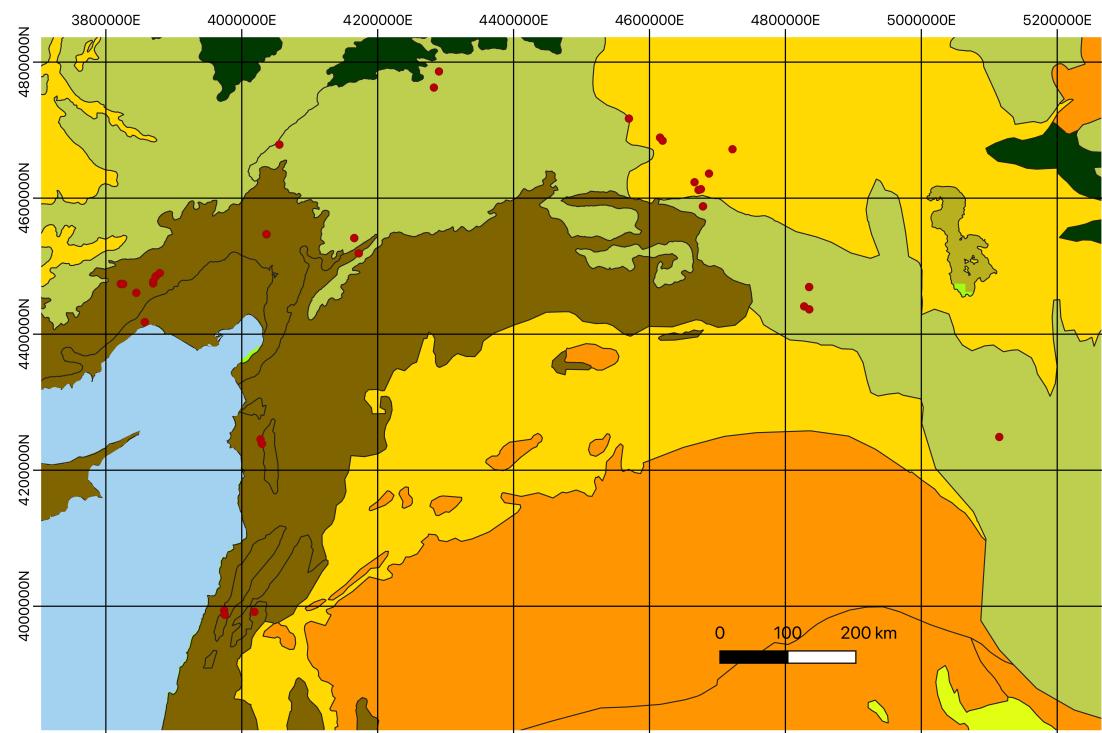
KÖPPEN SIGNATURES – *Quercus libani* Oliv., 1804
 GBIF localities of *Quercus libani* (preserved specimen)



All localities (n = 178); unique grid cells (n = 129)

BIOMES – *Quercus libani* Oliv., 1804

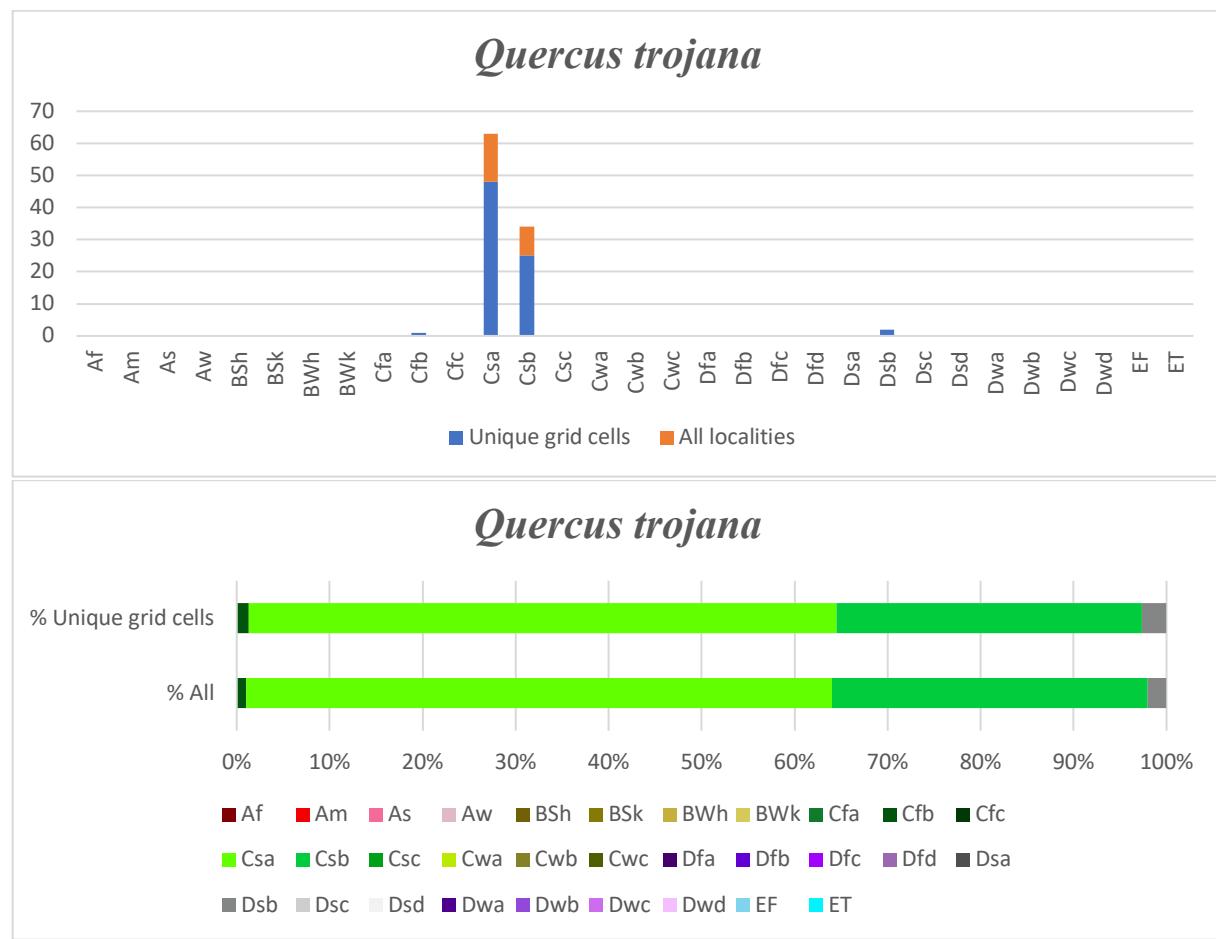
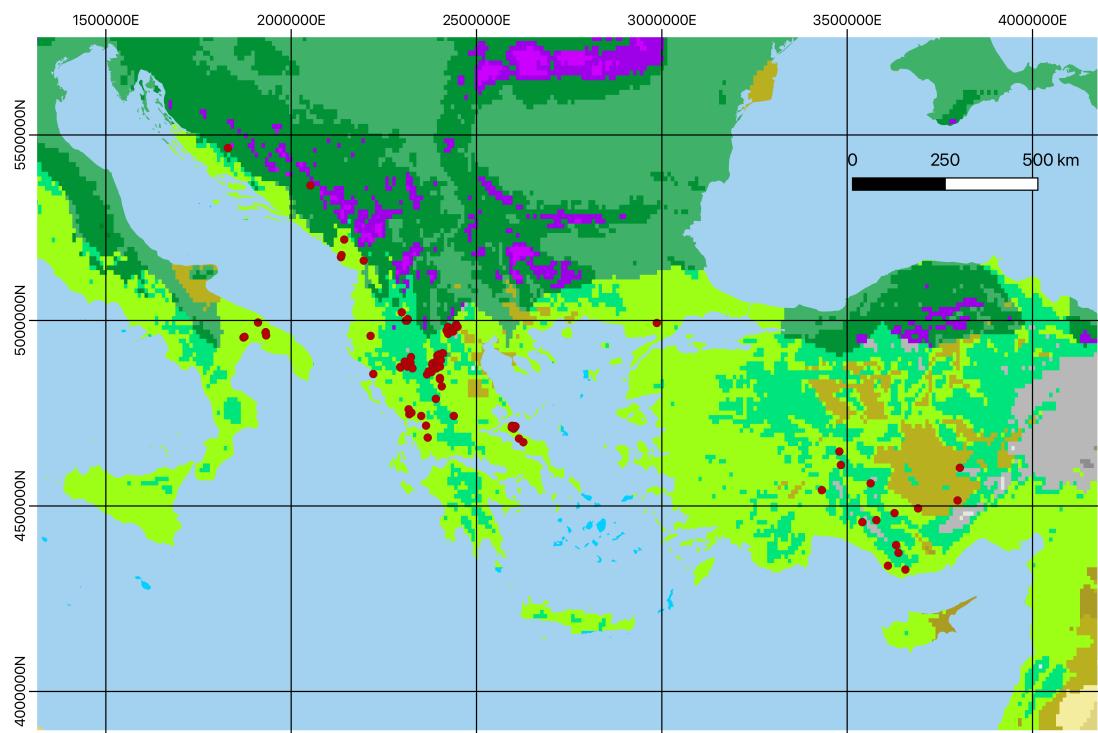
GBIF localities of *Quercus libani* (preserved specimen)



All localities (n = 171); unique localities (n = 147)

KÖPPEN SIGNATURES – *Quercus trojana* Webb, 1839

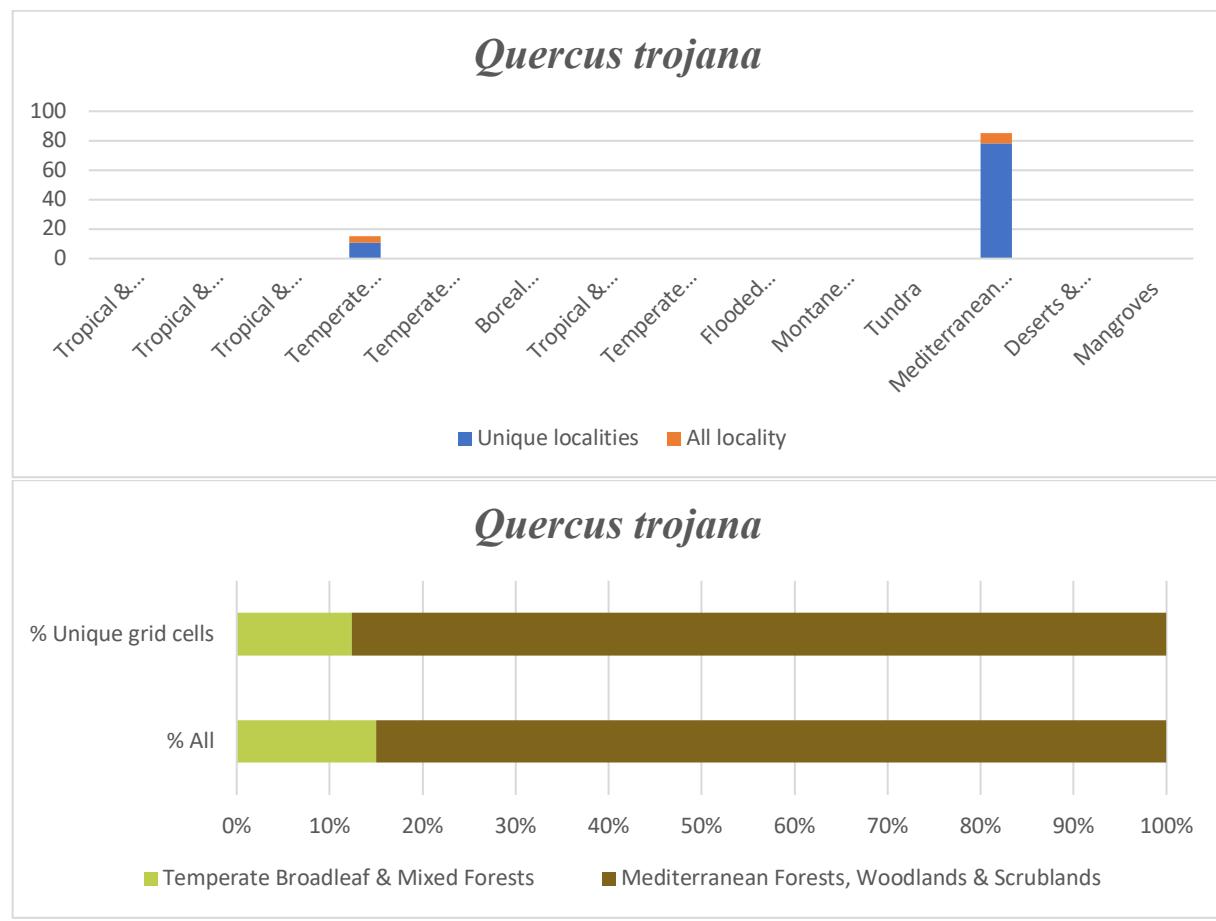
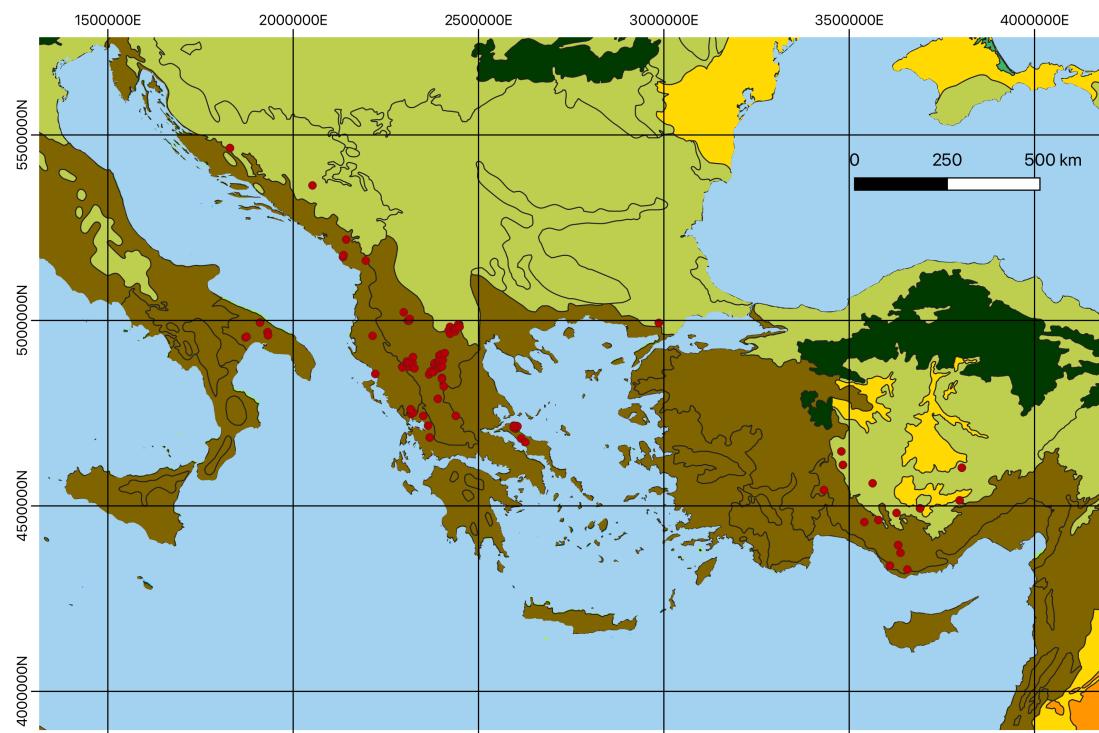
GBIF localities of *Quercus trojana* (preserved specimen)



All localities (n = 100); unique grid cells (n = 76)

BIOMES – *Quercus trojana* Webb, 1839

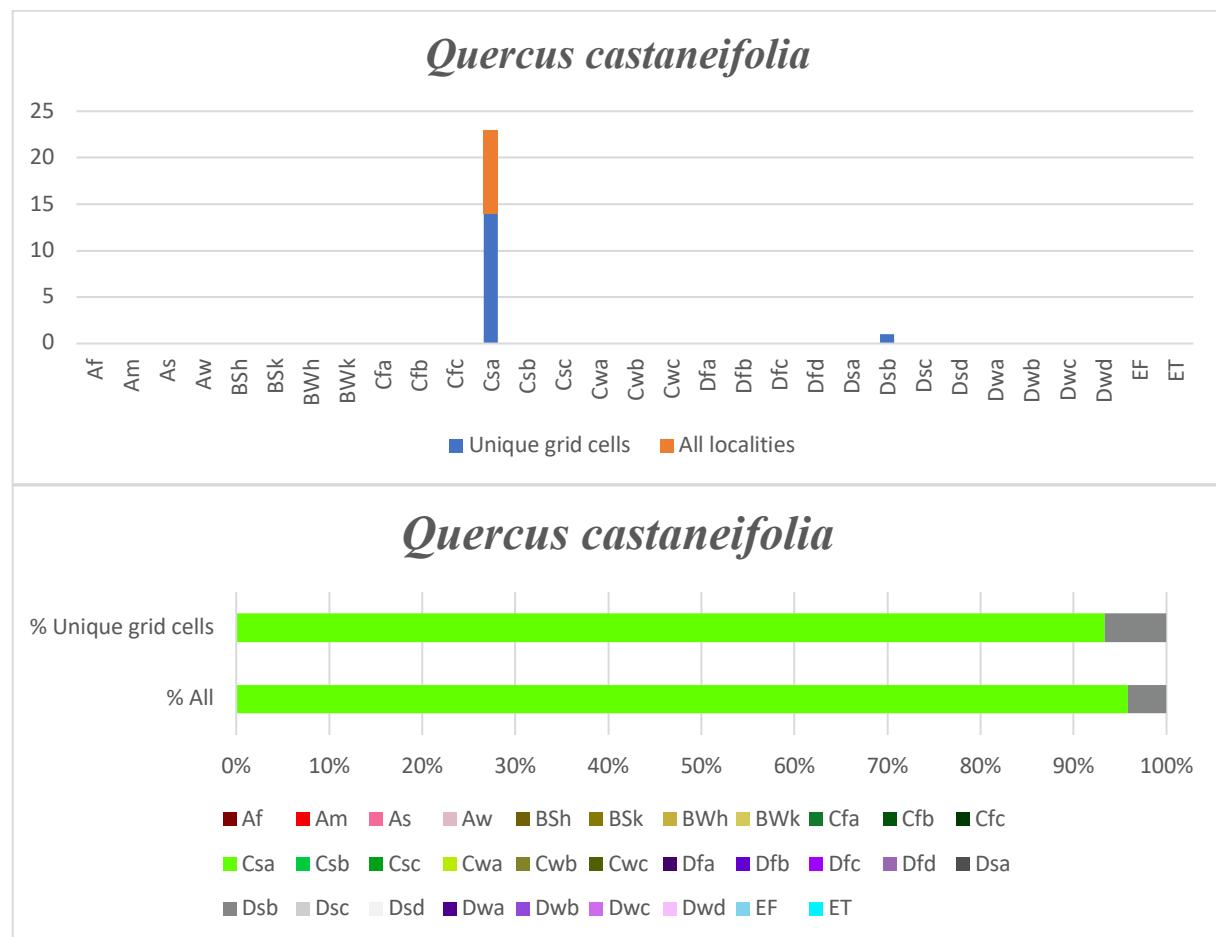
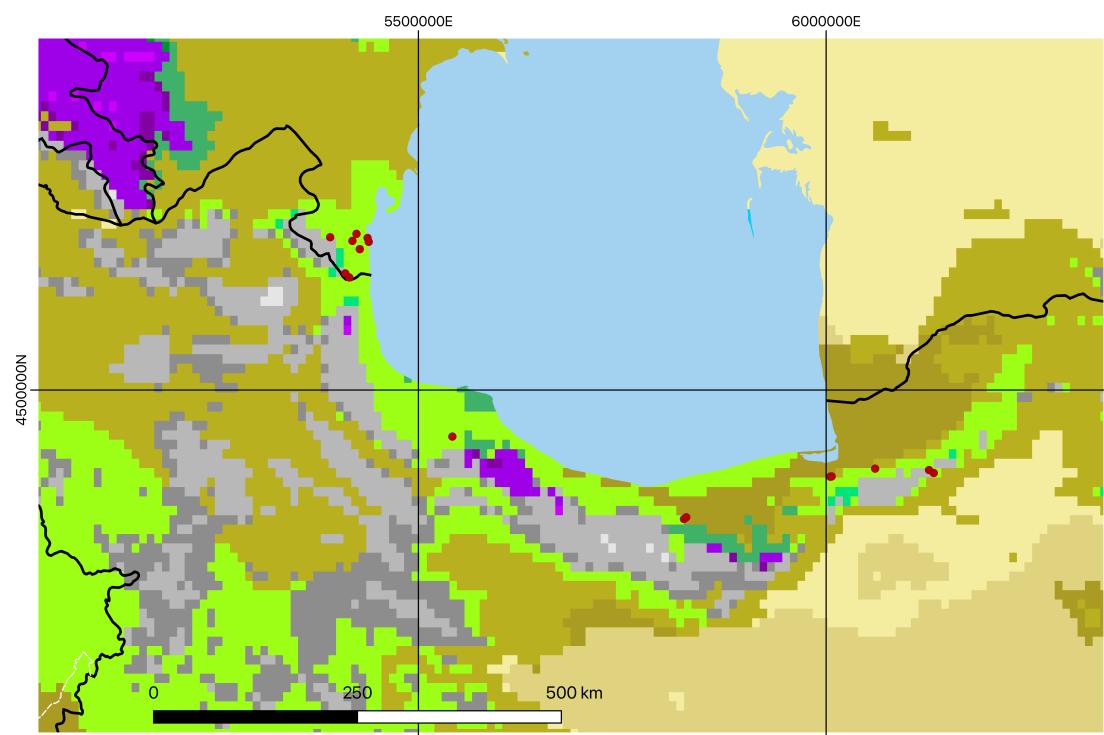
GBIF localities of *Quercus trojana* (preserved specimen)



All localities (n = 100); unique localities (n = 89)

KÖPPEN SIGNATURES – *Quercus castaneifolia* C.A.Mey., 1831

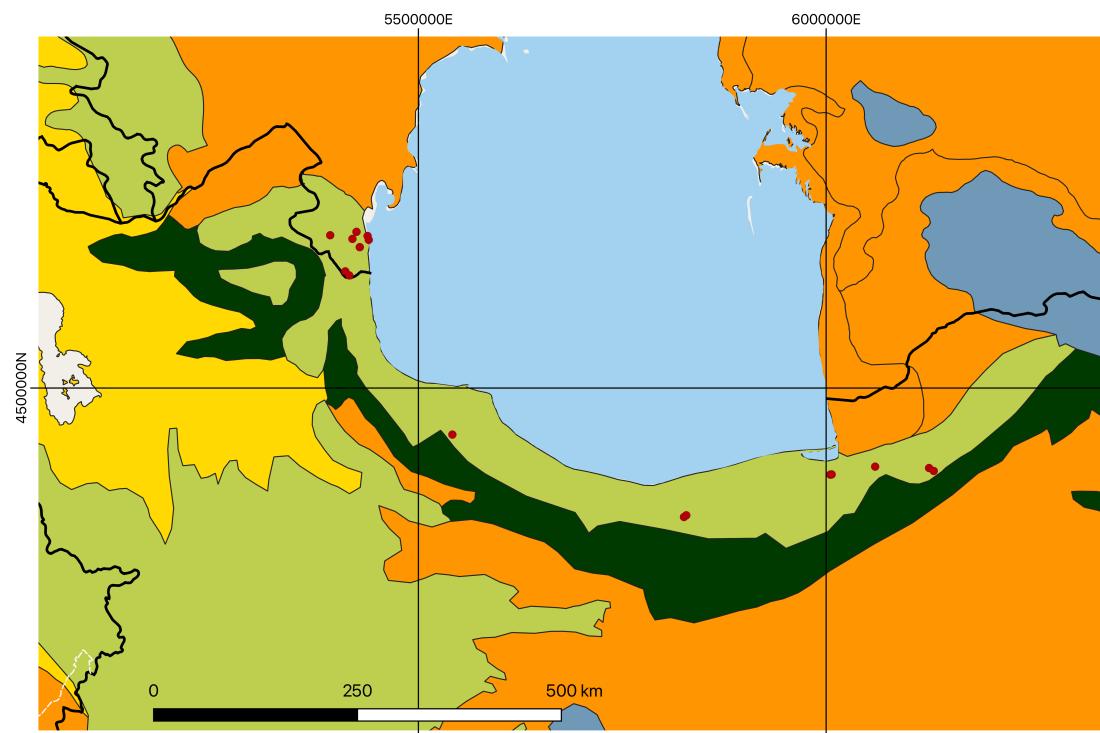
GBIF localities of *Quercus castaneifolia* (preserved specimen)



All localities (n = 24); unique grid cells (n = 15)

BIOMES – *Quercus castaneifolia* C.A.Mey., 1831

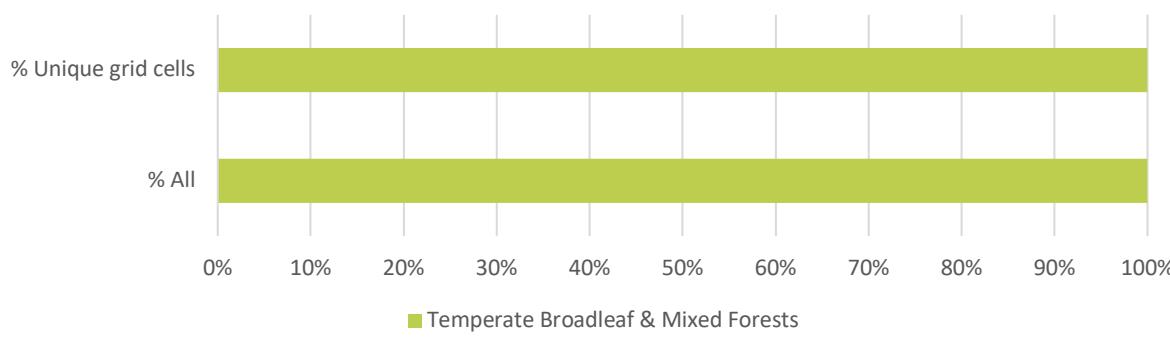
GBIF localities of *Quercus castaneifolia* (preserved specimen)



Quercus castaneifolia

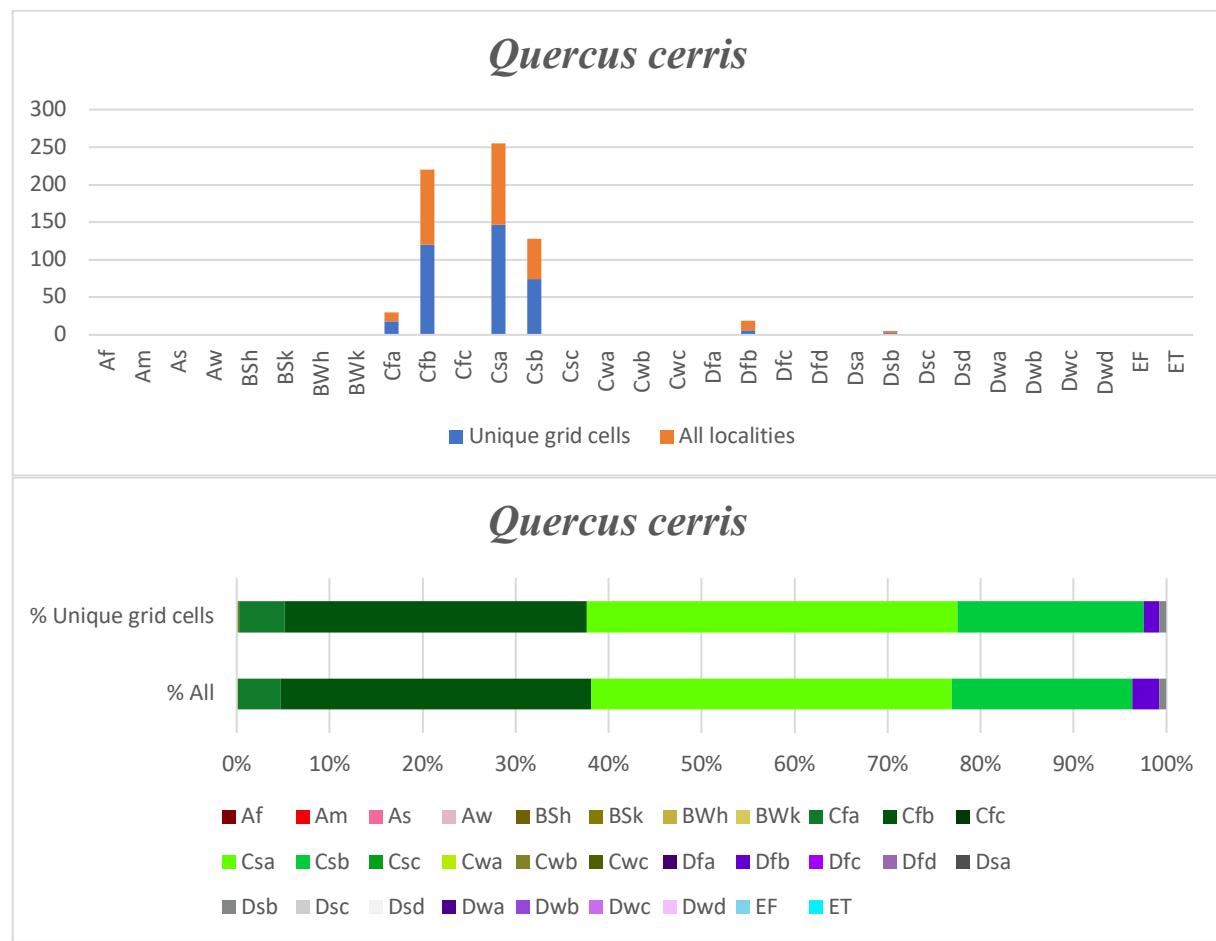
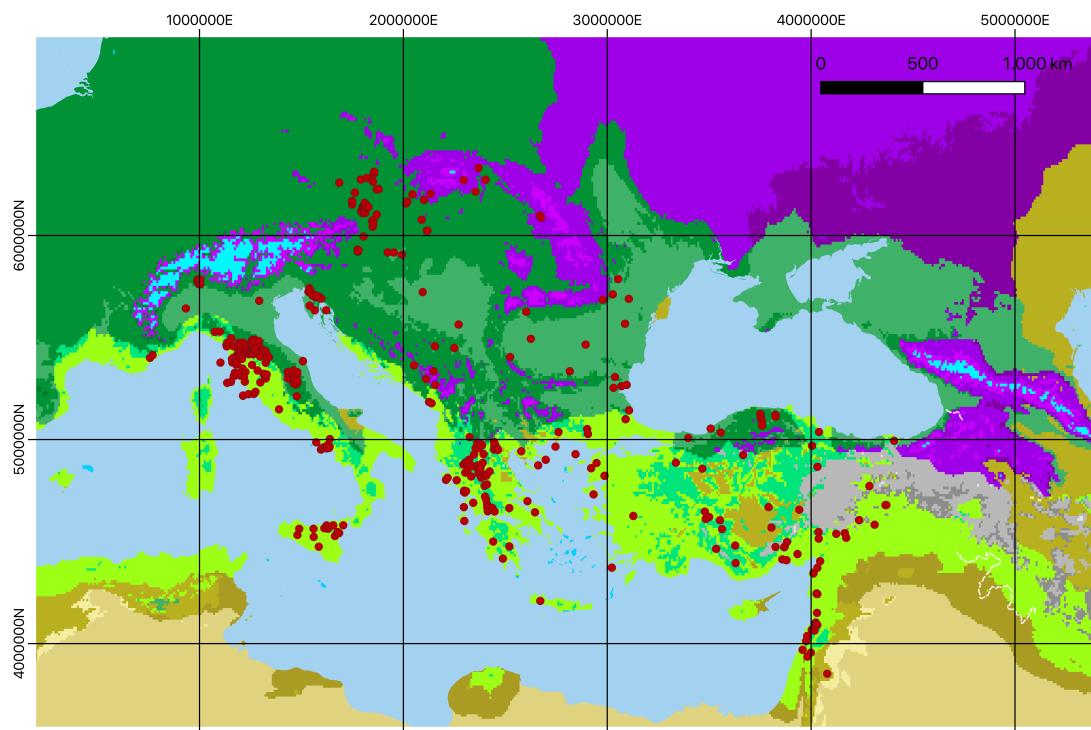


Quercus castaneifolia



All localities (n = 24); unique localities (n = 16)

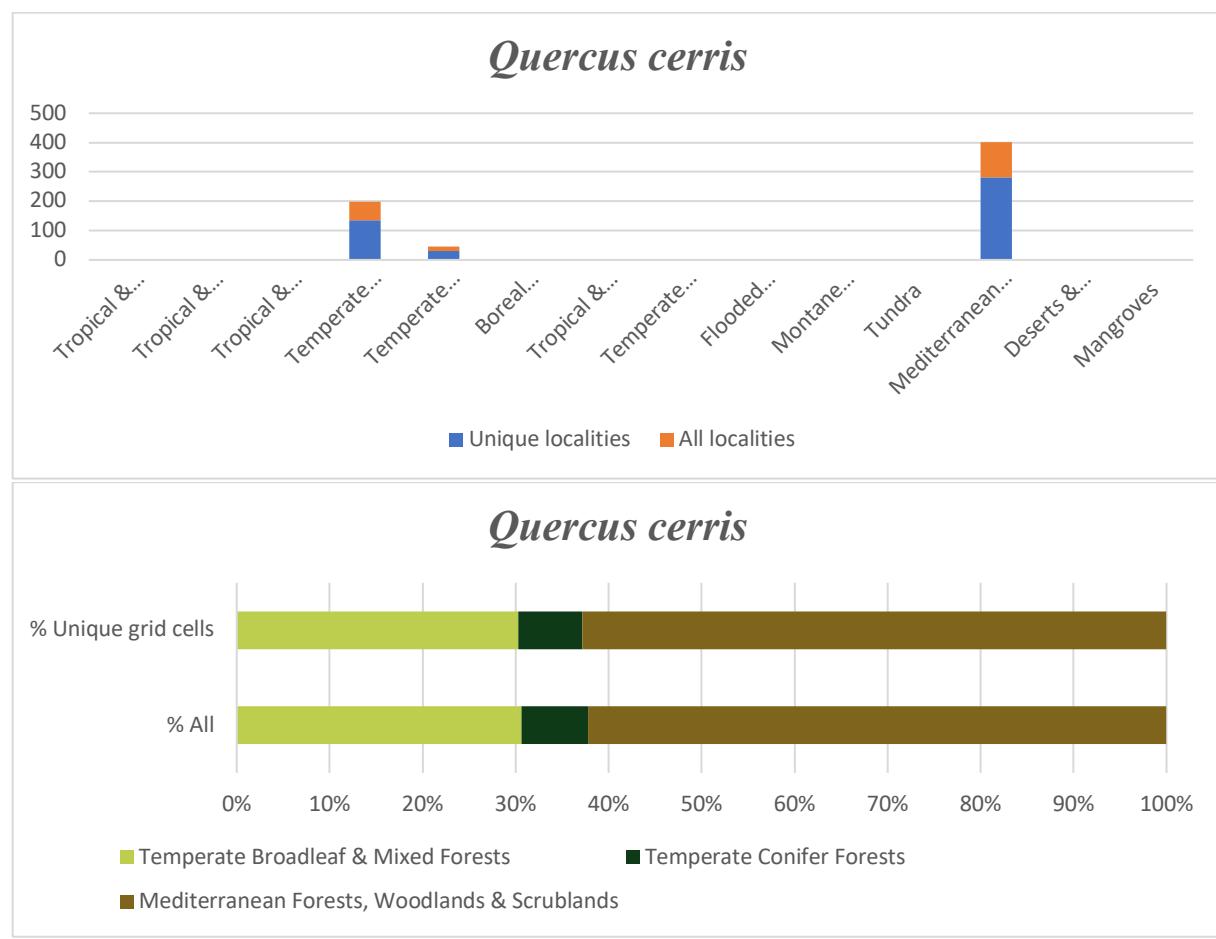
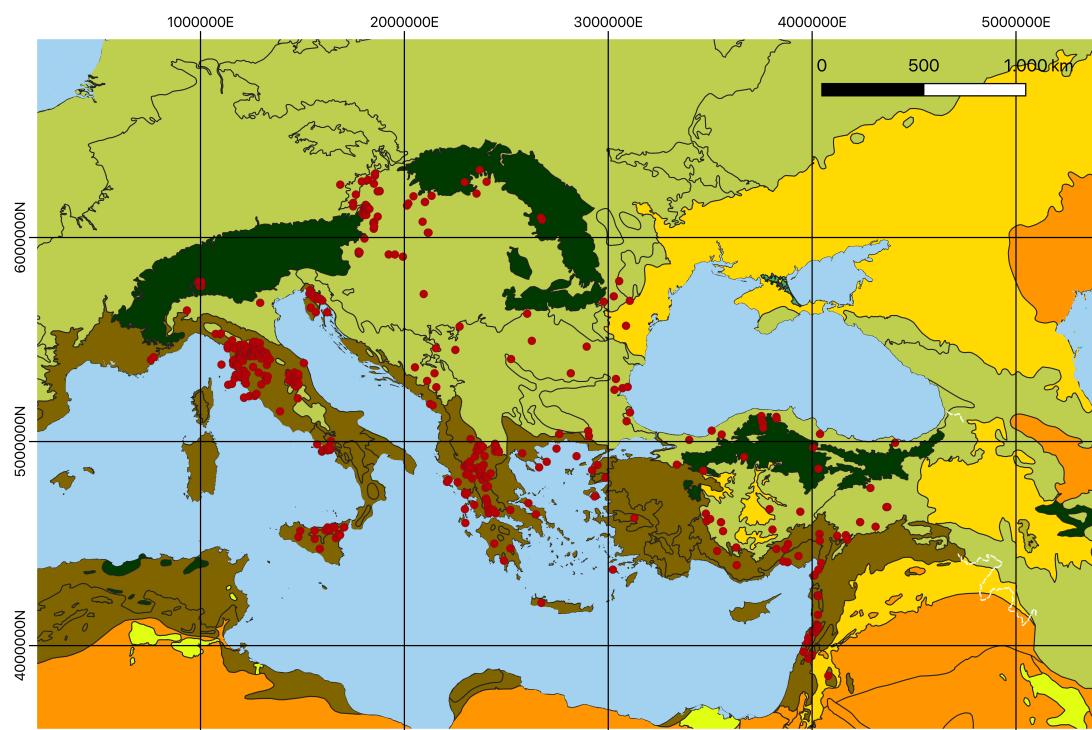
KÖPPEN SIGNATURES – *Quercus cerris* L., 1753
 GBIF localities of *Quercus cerris* (preserved specimen)



All localities (n = 658); unique grid cells (n = 369)

BIOMES – *Quercus cerris* L., 1753

GBIF localities of *Quercus cerris* (preserved specimen)

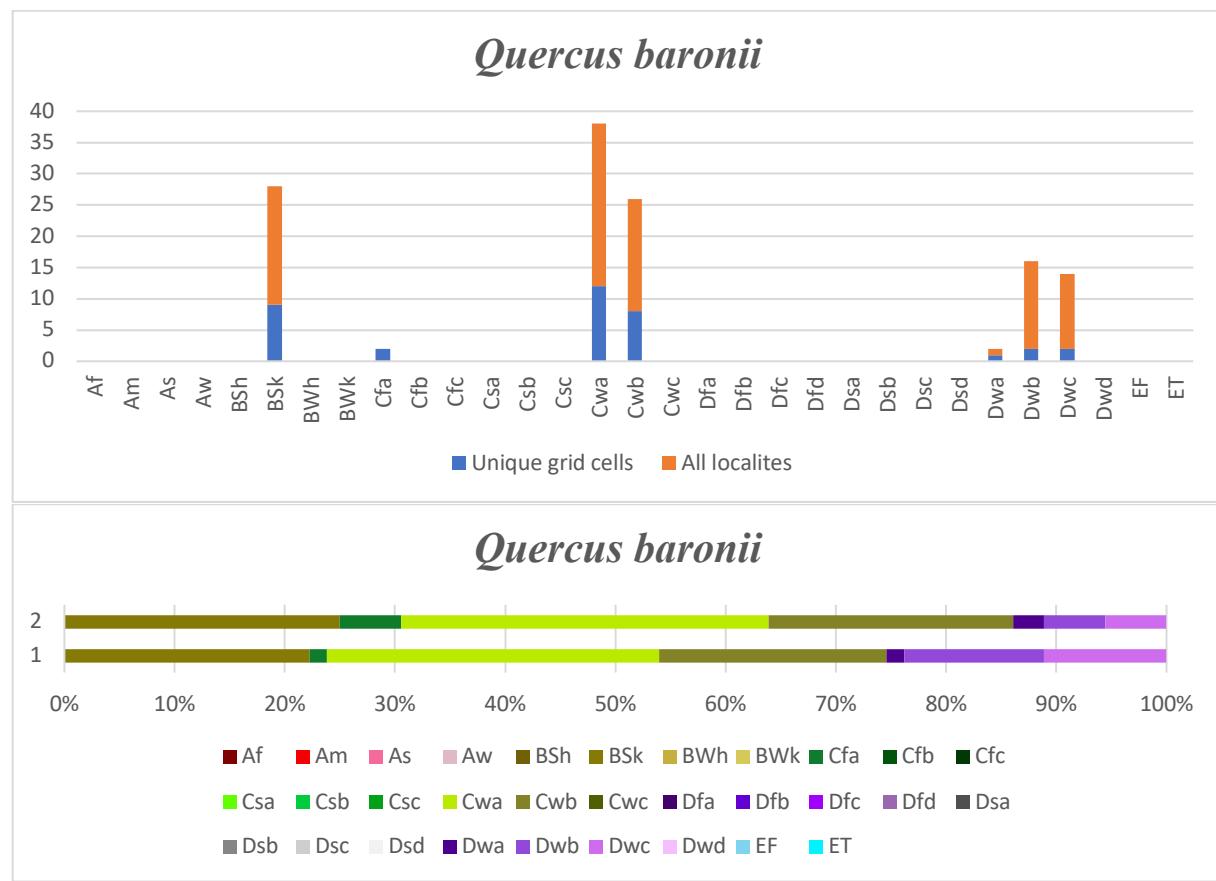
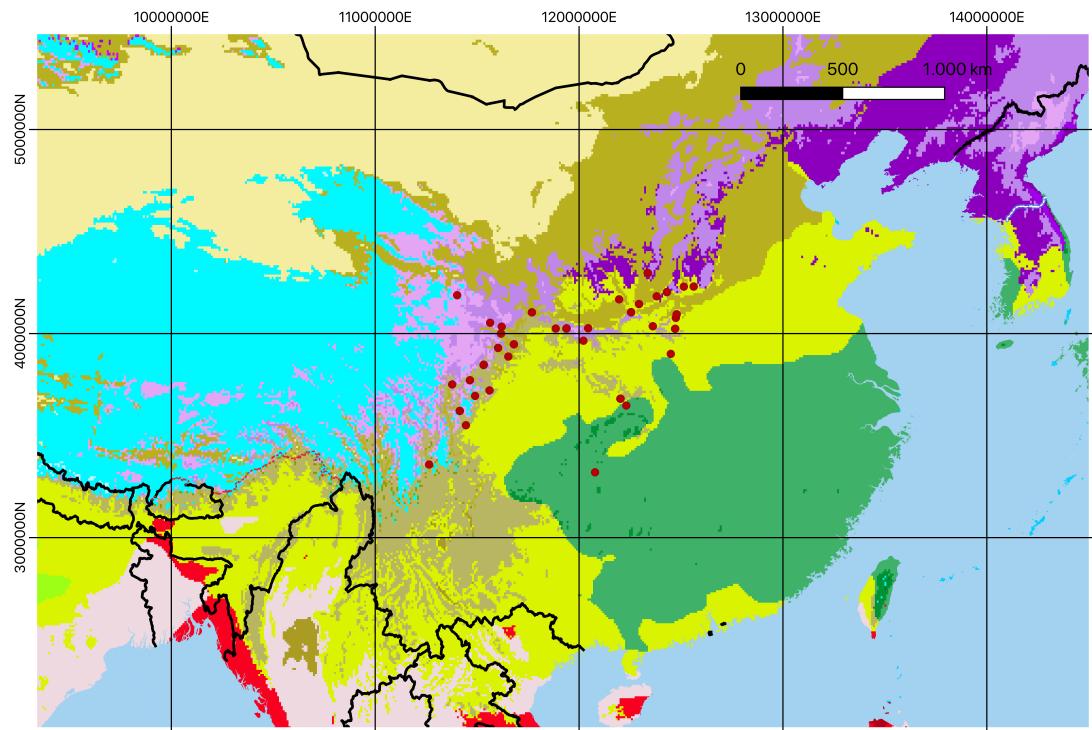


All localities (n = 647); unique localities (n = 449)

Quercus Sect. Ilex

KÖPPEN SIGNATURES – *Quercus baronii* Skan, 1899

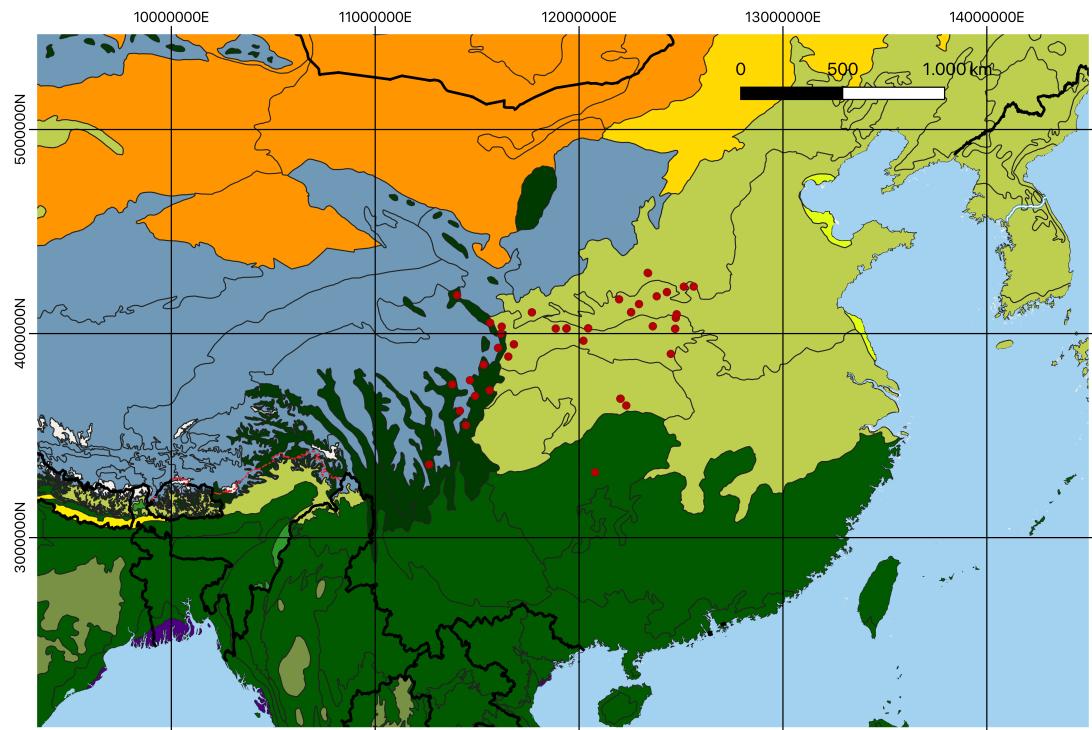
GBIF localities of *Quercus baronii* (preserved specimen)



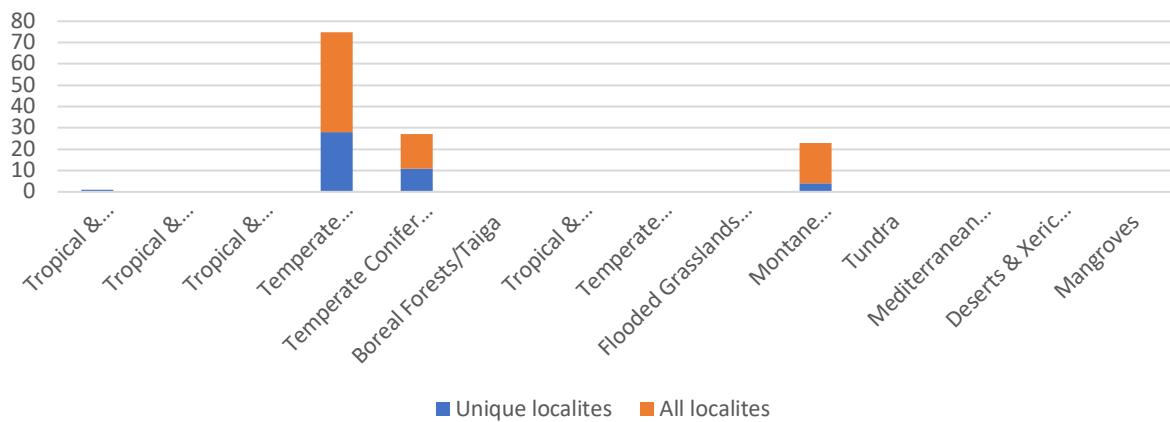
All localities (n = 126); unique grid cells (n = 36)

BIOMES – *Quercus baronii* Skan, 1899

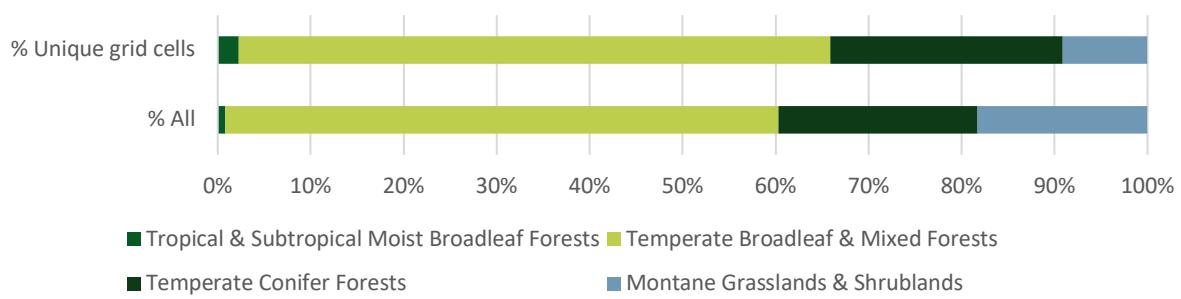
GBIF localities of *Quercus baronii* (preserved specimen)



Quercus baronii

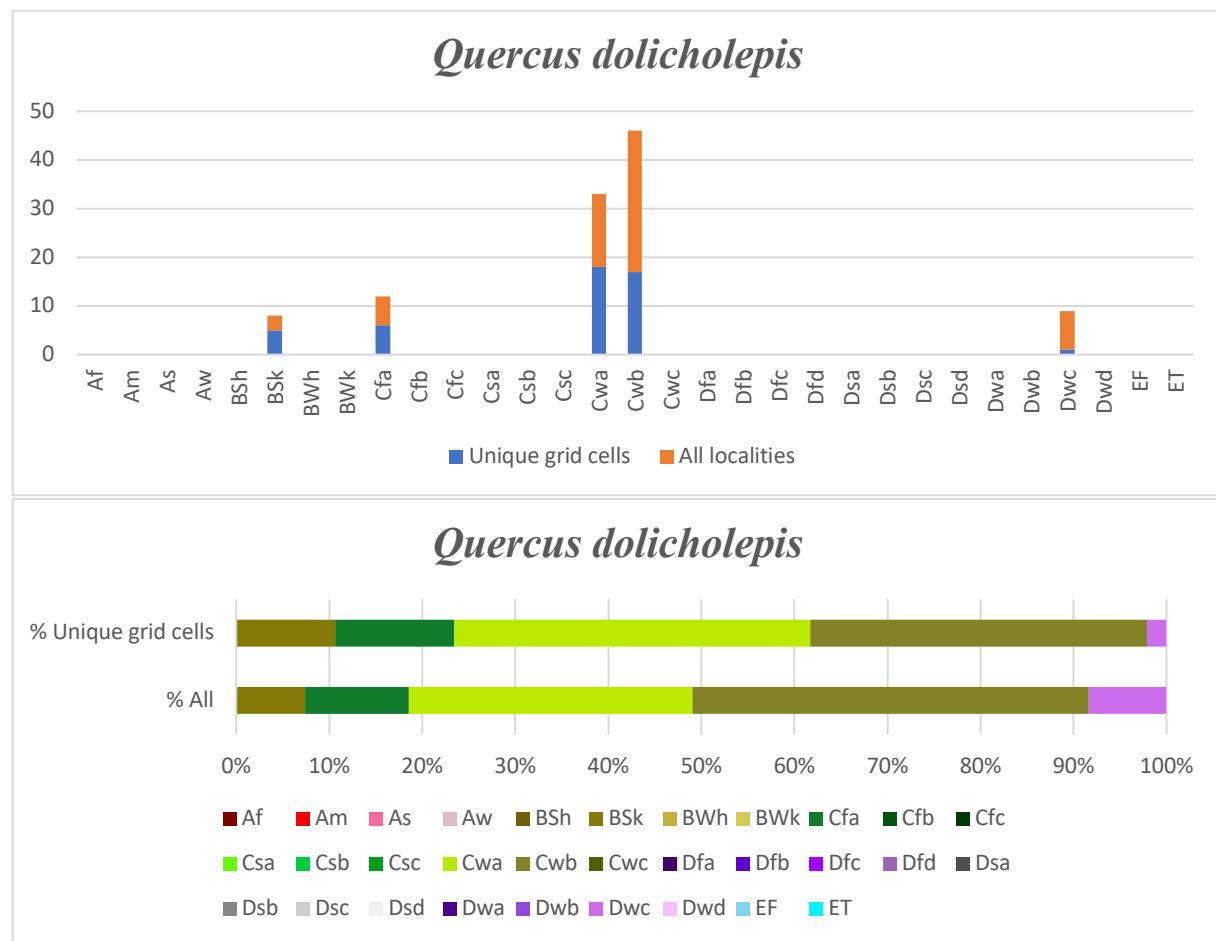
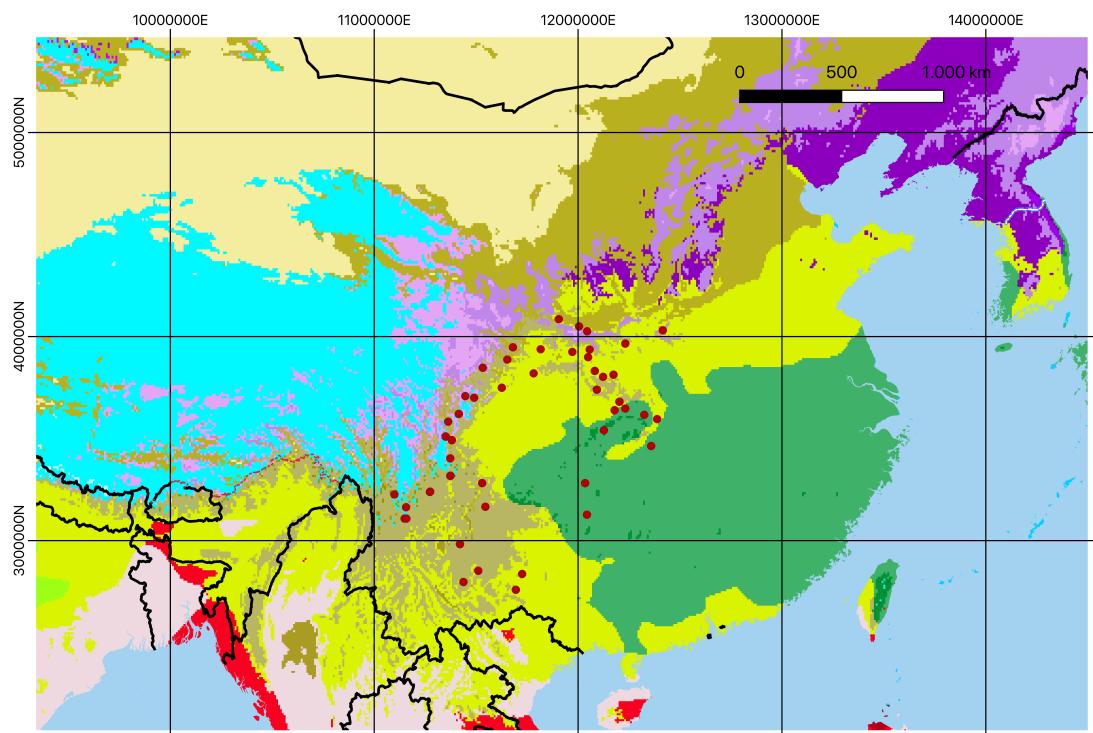


Quercus baronii



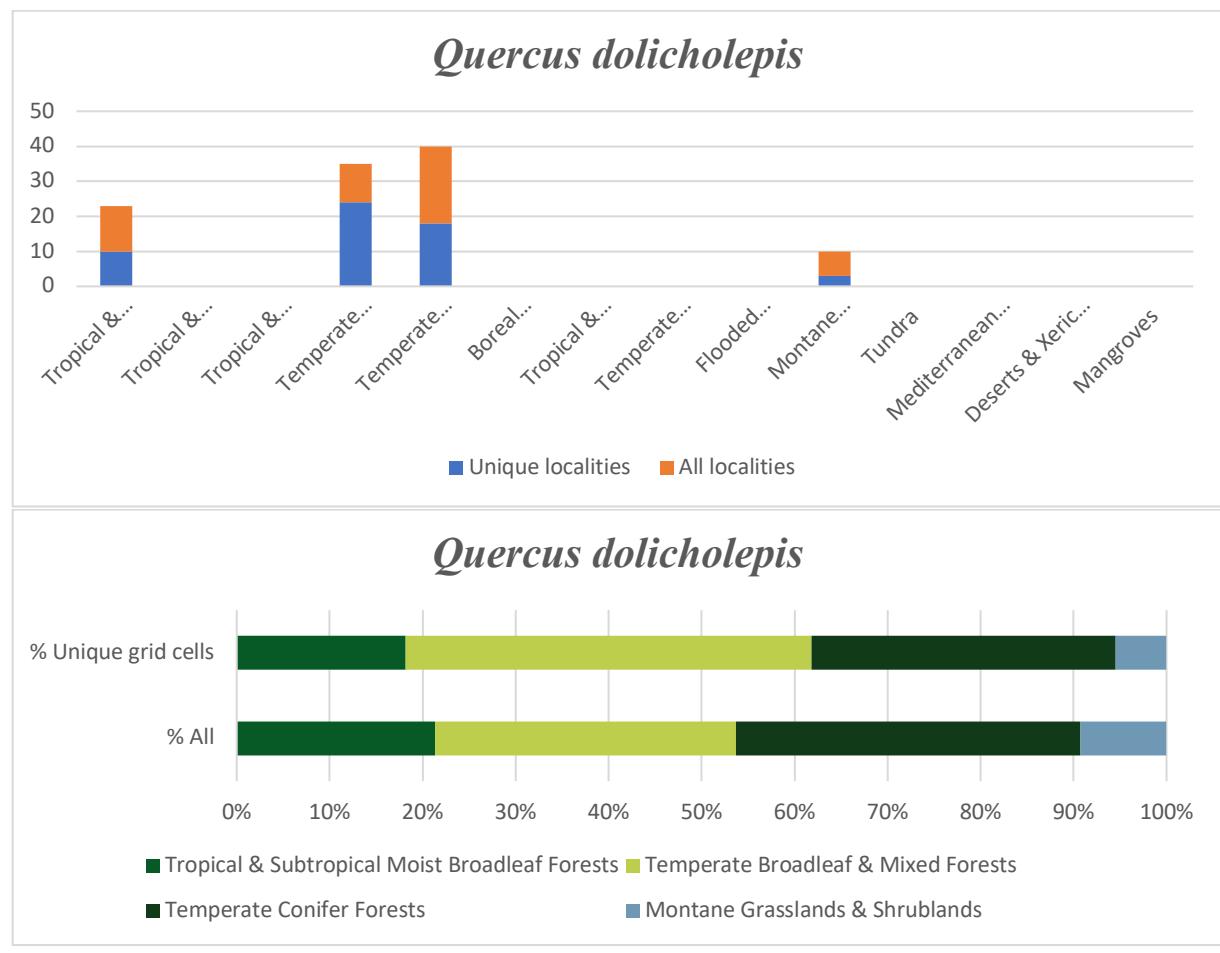
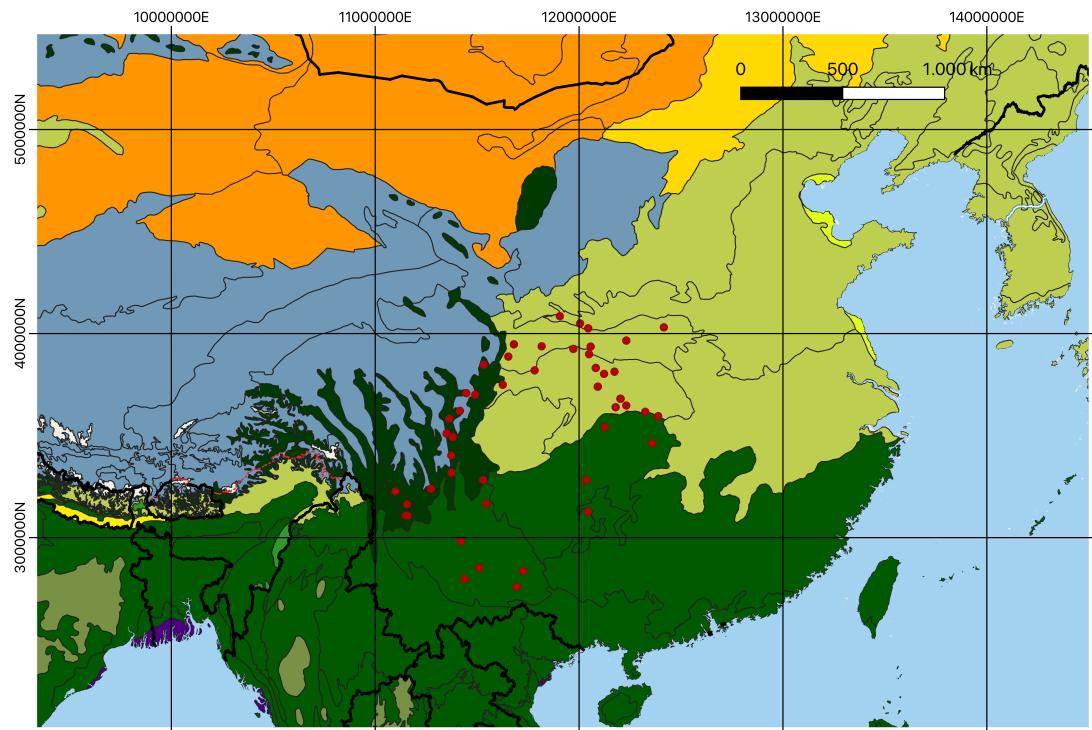
All localities (n = 126); unique grid cells (n = 44)

KÖPPEN SIGNATURES – *Quercus dolicholepis* A.Camus, 1954
 GBIF localities of *Quercus dolicholepis* (preserved specimen)



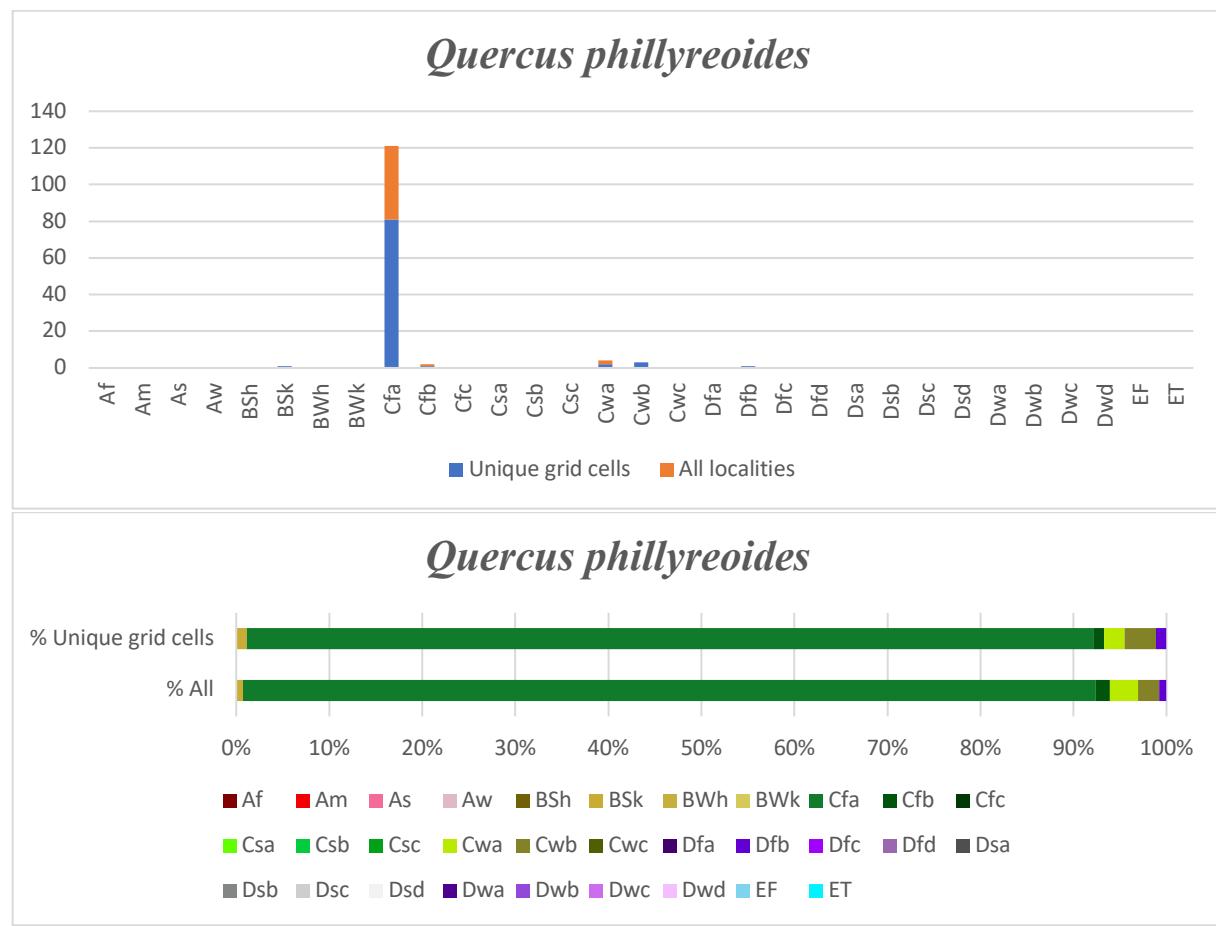
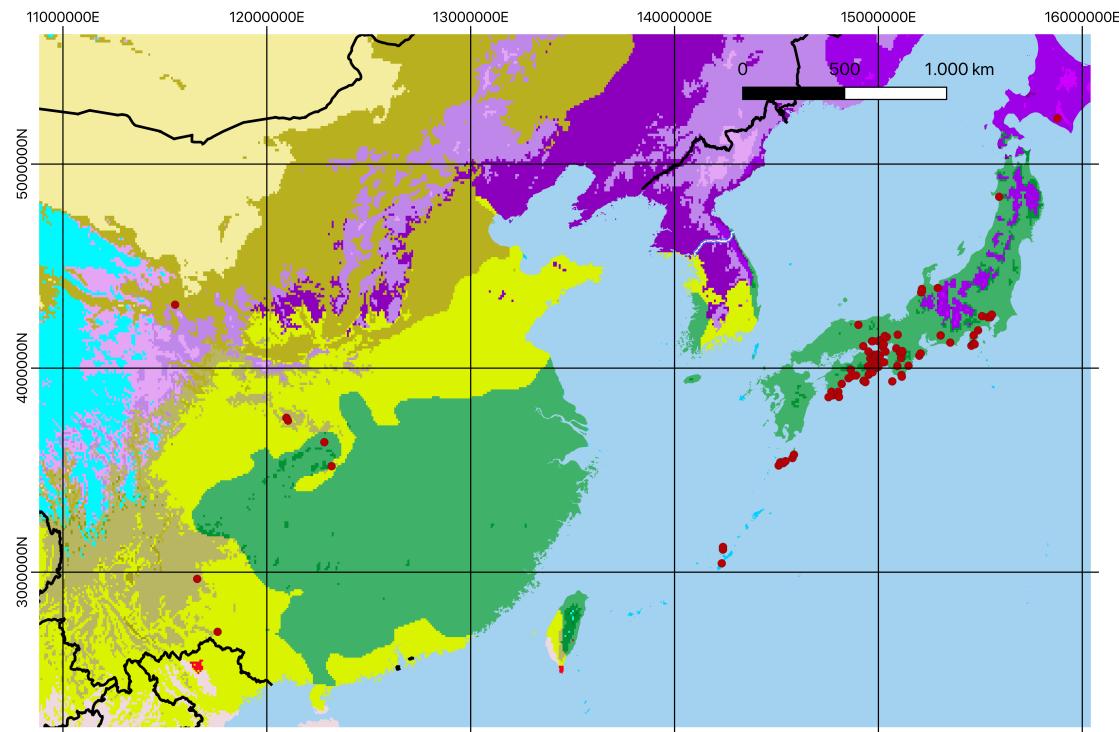
All localities (n = 108); unique grid cells (n = 47)

BIOMES – *Quercus dolicholepis* A.Camus, 1954
 GBIF localities of *Quercus dolicholepis* (preserved specimen)



All localities (n = 108); unique grid cells (n = 55)

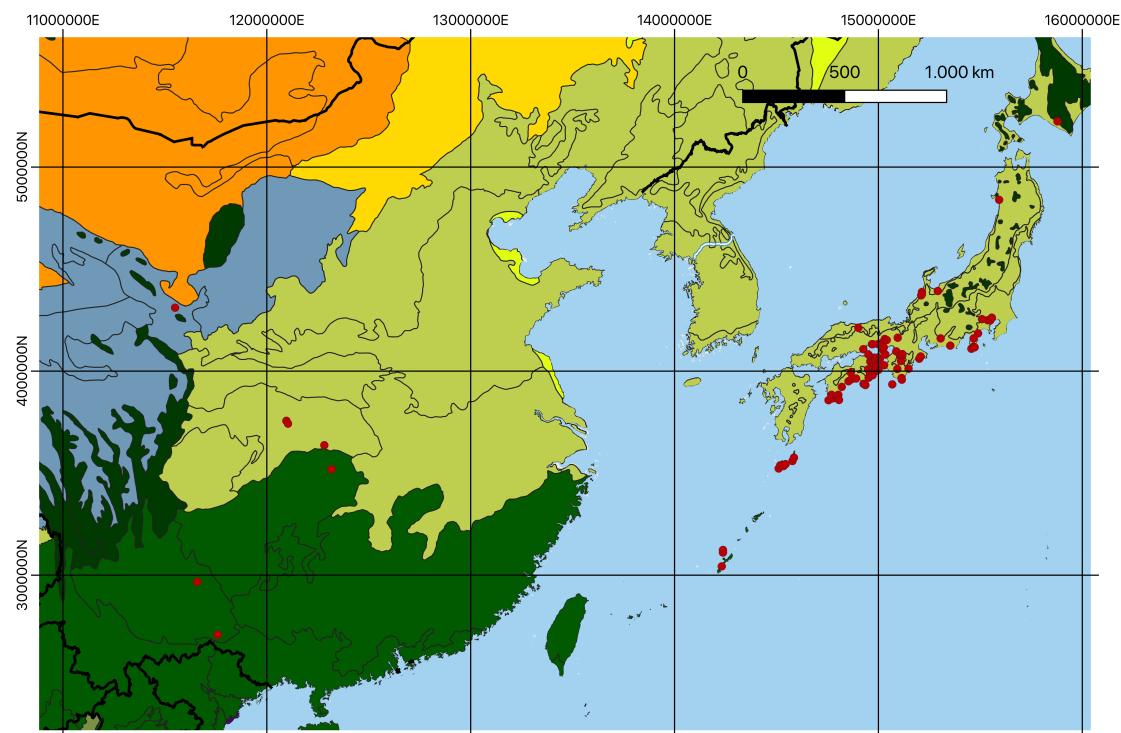
KÖPPEN SIGNATURES – *Quercus phillyreoides* A.Gray, 1858
 GBIF localities of *Quercus phillyreoides* (preserved specimen)



All localities (n = 132; unique grid cells (n = 89)

BIOMES – *Quercus phillyreoides* A.Gray, 1858

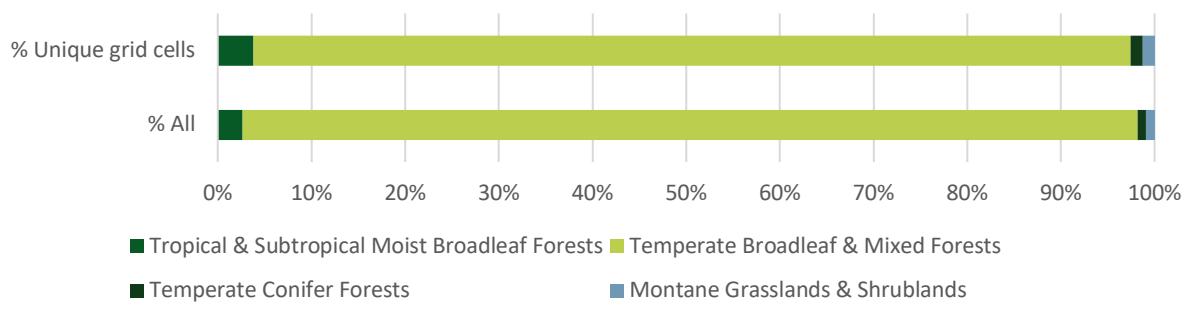
GBIF localities of *Quercus phillyreoides* (preserved specimen)



Quercus phillyreoides

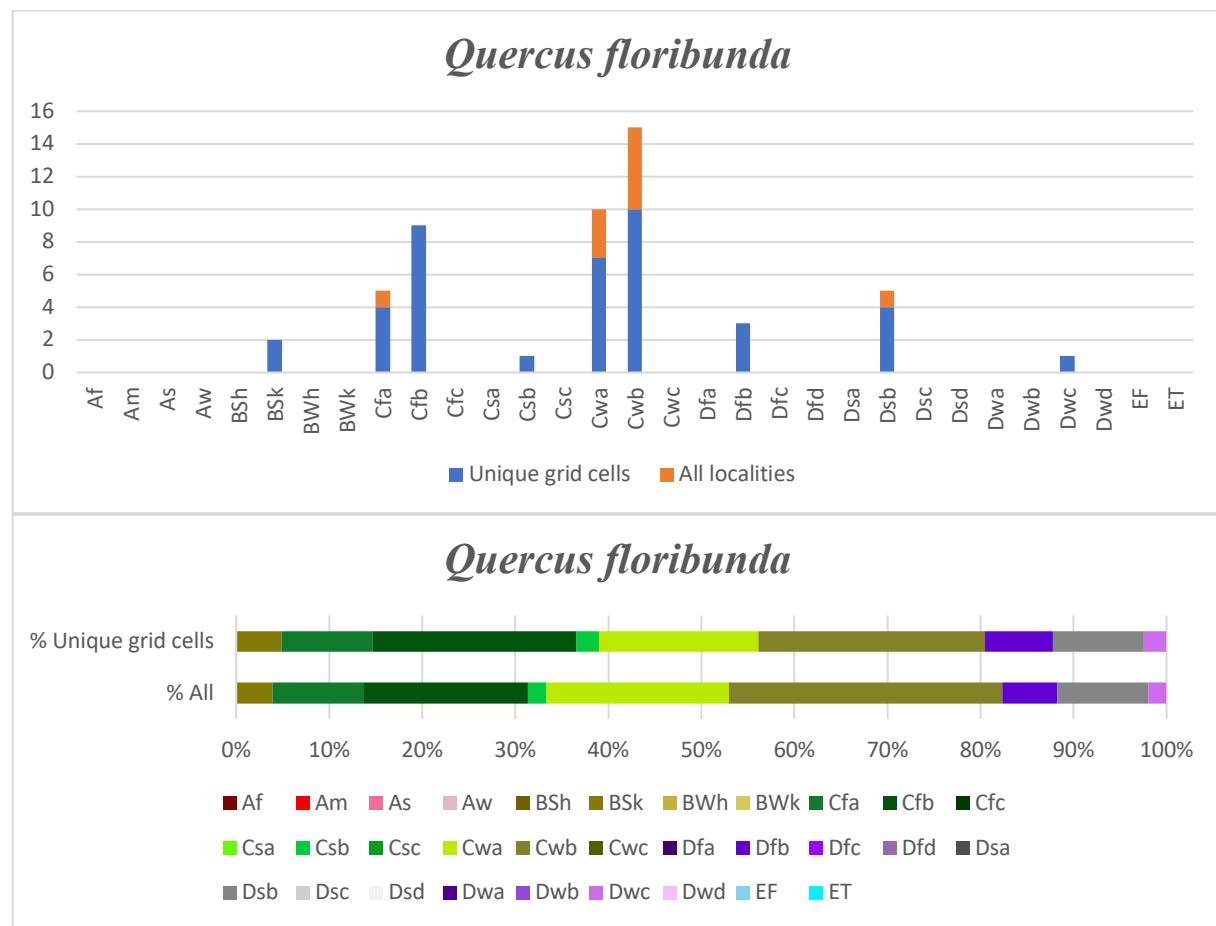
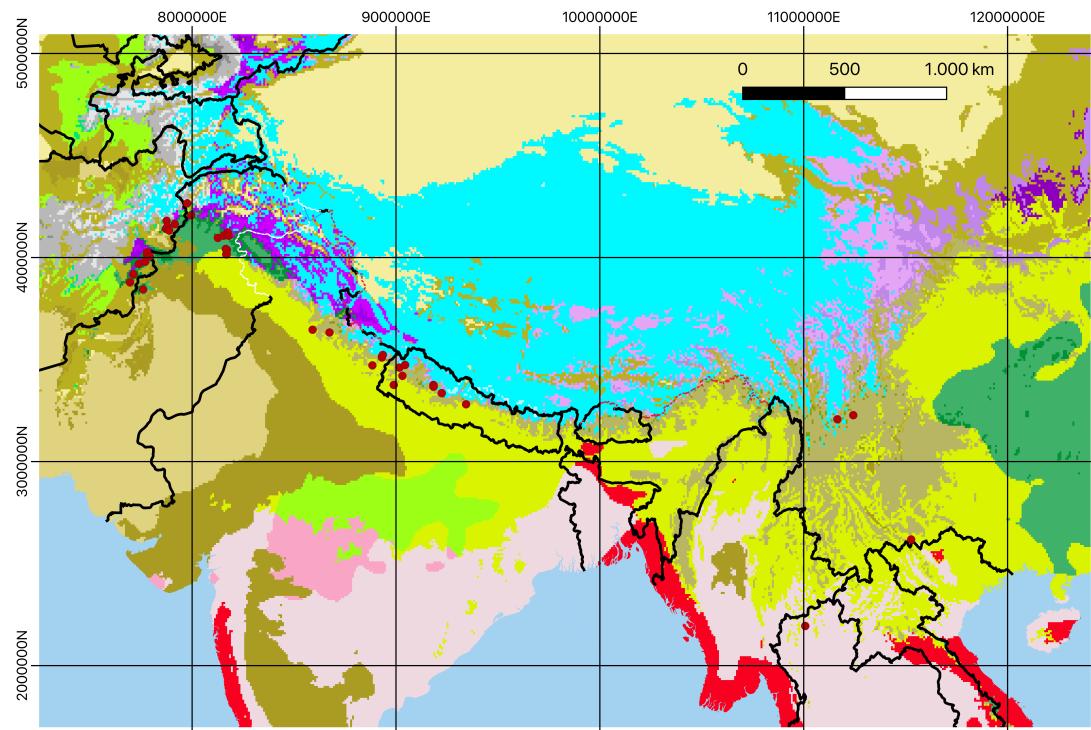


Quercus phillyreoides



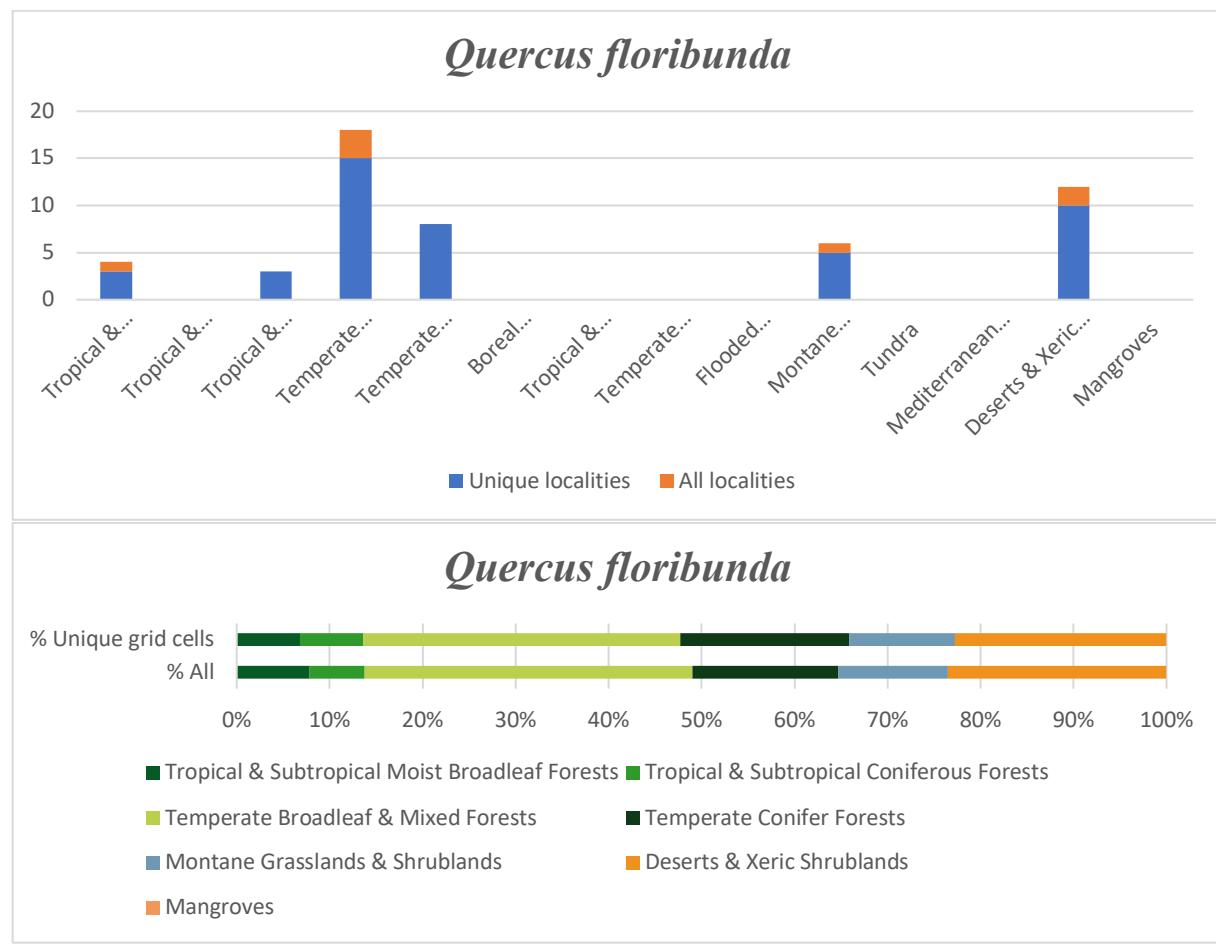
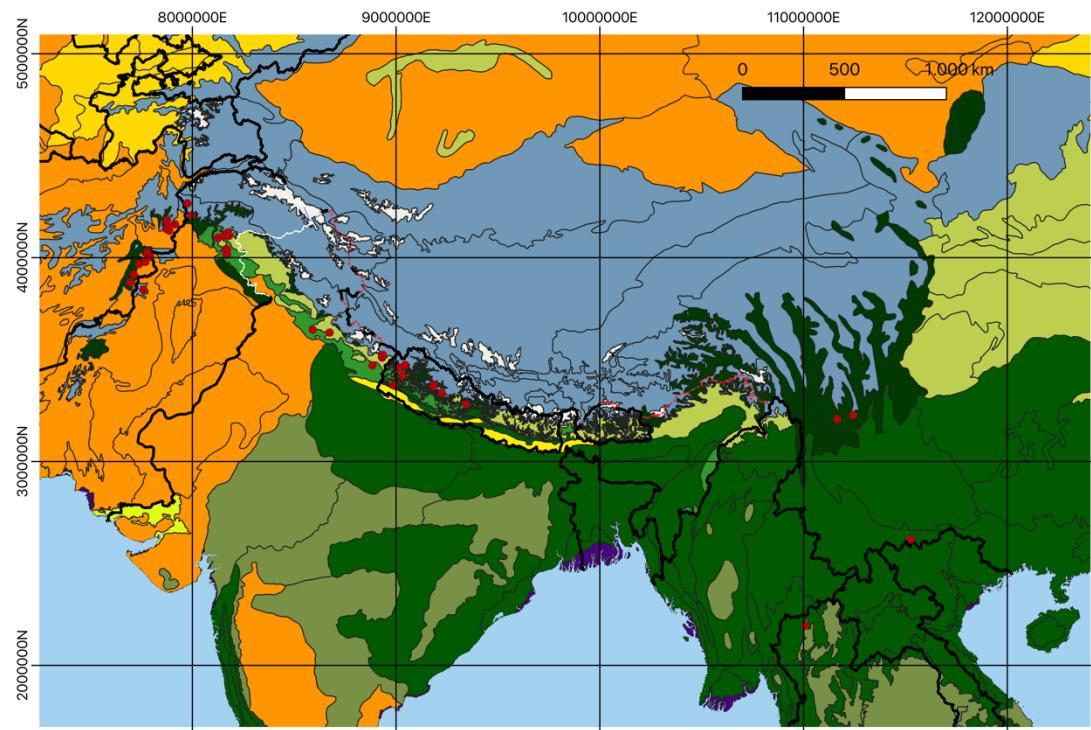
All localities (n = 112; unique grid cells (n = 79)

KÖPPEN SIGNATURES – *Quercus floribunda* Lindl. ex A.Camus, 1935
 GBIF localities of *Quercus floribunda* (preserved specimen)



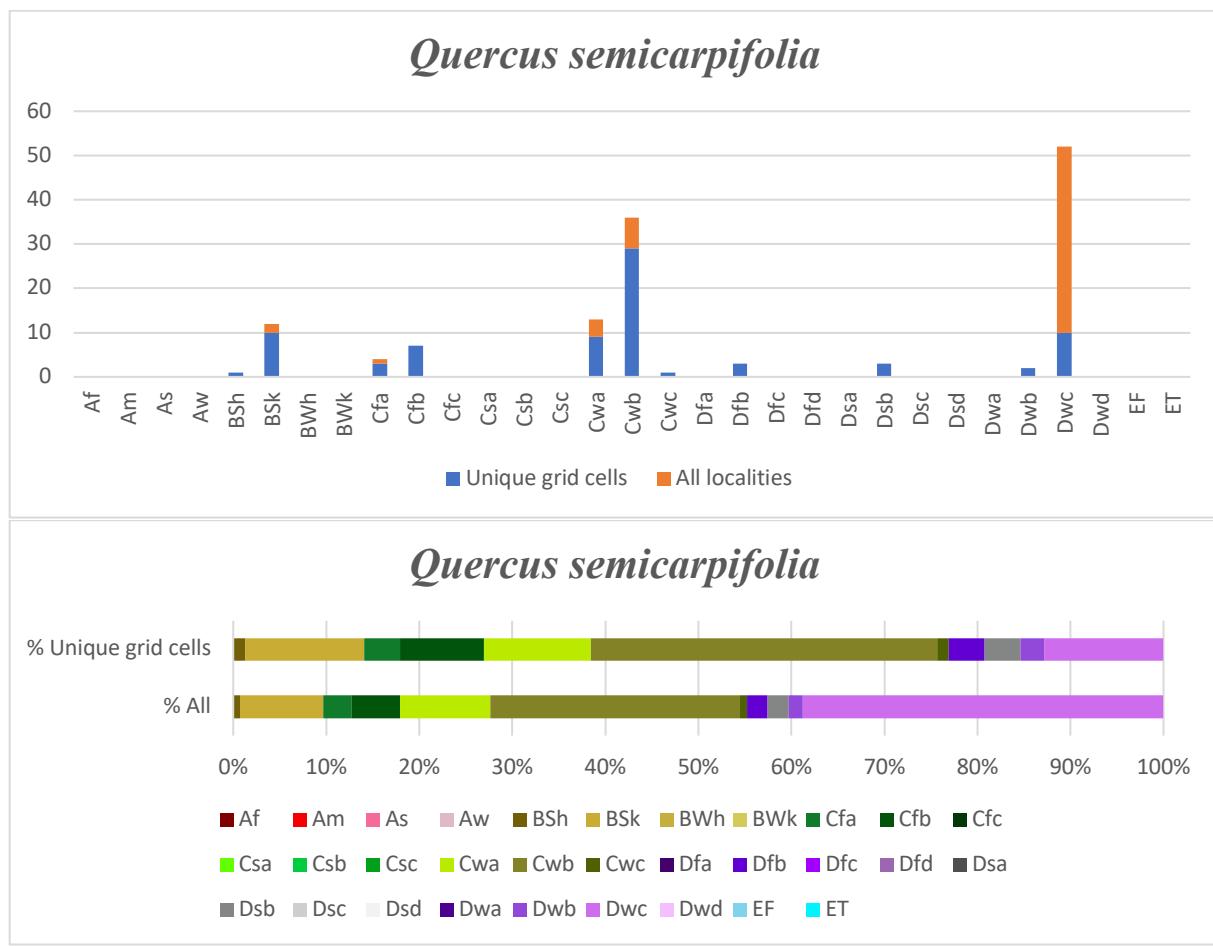
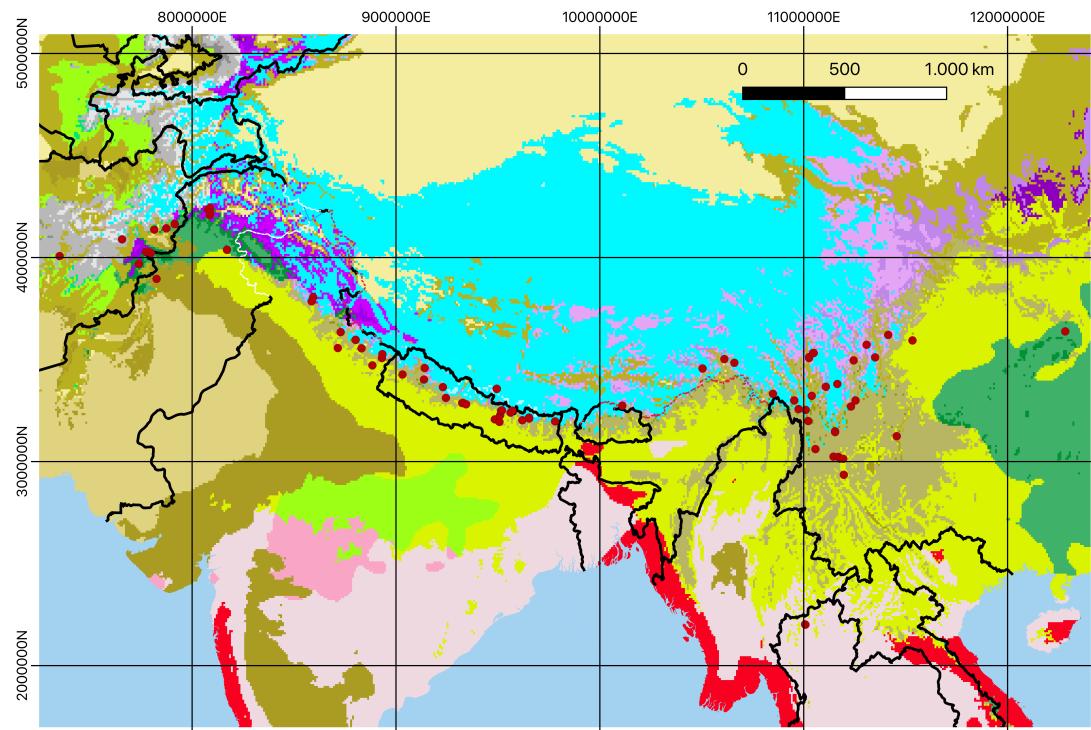
All localities (n = 51); unique grid cells (n = 41)

BIOMES – *Quercus floribunda* Lindl. ex A.Camus, 1935
 GBIF localities of *Quercus floribunda* (preserved specimen)



All localities (n = 51); unique grid cells (n = 44)

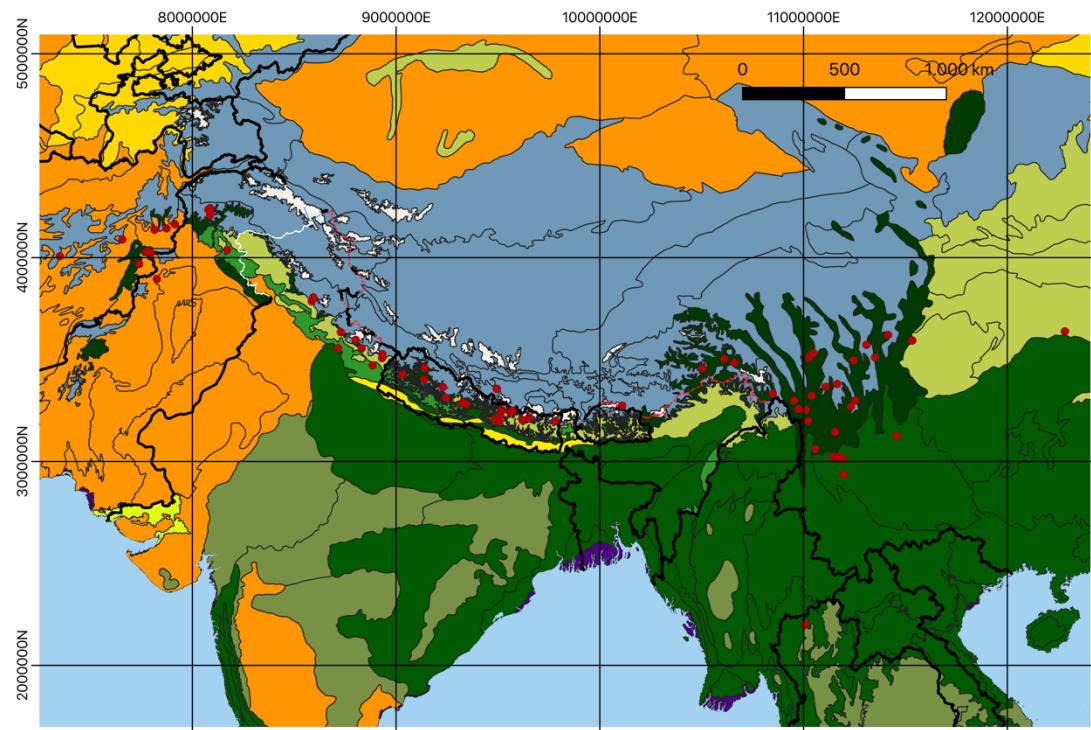
KÖPPEN SIGNATURES – *Quercus semicarpifolia* Sm., 1814
 GBIF localities of *Quercus semicarpifolia* (preserved specimen)



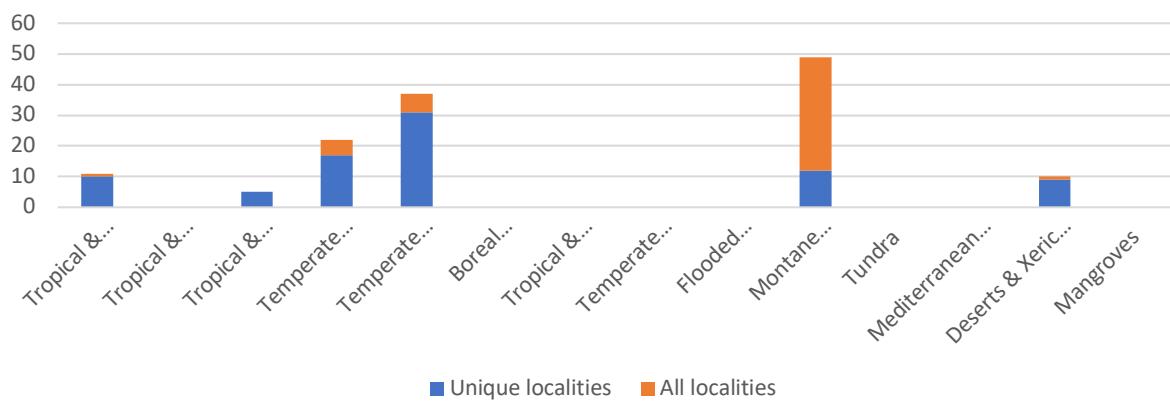
All localities (n = 134; unique grid cells (n = 78)

BIOMES – *Quercus semicarpifolia* Sm., 1814

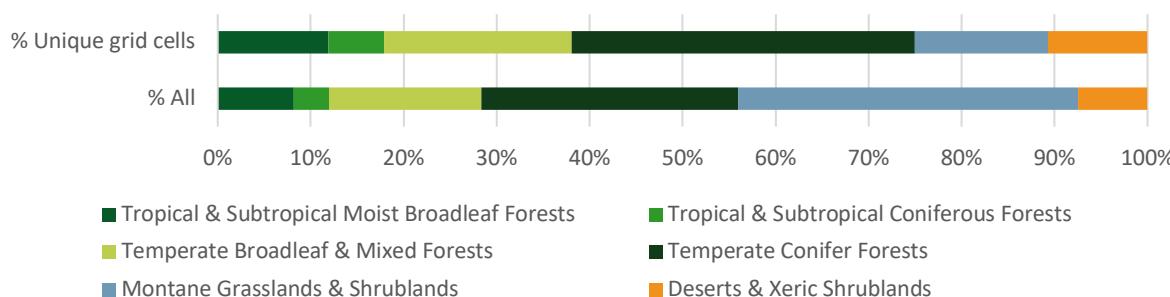
GBIF localities of *Quercus semicarpifolia* (preserved specimen)



Quercus semicarpifolia

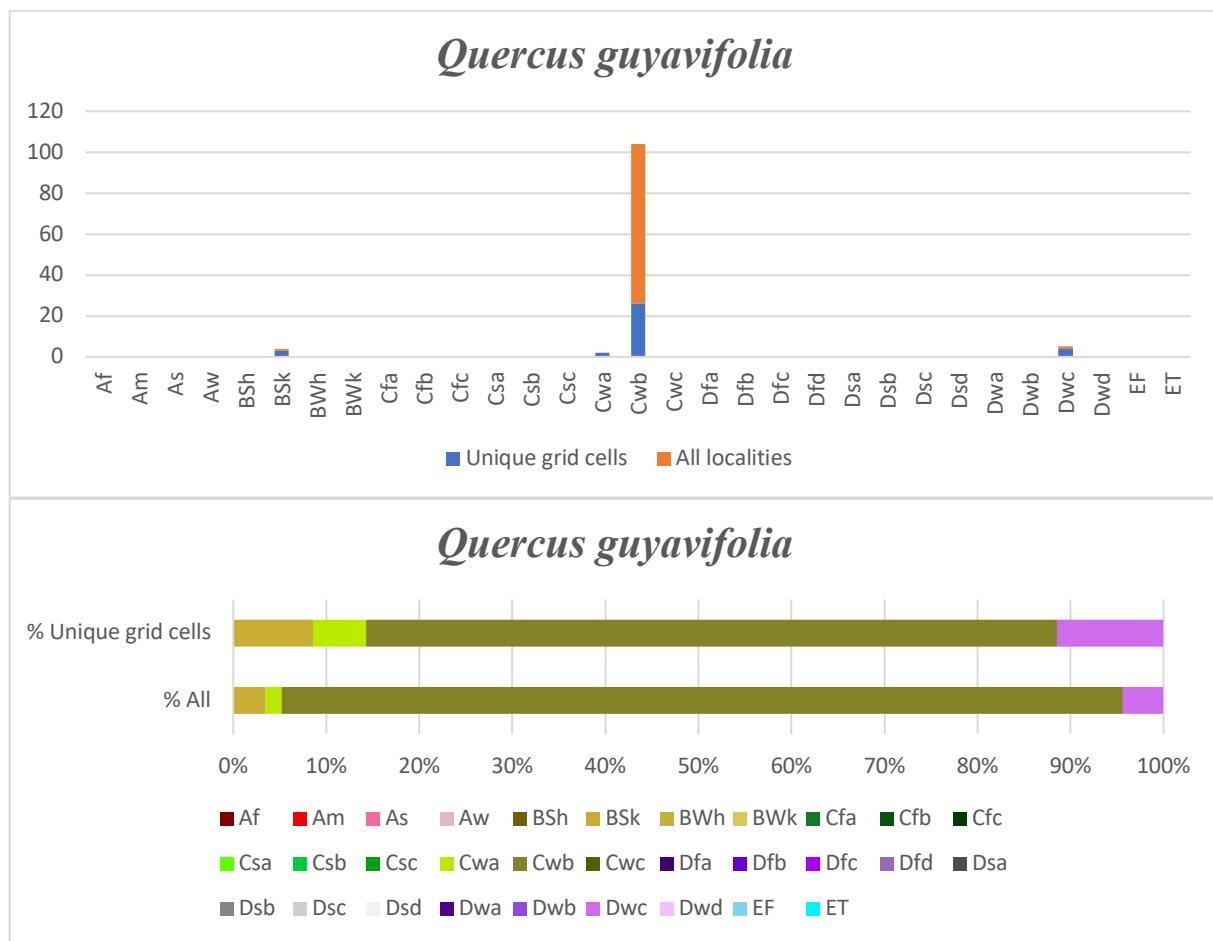
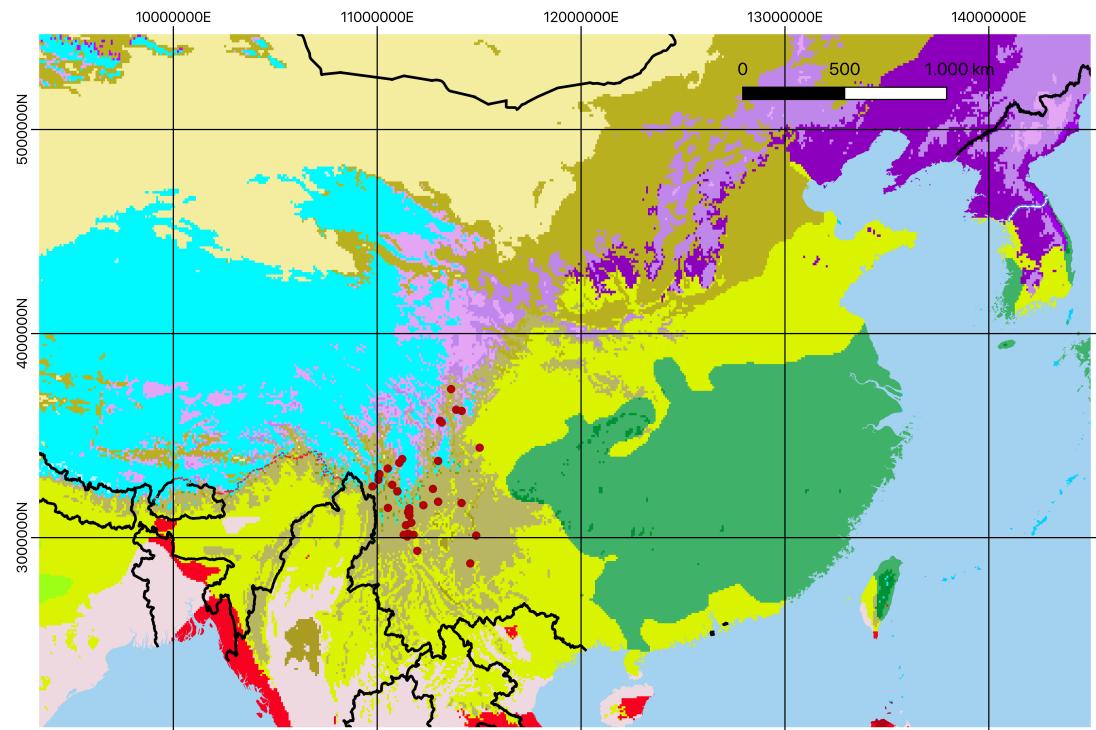


Quercus semicarpifolia



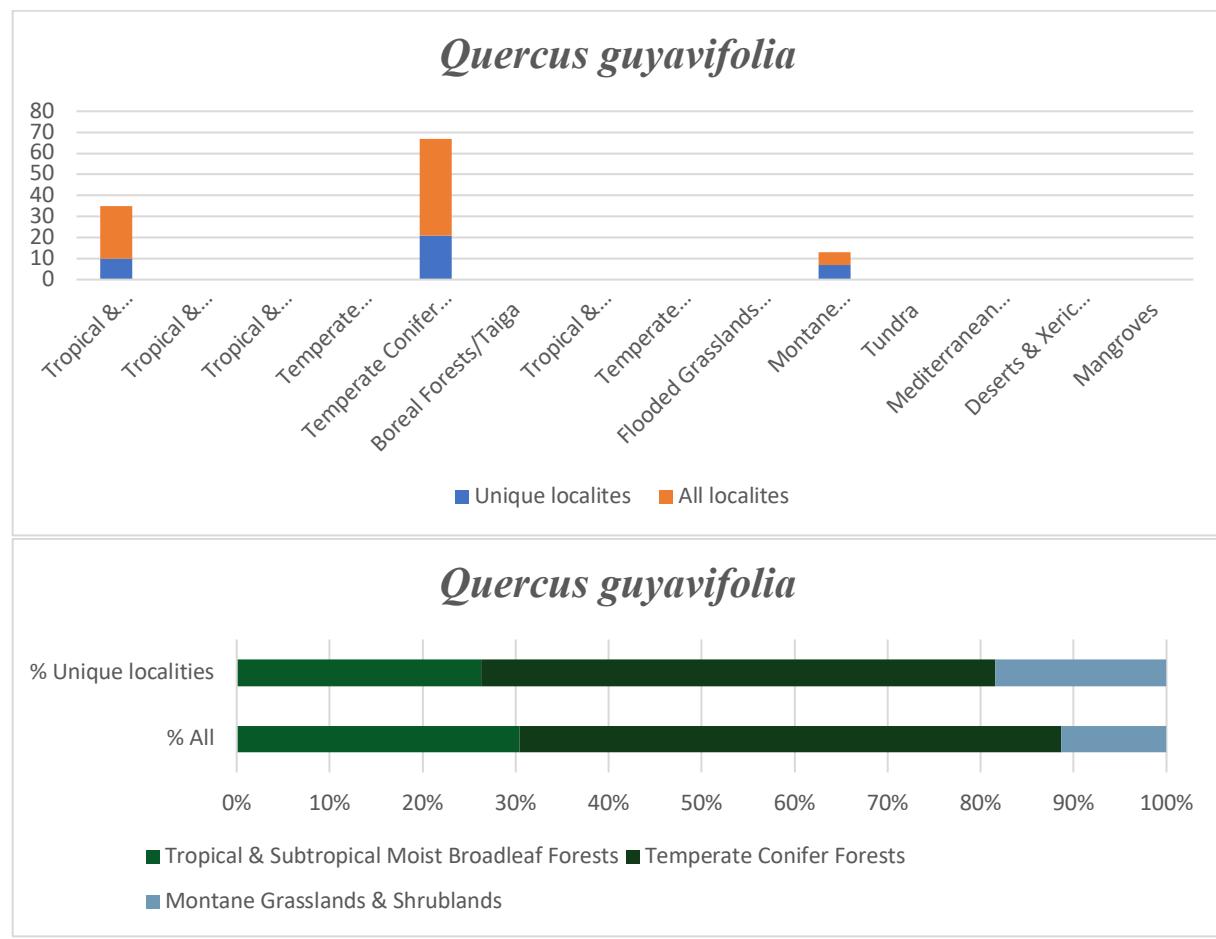
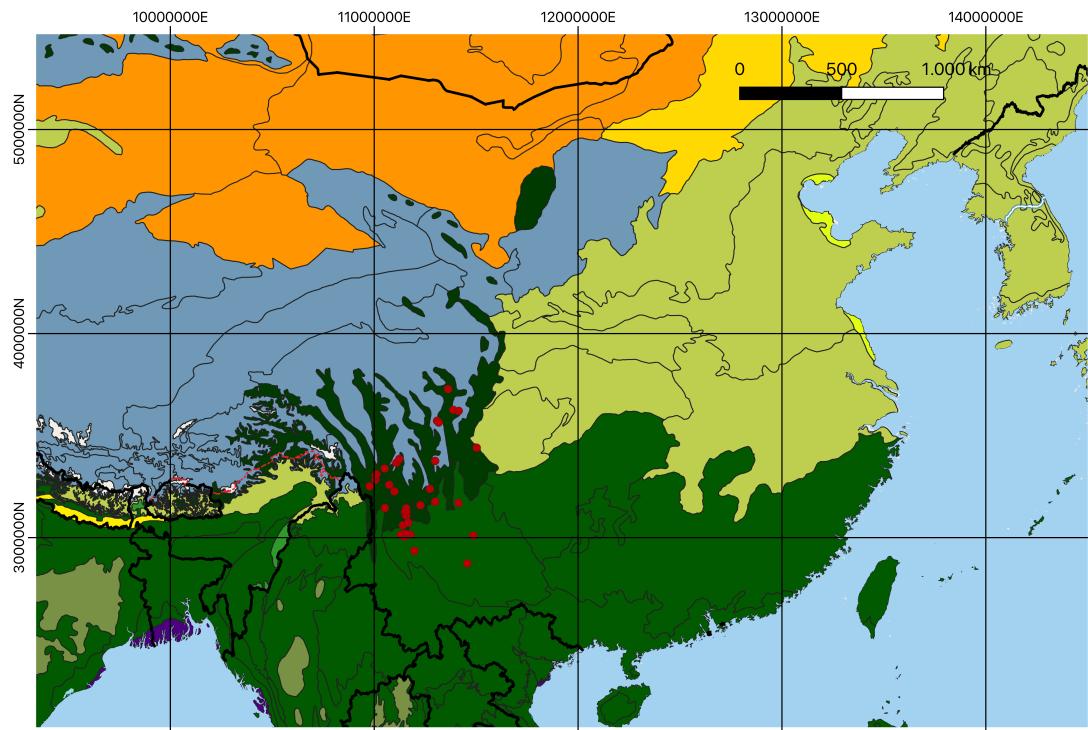
All localities (n = 134; unique grid cells (n = 84)

KÖPPEN SIGNATURES – *Quercus guyavifolia* H.Lév., 1913
 GBIF localities of *Quercus guyavifolia* (preserved specimen)



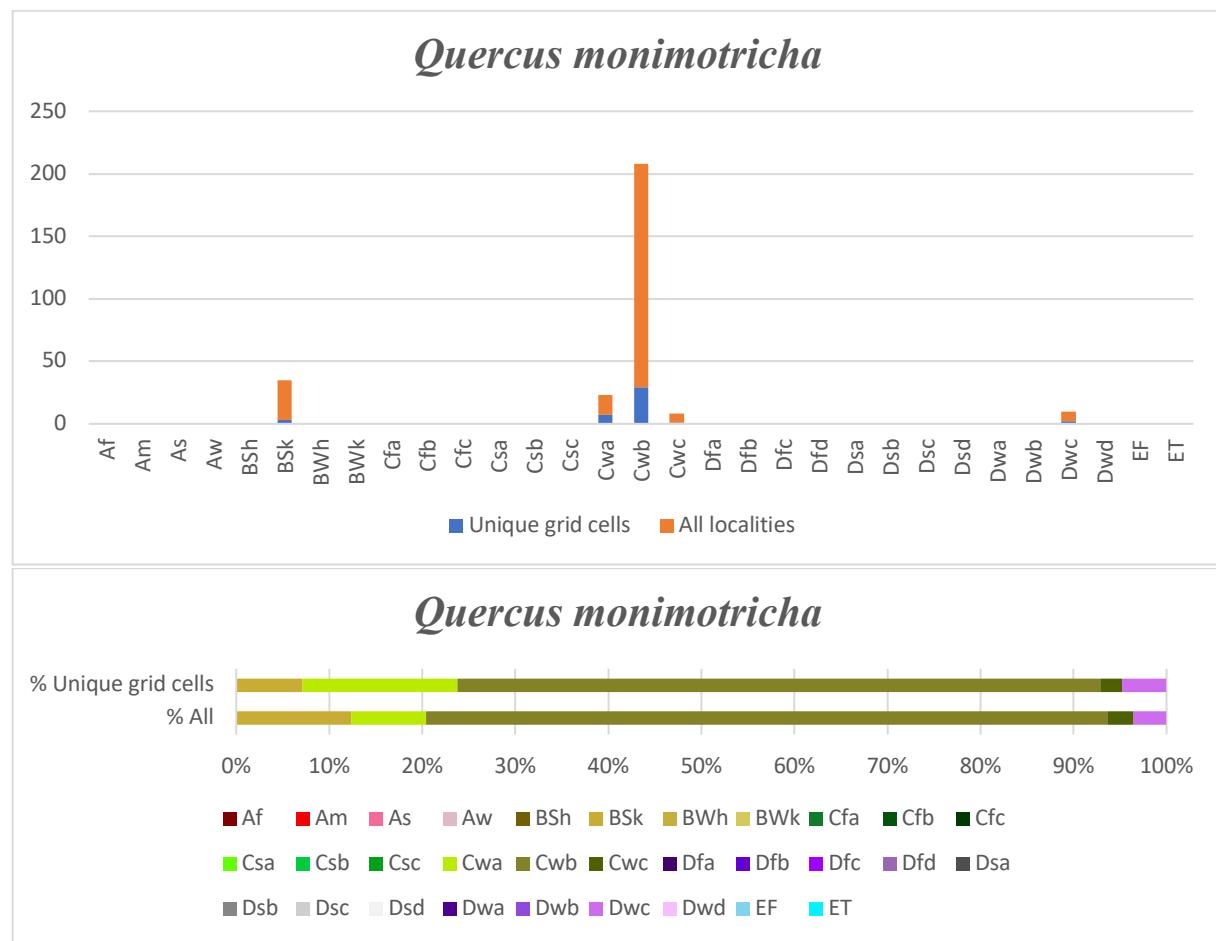
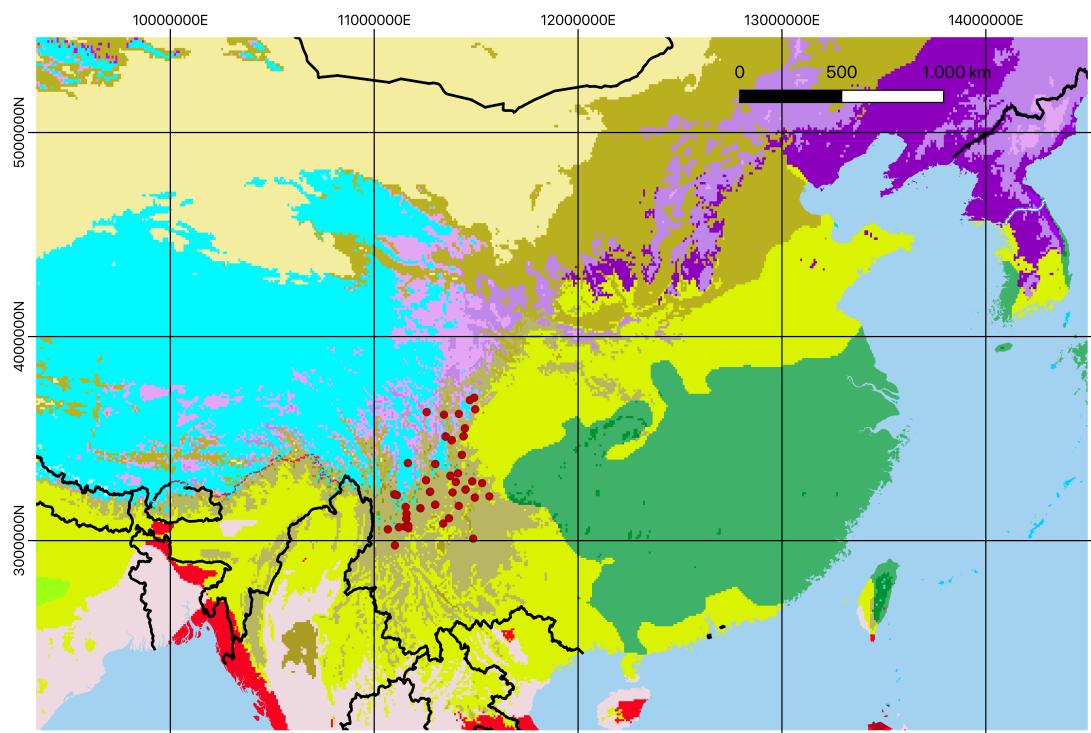
All localities (n = 115); unique grid cells (n = 35)

BIOMES – *Quercus guyavifolia* H.Lév., 1913
 GBIF localities of *Quercus guyavifolia* (preserved specimen)



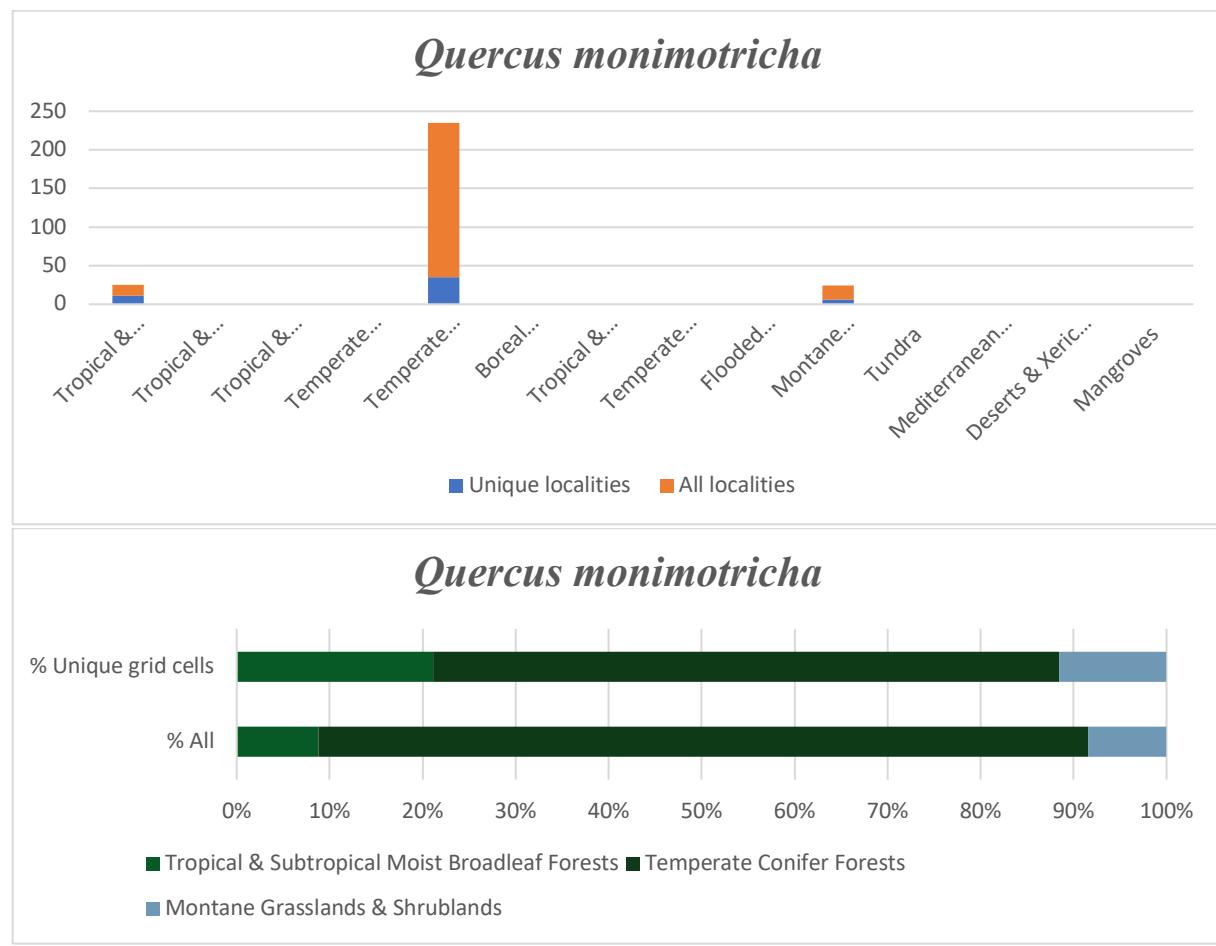
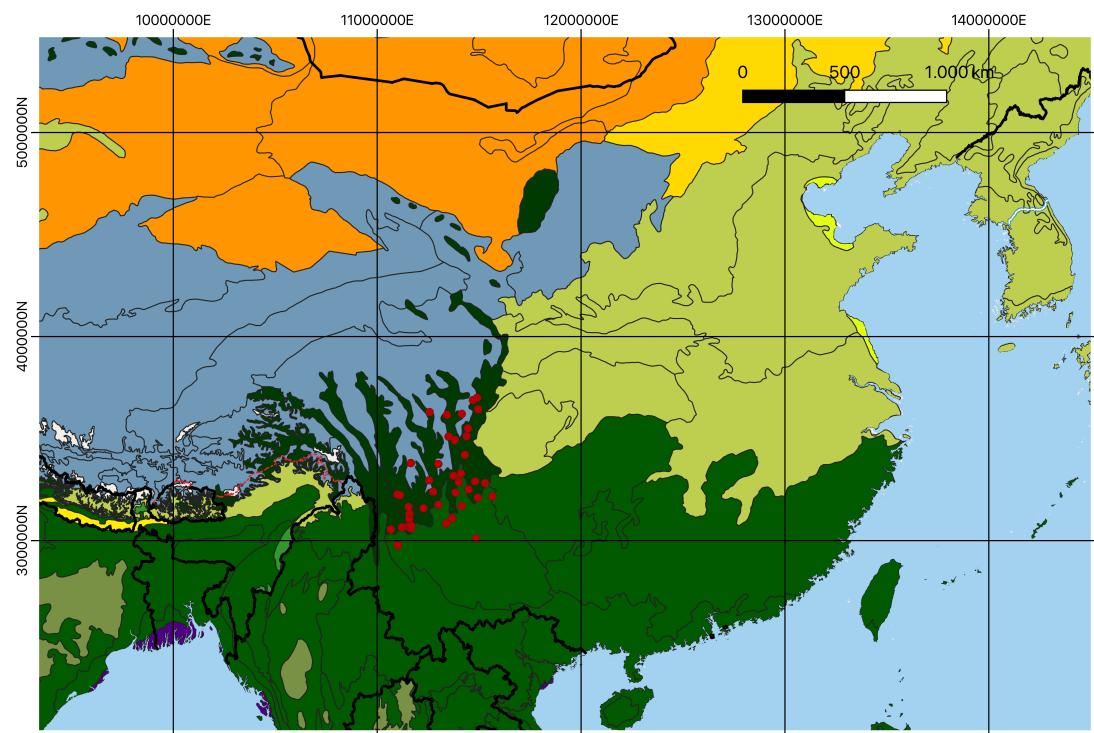
All localities (n = 115); unique grid cells (n = 38)

KÖPPEN SIGNATURES – *Quercus monimotricha* Hand.-Mazz., 1929
 GBIF localities of *Quercus monimotricha* (preserved specimen)



All localities (n = 284; unique grid cells (n = 42)

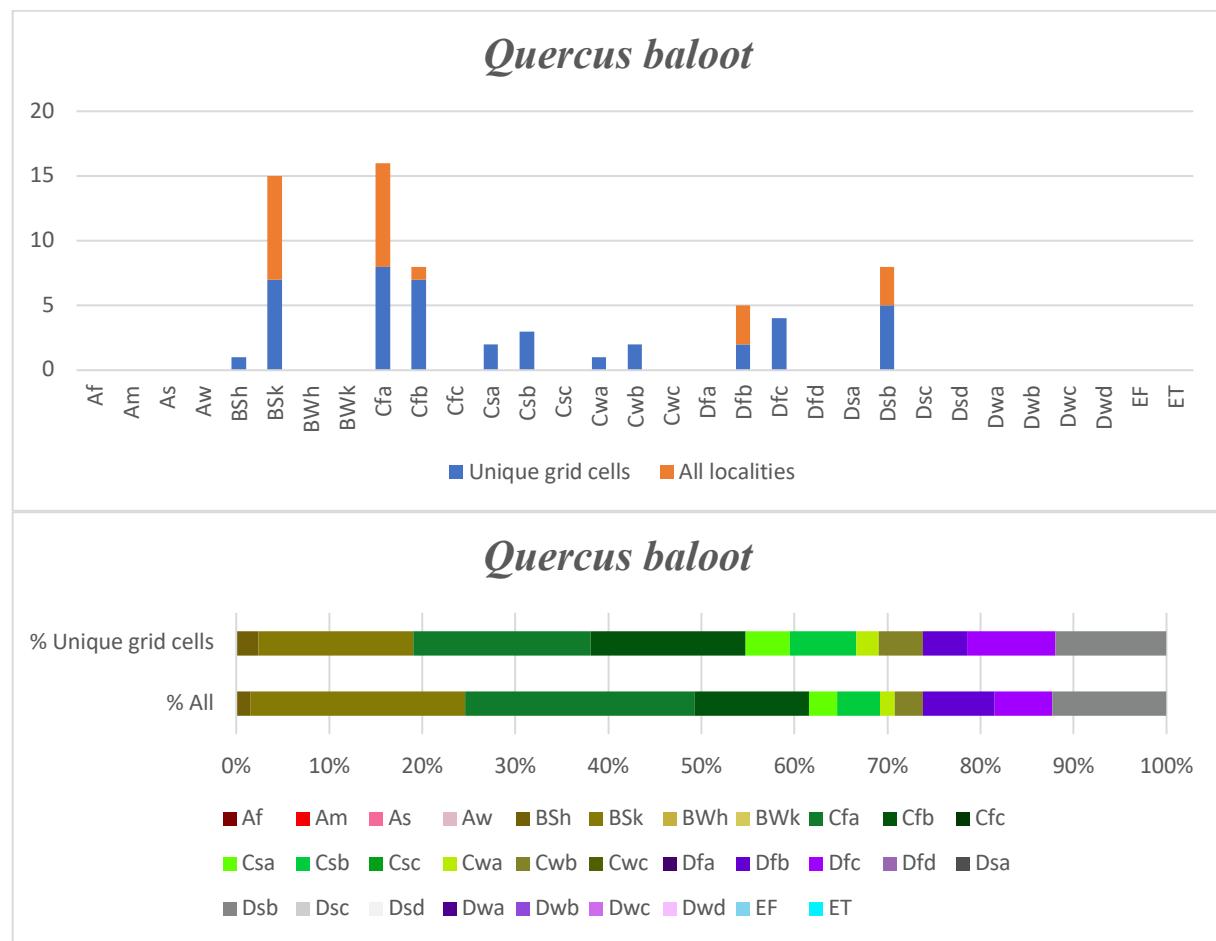
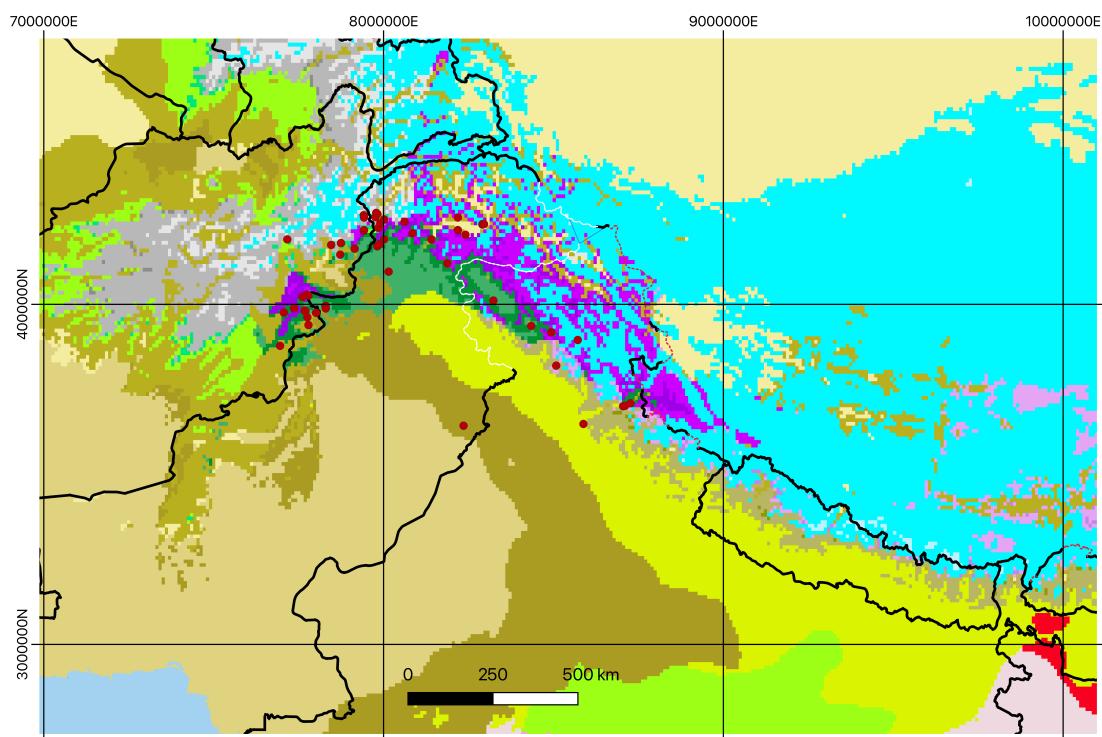
BIOMES – *Quercus monimotricha* Hand.-Mazz., 1929
 GBIF localities of *Quercus monimotricha* (preserved specimen)



All localities (n = 284; unique grid cells (n = 52)

KÖPPEN SIGNATURES – *Quercus baloot* Griff., 1848

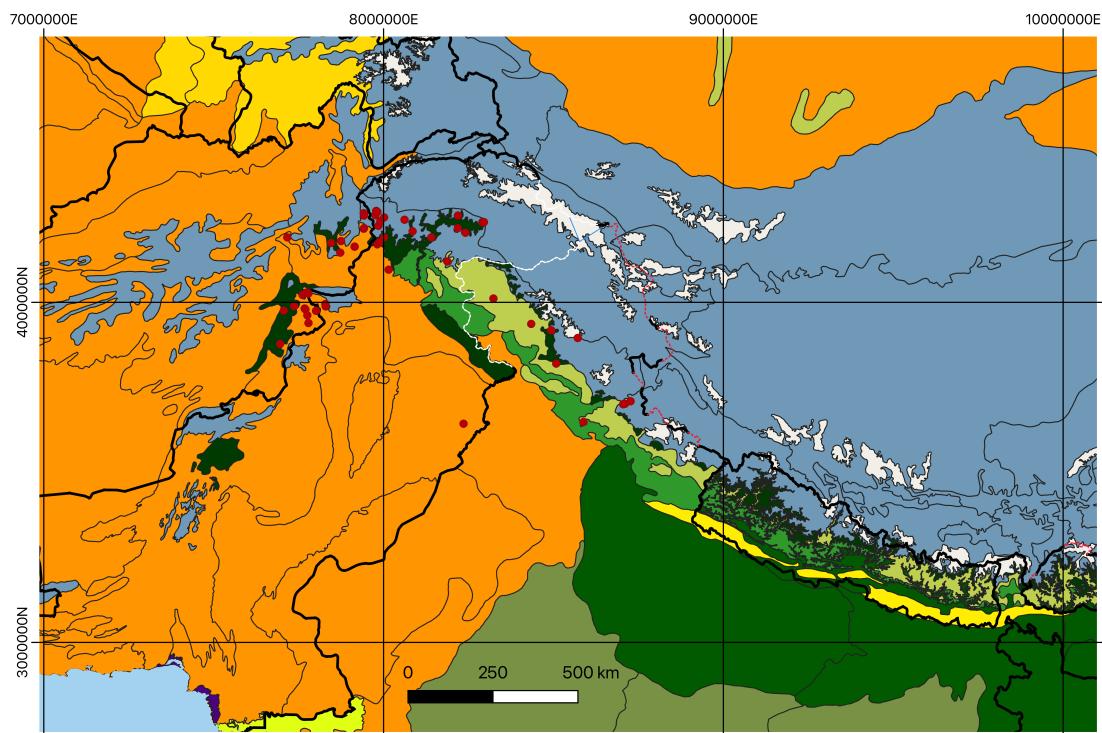
GBIF localities of *Quercus baloot* (preserved specimen)



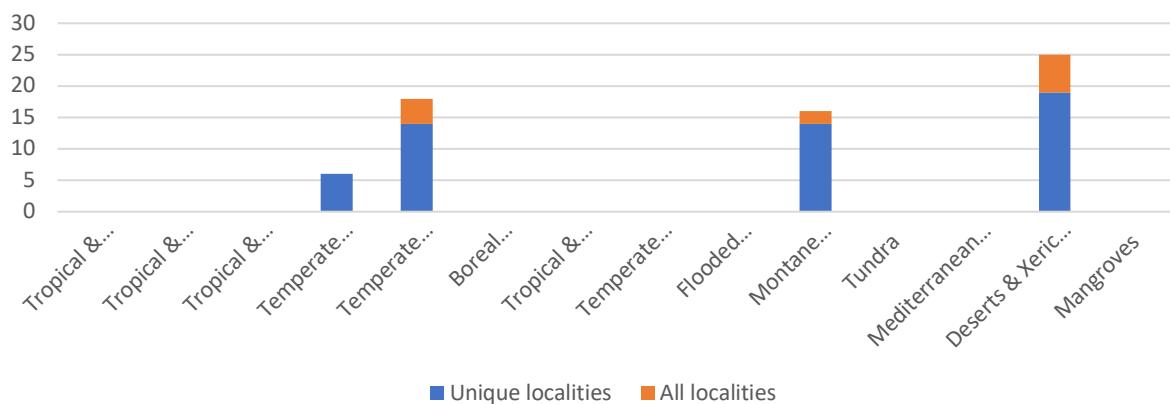
All localities (n = 65); unique grid cells (n = 42)

BIOMES – *Quercus baloot* Griff., 1848

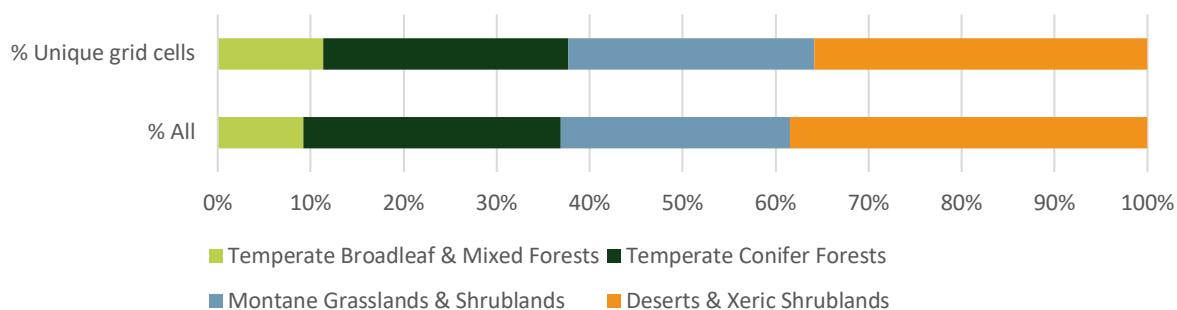
GBIF localities of *Quercus baloot* (preserved specimen)



Quercus baloot



Quercus baloot

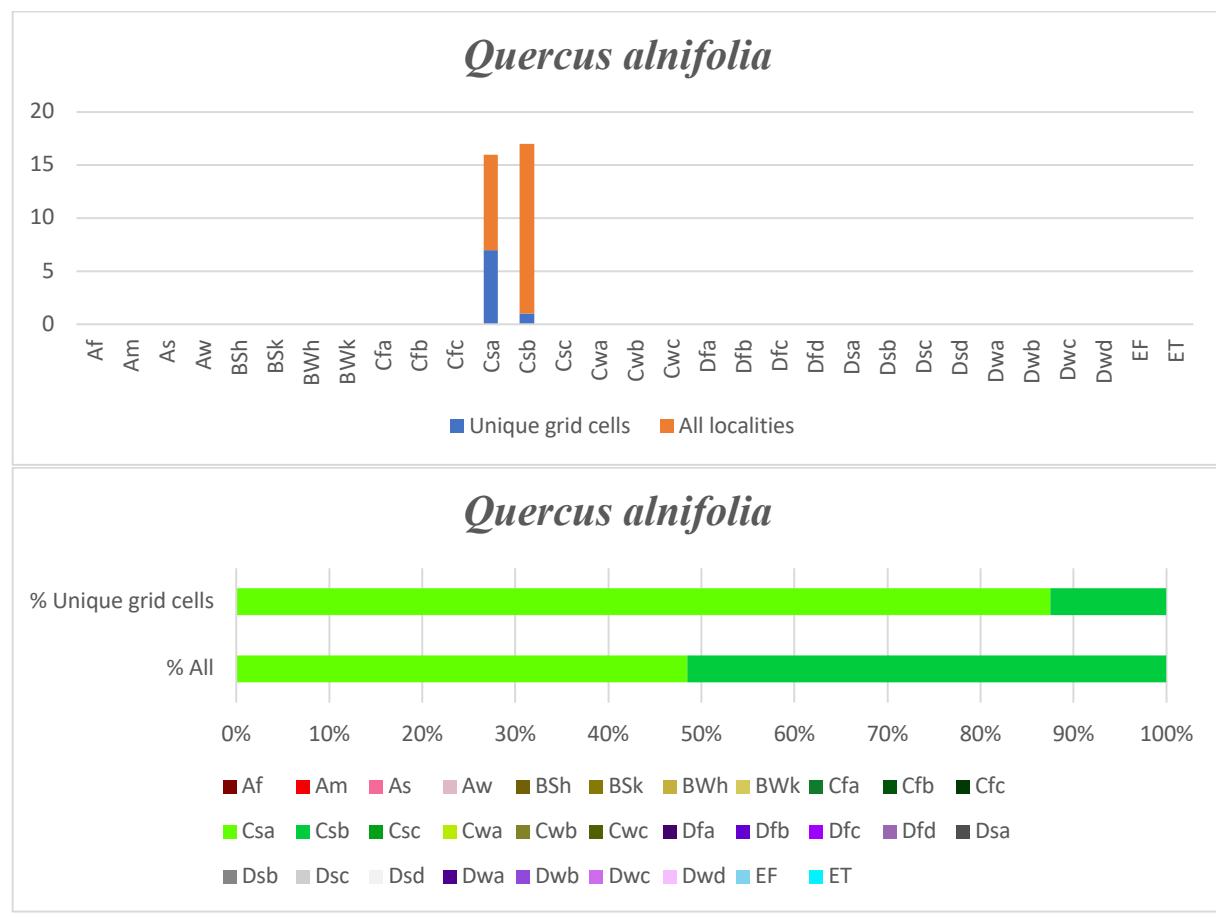
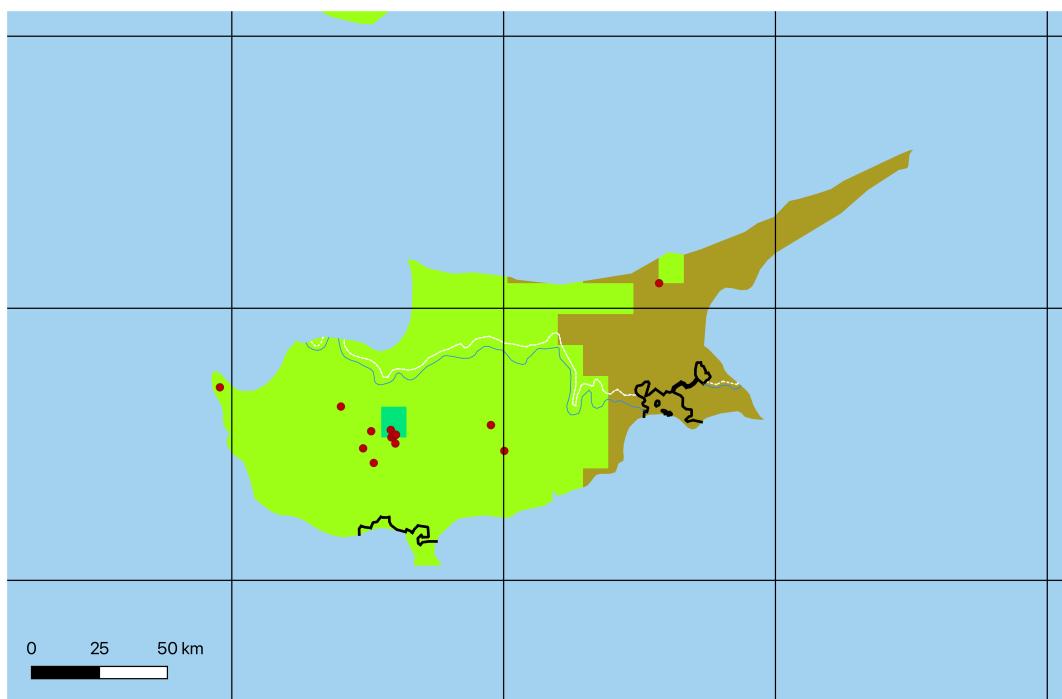


All localities (n = 65); unique grid cells (n = 53)

Quercus Section Ilex

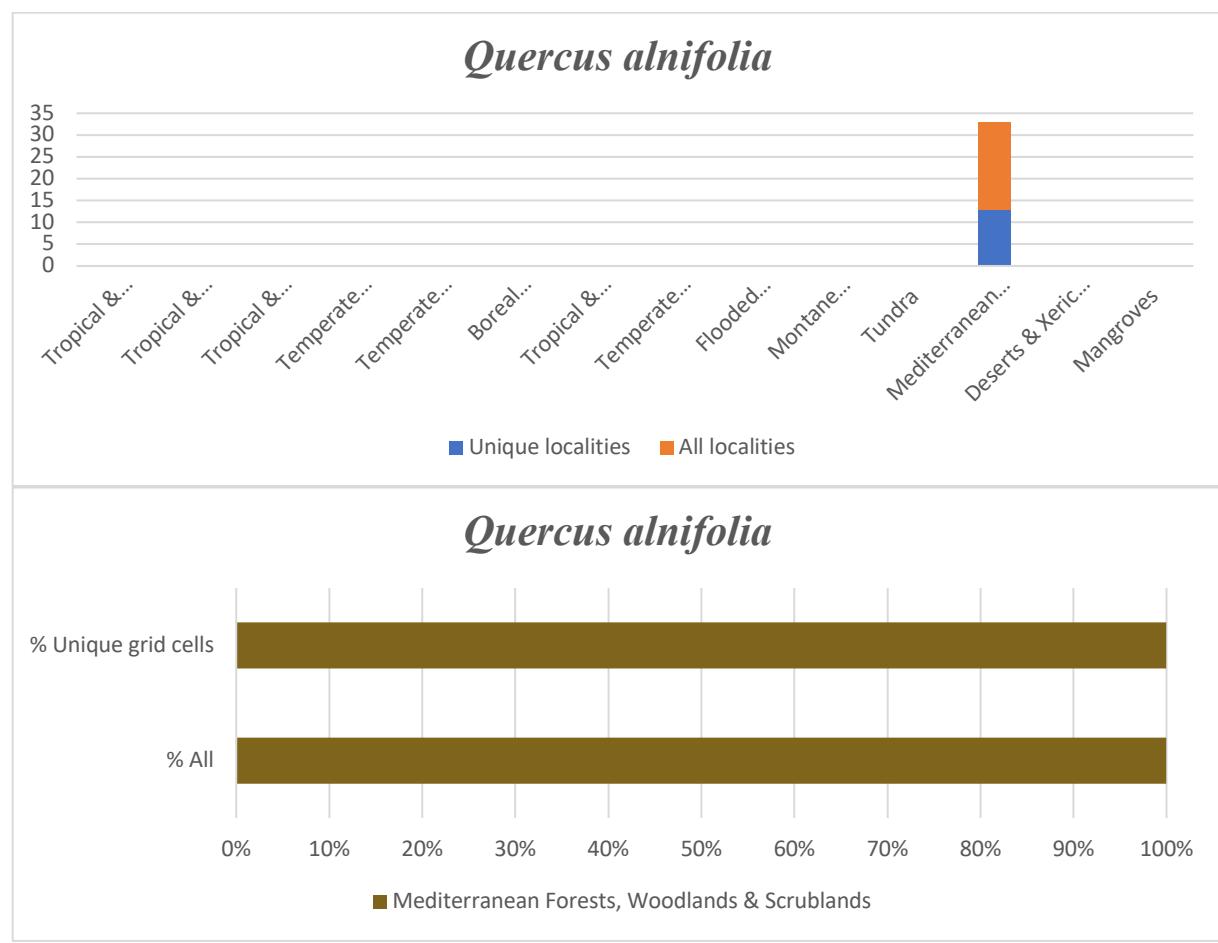
KÖPPEN SIGNATURES – *Quercus alnifolia* Poech, 1842

GBIF localities of *Quercus alnifolia* (preserved specimen)



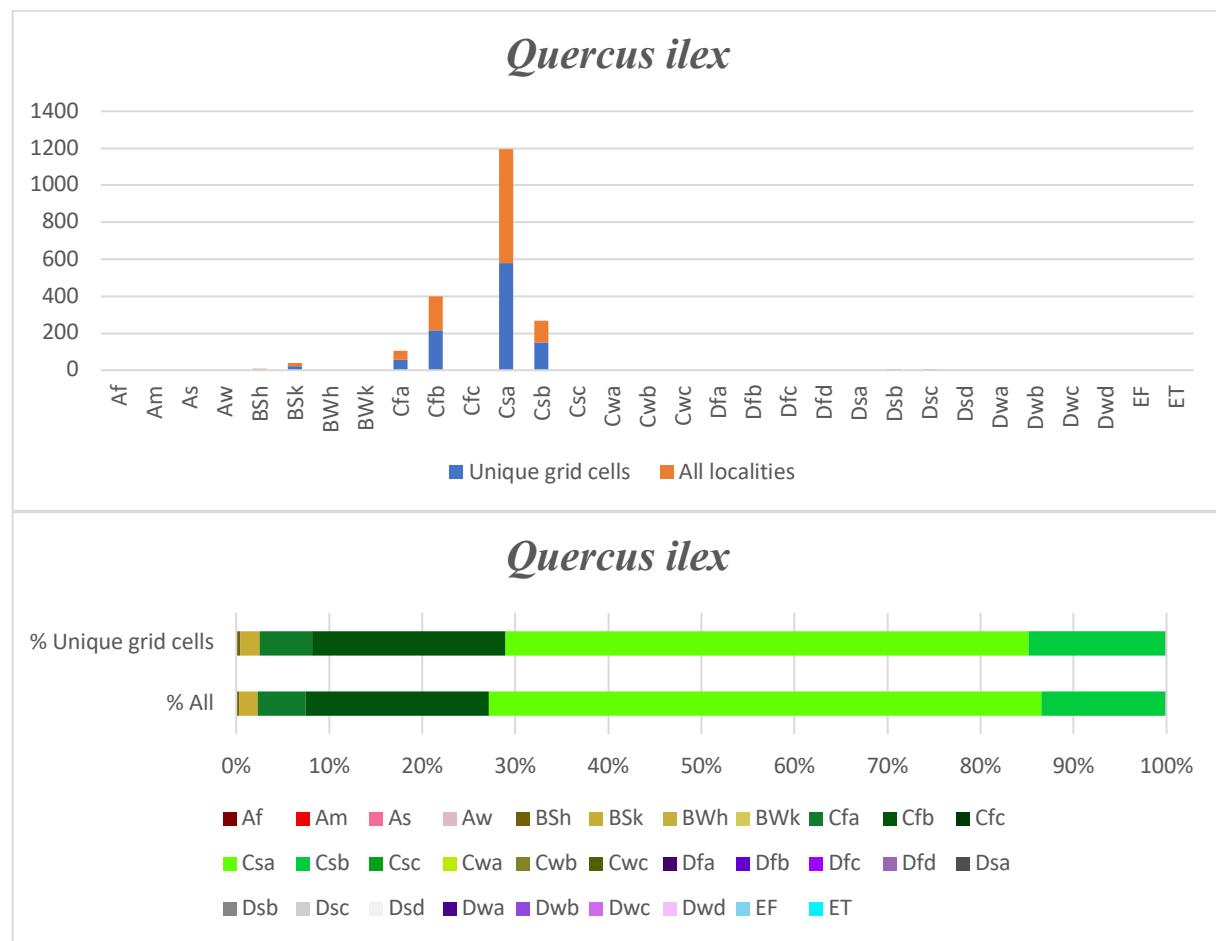
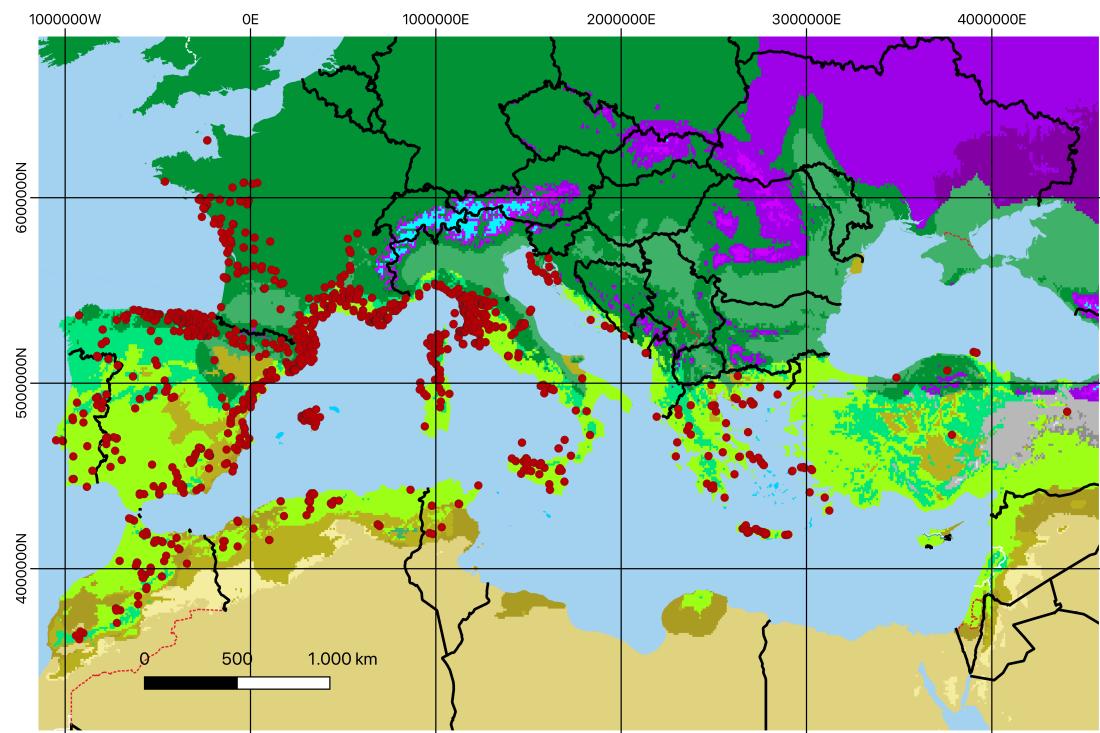
BIOMES – *Quercus alnifolia* Poech, 1842

GBIF localities of *Quercus alnifolia* (preserved specimen)



All localities (n = 33); unique grid cells (n = 13)

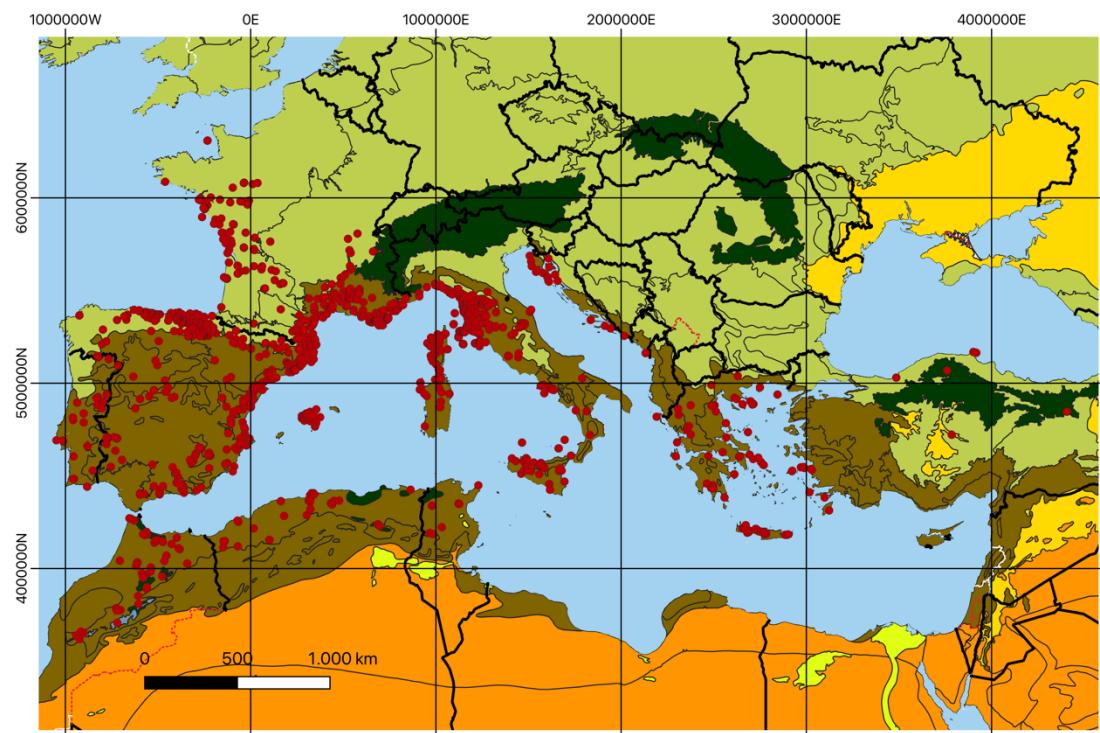
KÖPPEN SIGNATURES – *Quercus ilex* L., 1753
 GBIF localities of *Quercus ilex* (preserved specimen)



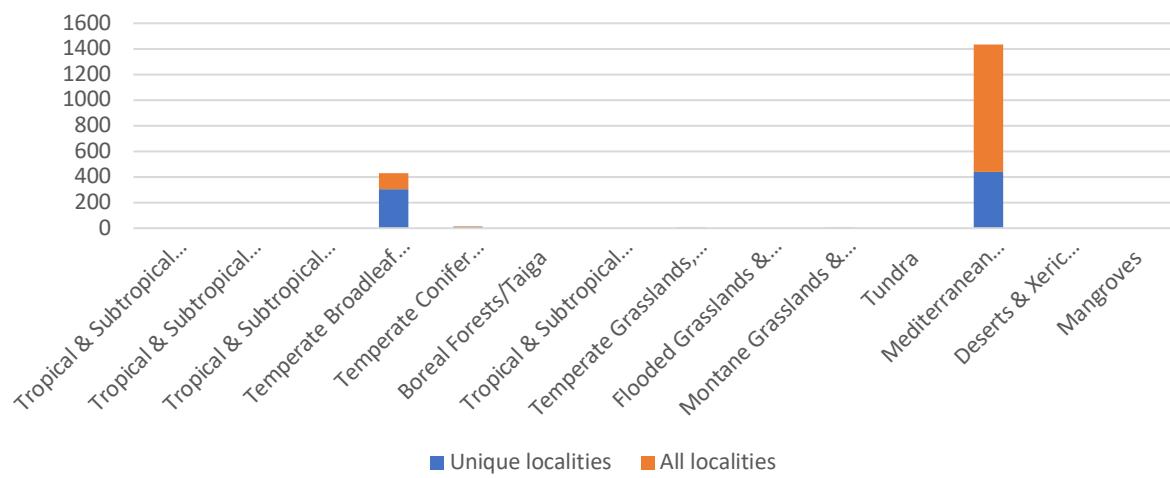
All localities (n = 2016; unique grid cells (n = 1032)

BIOMES – *Quercus ilex* L., 1753

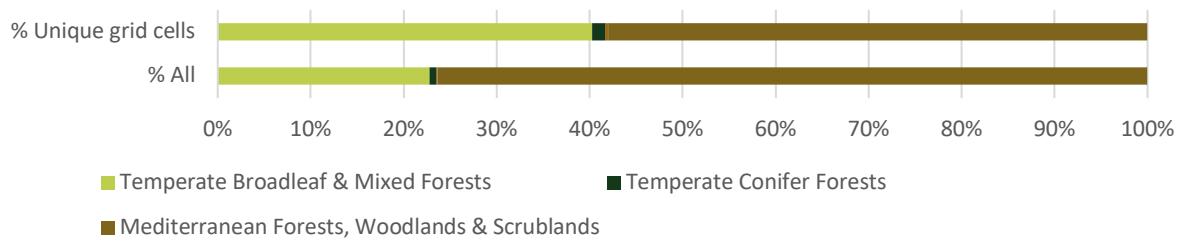
GBIF localities of *Quercus ilex* (preserved specimen)



Quercus ilex



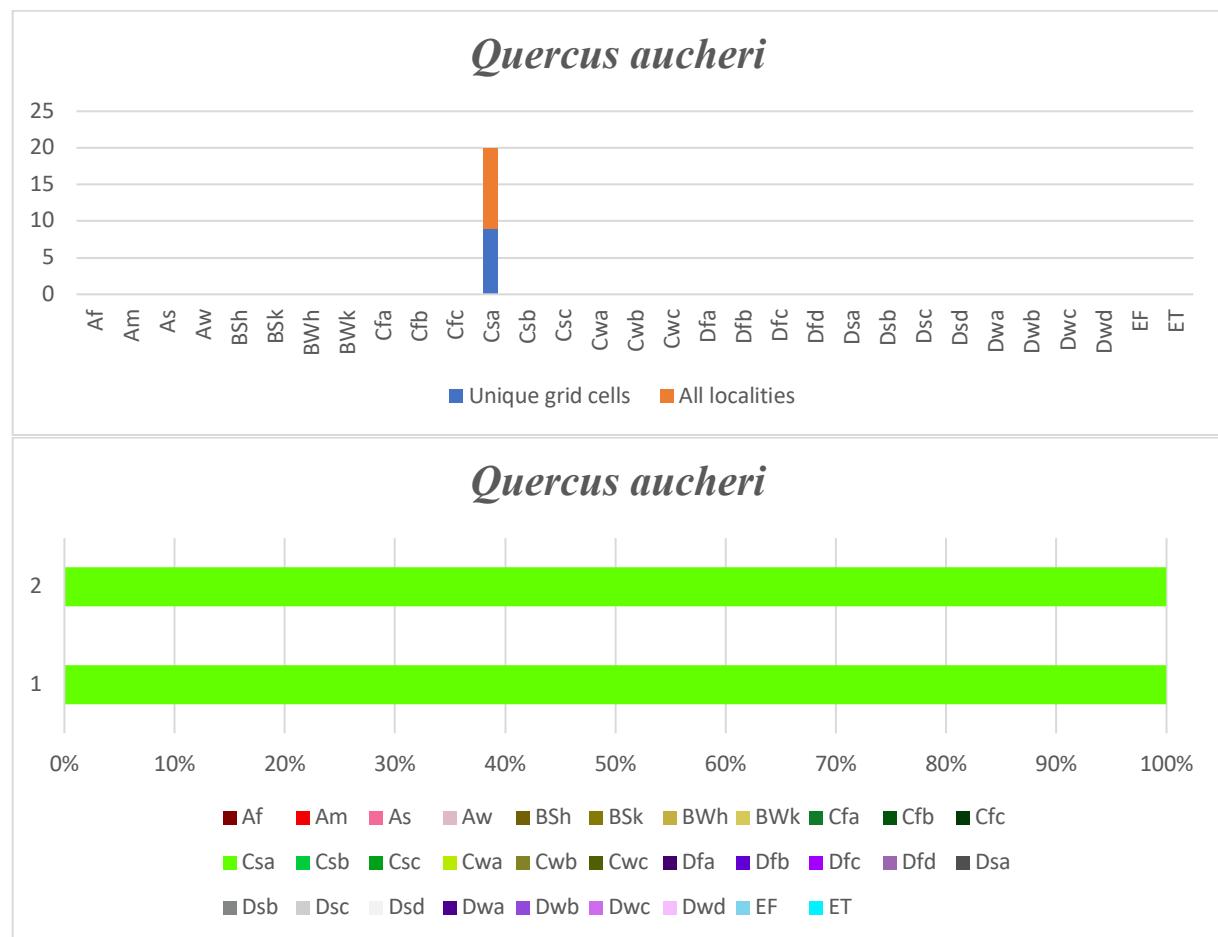
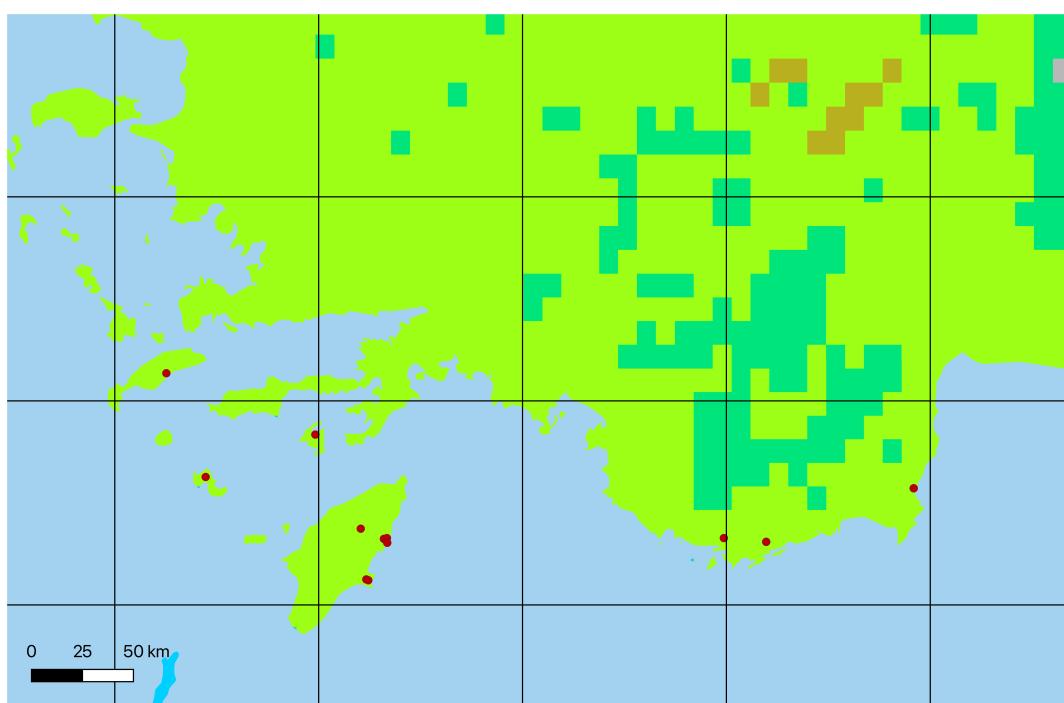
Quercus ilex



All localities (n = 1881; unique grid cells (n = 755)

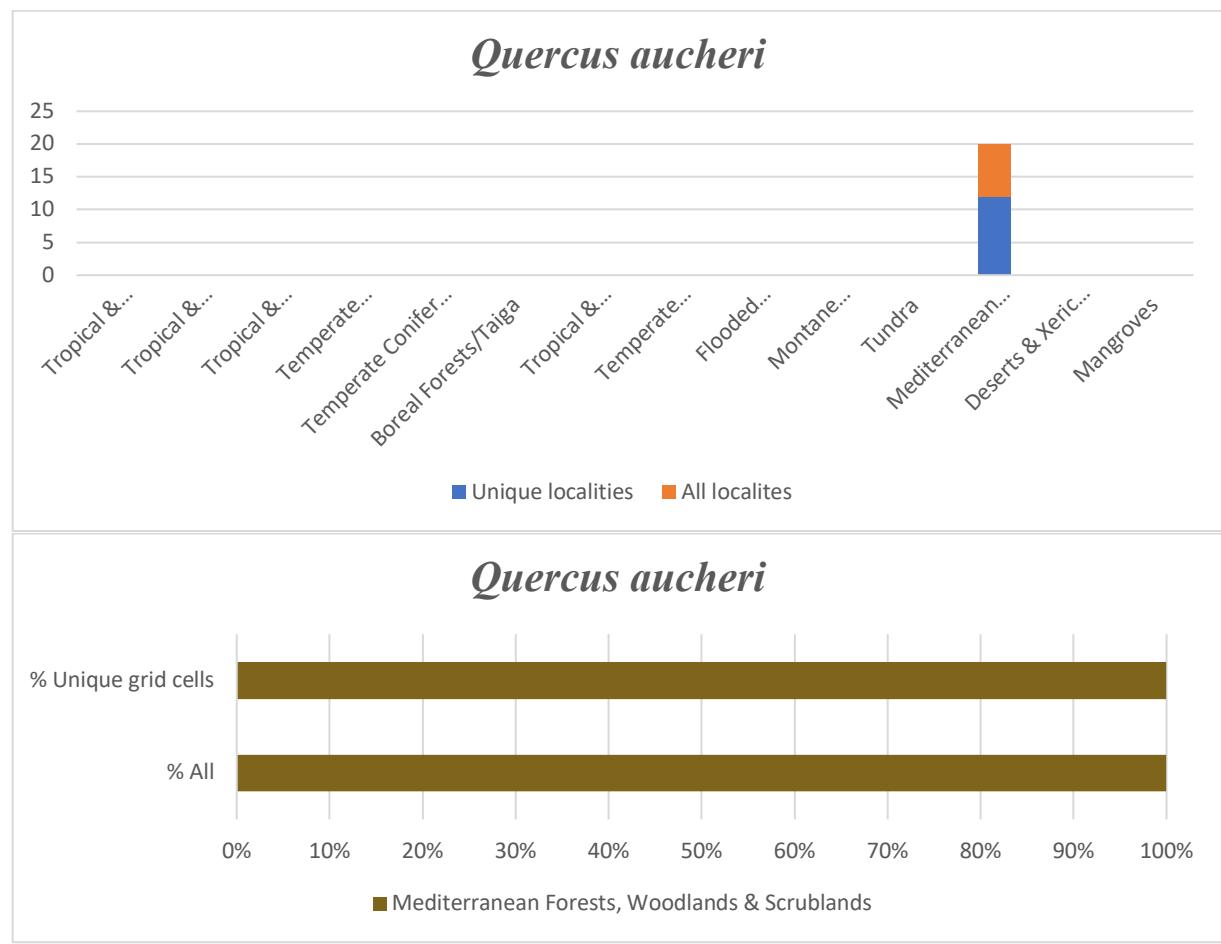
KÖPPEN SIGNATURES – *Quercus aucheri* Jaub. & Spach, 1843

GBIF localities of *Quercus aucherii* (preserved specimen)



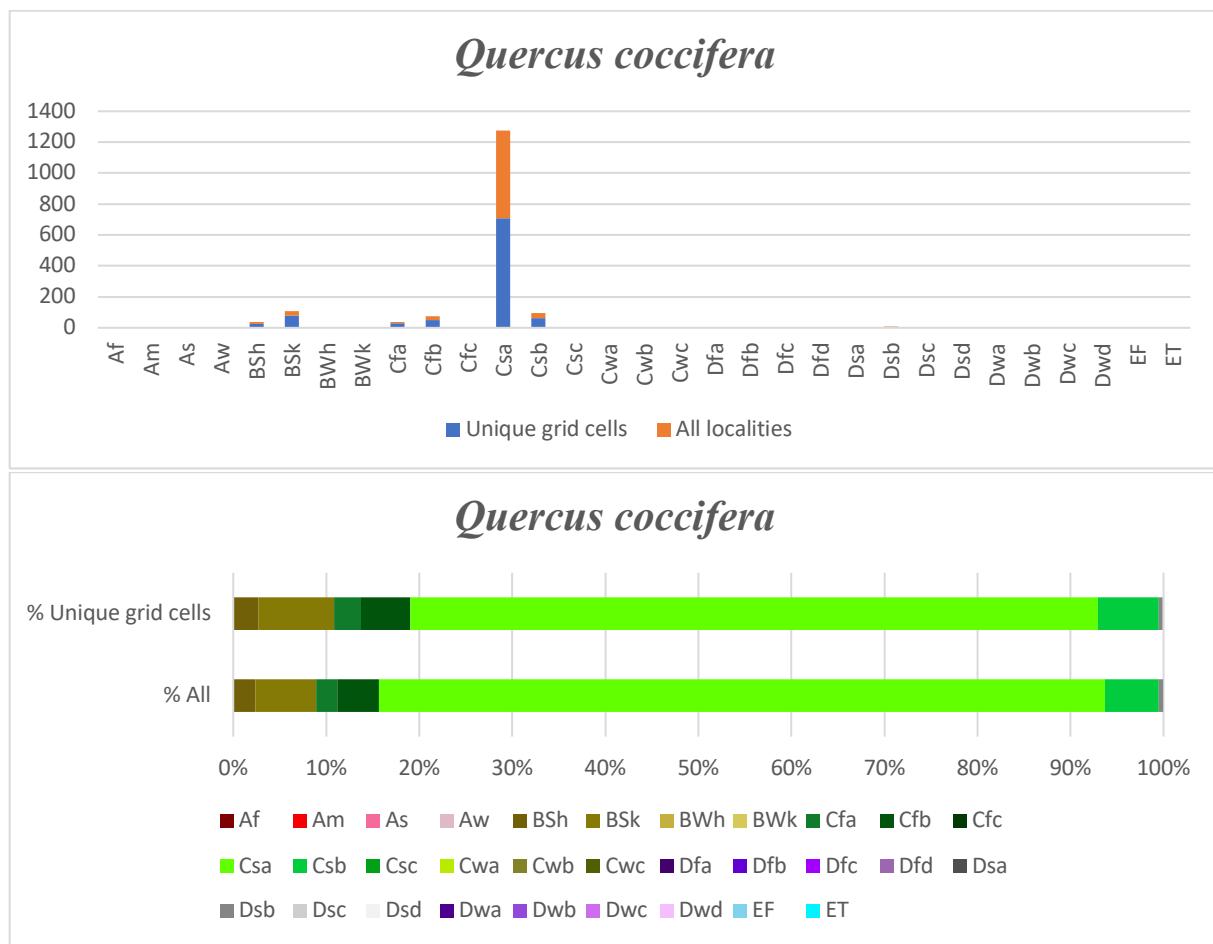
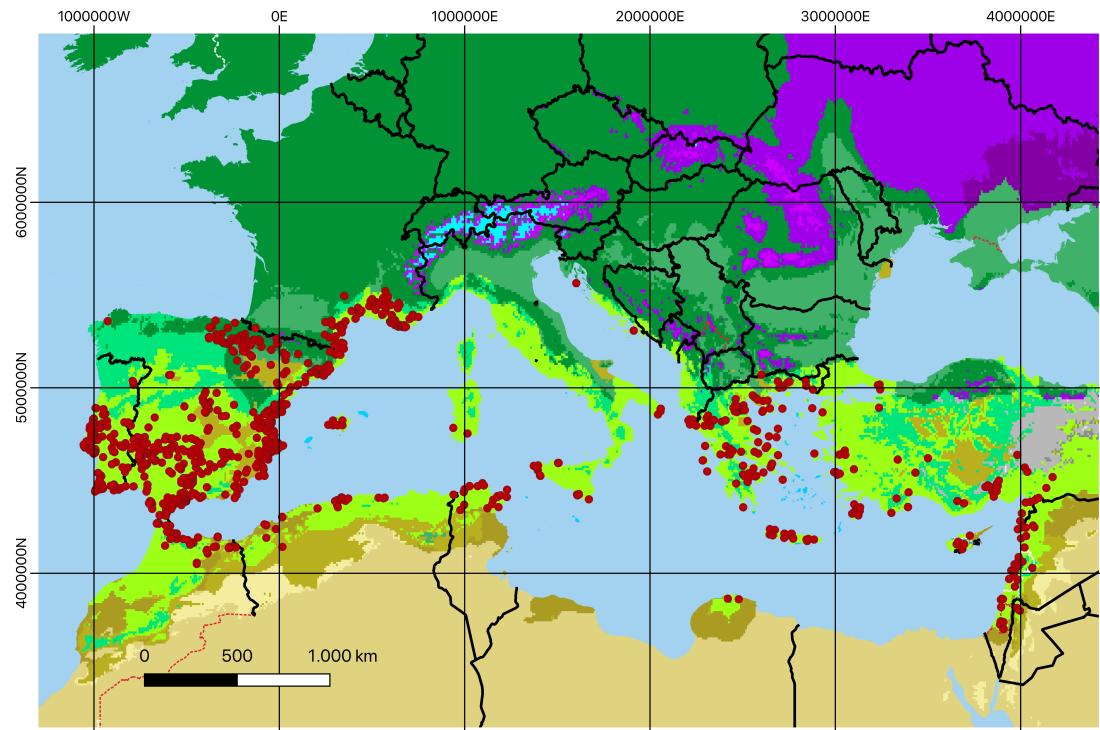
All localities (n = 20); unique grid cells (n = 9)

BIOMES – *Quercus aucheri* Jaub. & Spach, 1843
GBIF localities of *Quercus aucheri* (preserved specimen)



All localities (n = 20); unique grid cells (n = 12)

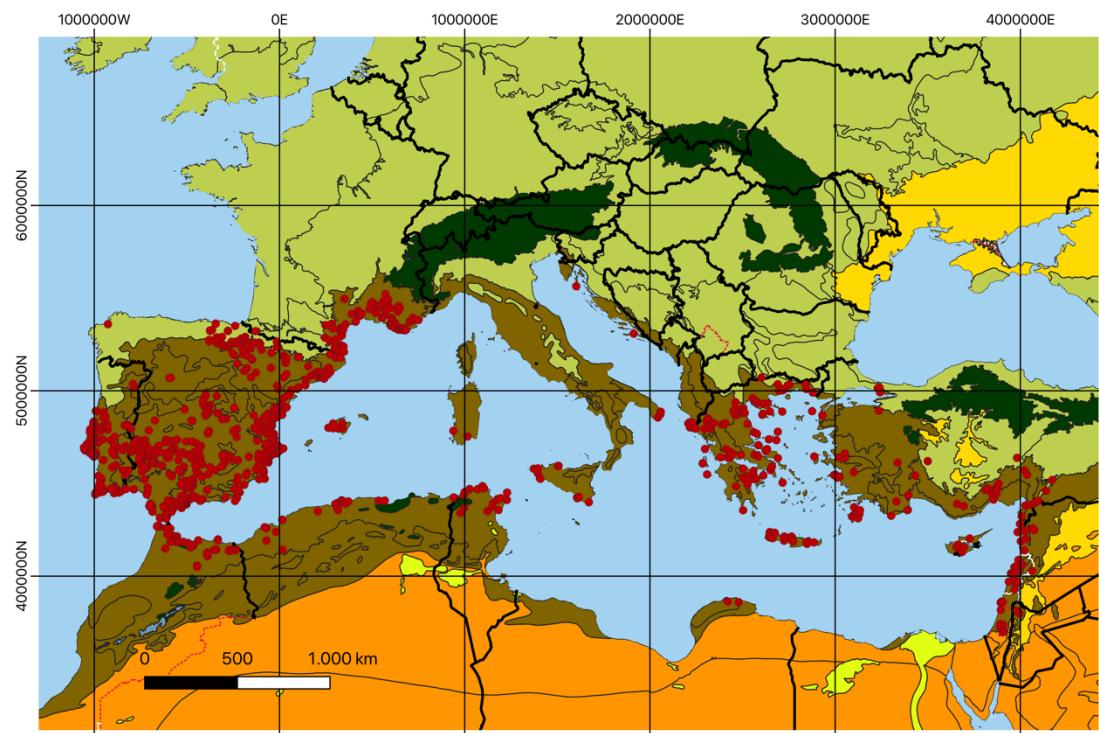
KÖPPEN SIGNATURES – *Quercus coccifera* L., 1753
 GBIF localities of *Quercus coccifera* (preserved specimen)



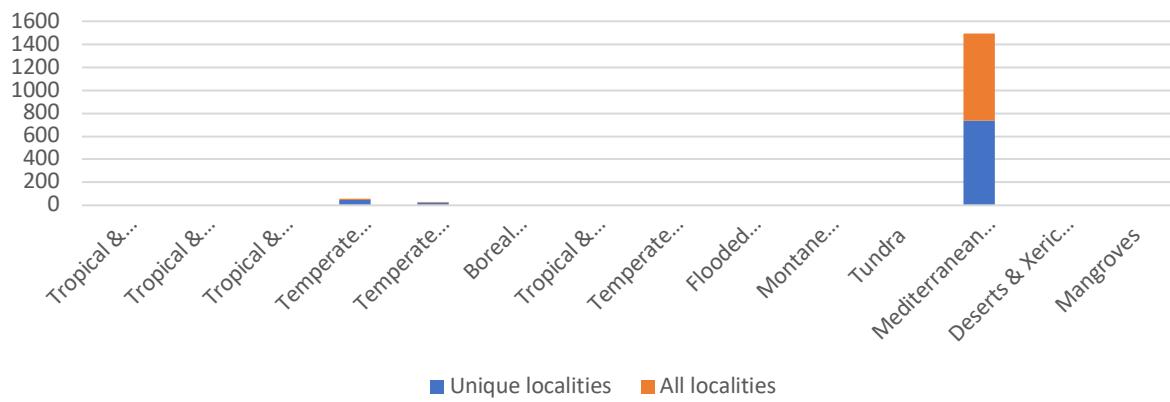
All localities (n = 1636); unique grid cells (n = 961)

BIOMES – *Quercus coccifera* L., 1753

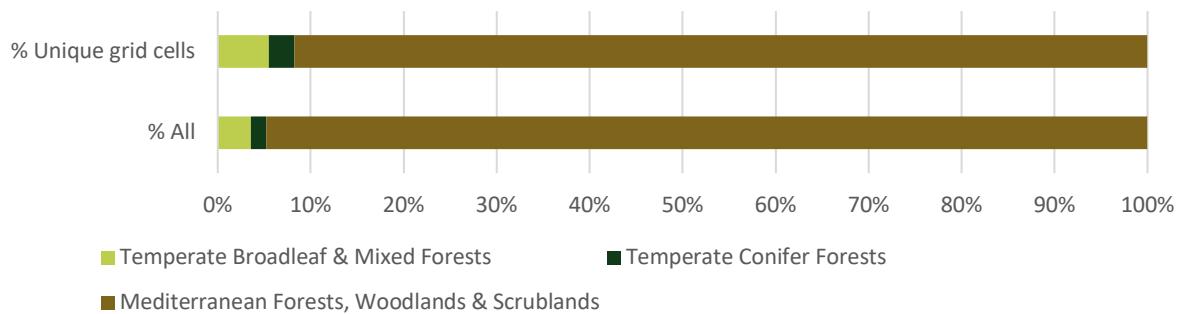
GBIF localities of *Quercus coccifera* (preserved specimen)



Quercus coccifera



Quercus coccifera



All localities (n = 1574); unique grid cells (n = 803)

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- Quercus afra* GBIF dataset: <https://doi.org/10.15468/dl.xkk4td>
- Quercus brantii* GBIF dataset: <https://doi.org/10.15468/dl.ng2vna>
- Quercus castaneifolia* GBIF dataset: <https://doi.org/10.15468/dl.fexw7u>
- Quercus cerris* GBIF dataset: <https://doi.org/10.15468/dl.fe3qft>
- Quercus crenata* GBIF dataset: <https://doi.org/10.15468/dl.55sj7z>
- Quercus chenii* GBIF dataset: <https://doi.org/10.15468/dl.xdahkj>
- Quercus ithaburensis* GBIF dataset: <https://doi.org/10.15468/dl.vg6jgs>
- Quercus libani* GBIF dataset: <https://doi.org/10.15468/dl.yat27m>
- Quercus suber* GBIF dataset: <https://doi.org/10.15468/dl.7hvbr5>
- Quercus trojana* GBIF dataset: <https://doi.org/10.15468/dl.cug7aa>
- Quercus variabilis* GBIF dataset: <https://doi.org/10.15468/dl.3sxva6>
- Quercus alnifolia* GBIF dataset: <https://doi.org/10.15468/dl.s7hefa>
- Quercus aucheri* GBIF dataset: <https://doi.org/10.15468/dl.4298q9>

Quercus baloot GBIF dataset: <https://doi.org/10.15468/dl.fan8g2>

Quercus baroni GBIF dataset: <https://doi.org/10.15468/dl.588x8y>

Quercus coccifera GBIF dataset: <https://doi.org/10.15468/dl.9mykx2>

Quercus dolicholepis GBIF dataset: <https://doi.org/10.15468/dl.mugwb2>

Quercus floribunda GBIF dataset: <https://doi.org/10.15468/dl.dnwerd>

Quercus guyavifolia GBIF dataset: <https://doi.org/10.15468/dl.8yyes4>

Quercus ilex GBIF dataset: <https://doi.org/10.15468/dl.agcxqs>

Quercus phillyreoides GBIF dataset: <https://doi.org/10.15468/dl.ybs3ed>

Quercus semecarpifolia GBIF dataset: <https://doi.org/10.15468/dl.hpggax>

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