Table S1: Initial environmental variables

Variable name	Description (unit)	Source
Aspect	Slope direction (8 directions and flat)	Calculated from Worldclim DEM layer
Bedrock	Distance to the soil bedrock (m)	Soil map of Kenya
Bio1	Annual mean temperature	WorldClim
Bio2	Mean diurnal temperature range (mean of monthly mean daily values) (℃)	WorldClim
Bio3	Isothermality (Bio2/Bio7×100%)	WorldClim
Bio4	Temperature seasonality (standard deviation of monthly mean temperature ×100) (℃)	WorldClim
Bio5	Max temperature of warmest month (°C)	WorldClim
Bio6	Min temperature of coldest month (°C)	WorldClim
Bio7	Temperature annual range (Bio5-Bio6) (°C)	WorldClim
Bio8	Mean temperature of wettest quarter (°C)	WorldClim
Bio9	Mean temperature of driest quarter (°C)	WorldClim
Bio10	Mean temperature of warmest quarter (°C)	WorldClim
Bio11	Mean temperature of coldest quarter (°C)	WorldClim
Bio12	Annual precipitation (mm)	WorldClim
Bio13	Precipitation of wettest month (mm)	WorldClim
Bio14	Precipitation of driest month (mm)	WorldClim
Bio15	Precipitation seasonality (coefficient of variation)	WorldClim
Bio16	Precipitation of wettest quarter (mm)	WorldClim
Bio17	Precipitation of driest quarter (mm)	WorldClim
Bio18	Precipitation of warmest quarter (mm)	WorldClim
Bio19	Precipitation of coldest quarter (mm)	WorldClim
CEC	Soil cation exchange capacity ($cmol_c$/kg)	Soil map of Kenya
Clay	Soil clay content (minerology)	Soil map of Kenya
Drainage	Soil drainage capacity (8 classes)	Soil map of Kenya
Distrivers	Distance to rivers (km)	Calculated from HYDROSHEDS layer
Elevation	Height above sea level (m)	WorldClim
ExchK	Soil exchangeable potassium ($cmol_c$/kg)	Soil map of Kenya

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ExchNa	Soil exchangeable sodium (cmol$_c$/kg)	Soil map of Kenya
HII	Human influence index	NASA socio-economic data and application center (SEDAC)
Landform	Features that make up the land surface (14 classes)	Soil map of Kenya
LC	Land cover (9 classes)	Land cover map of Kenya (European Space Agency; ESA)
Lithology	Soil mineral composition, colour and grainsize (32 classes)	Soil map of Kenya
Ph kci	Soil PH	Soil map of Kenya
Ph water	Soil PH	Soil map of Kenya
PD	Human population density (/km^2)	NASA gridded population density
Rdensity	Road density (length/km^2)	Calculated from
Rootablesoil	Thickness of rootable soil layer depth (7 classes)	Soil map of Kenya
Slope	The degree of inclination (decimal degree)	Calculated from Worldclim DEM layer
Texture	Soil texture (5 classes)	Soil map of Kenya
WI	Warmness index is annual sum of positive monthly temperatures (Choi et al., 2011).	Calculated based on WorldClim monthly mean temperature

$$WI = \sum_{m=1}^{12} \max(T_m - 5, \quad 0)$$

where, T_m is monthly mean temperature of month m (°C).

(a) Mean diurnal temperature range (Bio2)
    Present   RCP 4.5
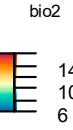
bio2

14
10
6

(b) Isothermality (Bio3)
    Present   RCP 4.5
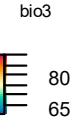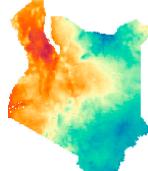
bio3

80
65

(c) Annual precipitation (Bio12)
    Present   RCP 4.5

(d) Precipitation of wettest month (Bio13)
    Present   RCP 4.5

(e) Precipitation of driest month (Bio14)
Present   RCP 4.5

(f) Precipitation of wettest quarter (Bio16)
Present   RCP 4.5

(g) Precipitation of driest quarter (Bio17)
Present   RCP 4.5

(h) Precipitation of coldest quarter (Bio19)
Present   RCP 4.5
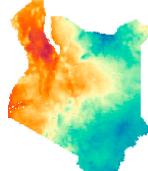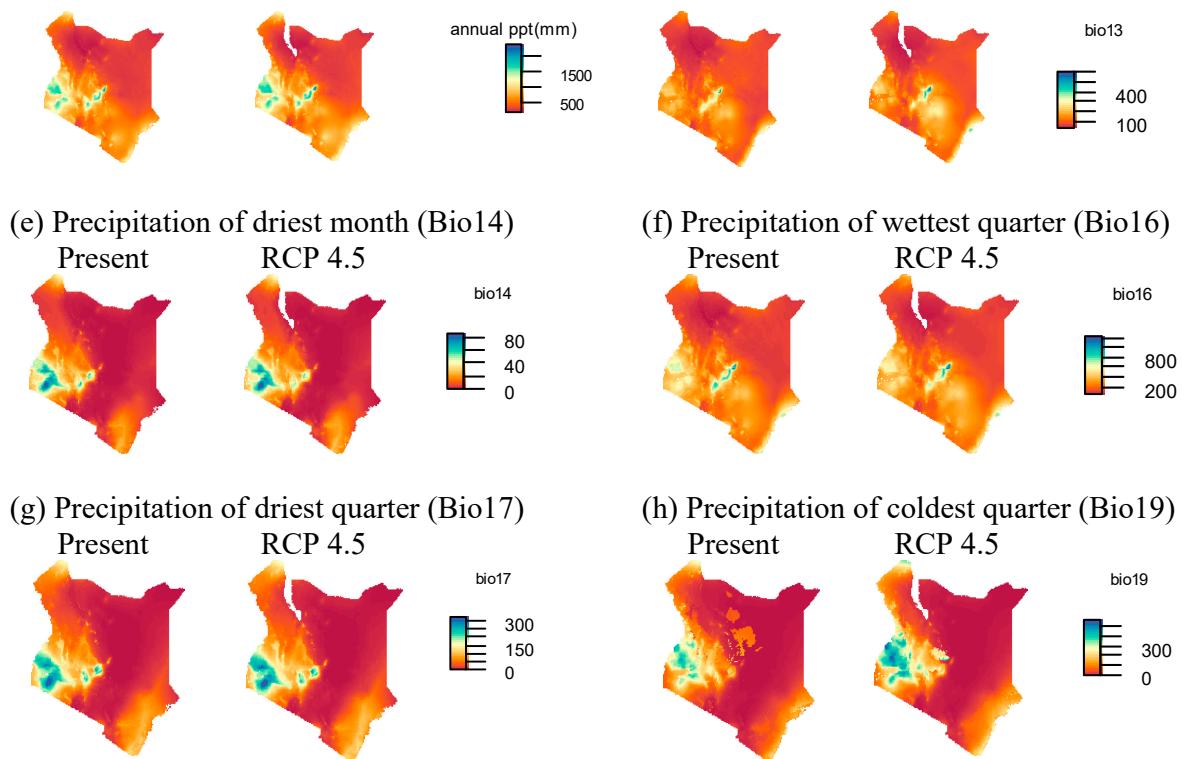
Figure S1: Bioclimatic predictors selected by the MaxentVariableSelection package for any species in present and in 2050 by RCP 4.5.

(a) Cation exchange capacity (CEC)

(b) Distance from rivers (Distrivers)

(c) Elevation

(d) Exchange capacity of Na (ExchNa)

(e) Road density (Rdensity)

(f) Slope
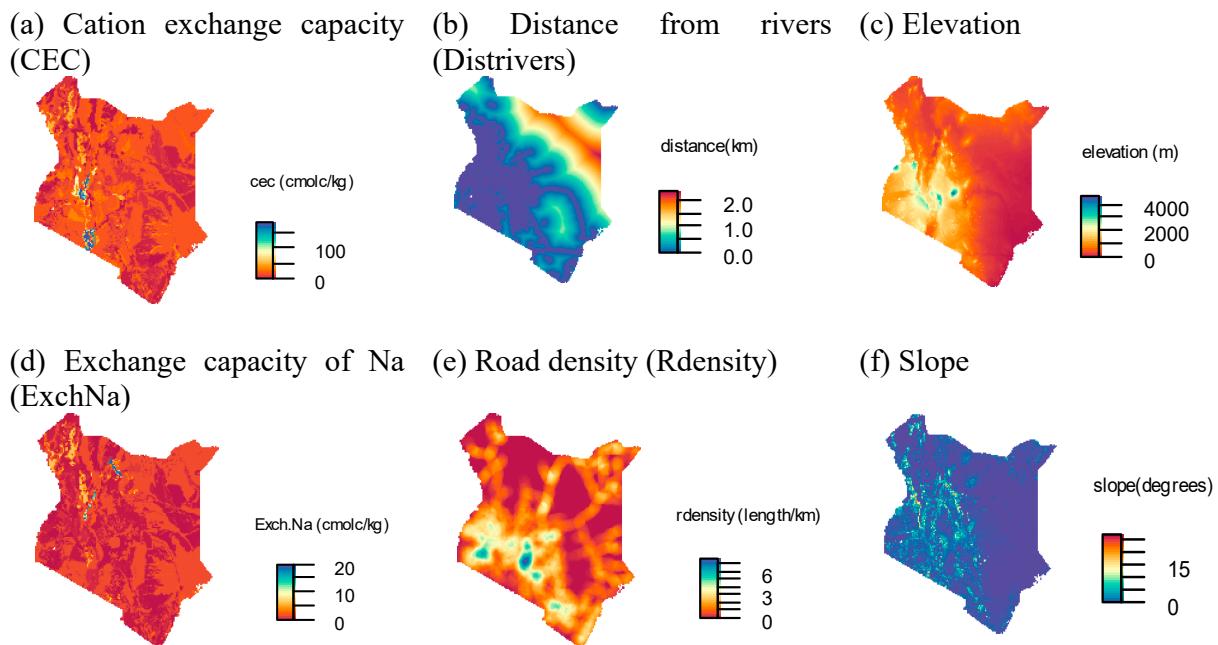
(g) Aspect
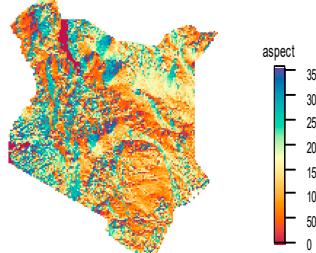
(h) Landforms
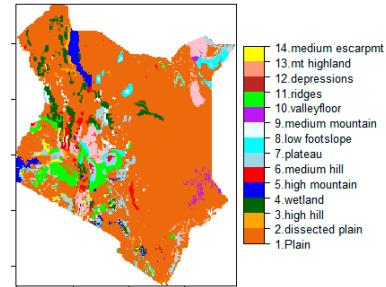
Figure S2: Soil, topographic, and geographic predictors selected by the MaxentVariableSelection package for models

Indigofera arrecta
AUC= 0.939

Crotalaria axillaris
AUC= 0.954

Crotalaria goodiiformis
AUC= 0.93

Senegalia brevispica
AUC= 0.821

Senegalia mellifera
AUC= 0.832

Senegalia Senegal
AUC= 0.94

Vachellia etbaica
AUC= 0.778

Vachellia hockii
AUC= 0.823

Vachellia nilotica
AUC= 0.946
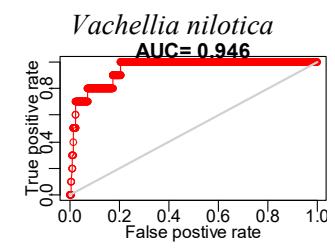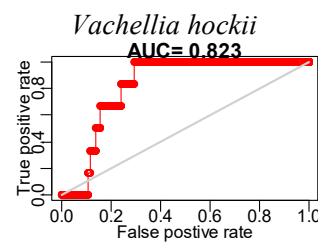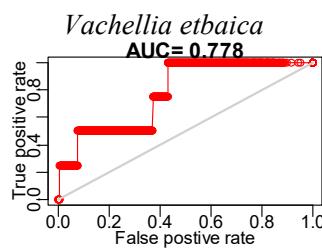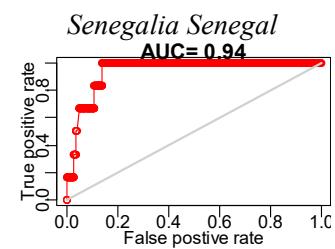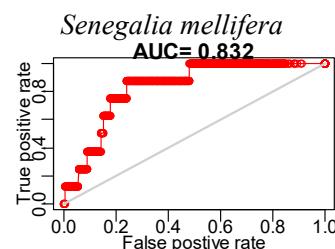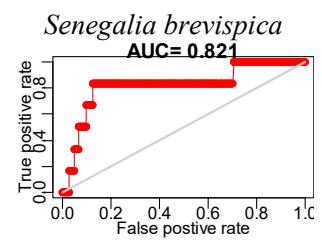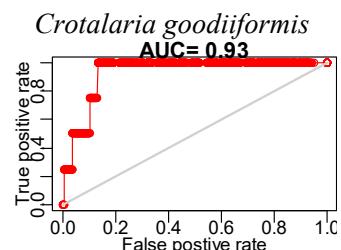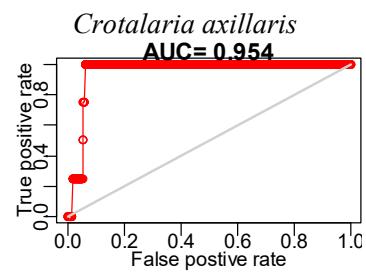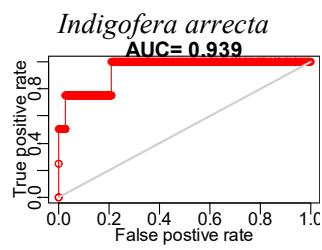
Figure S3: Maxent ROCs for the 9 modeled species
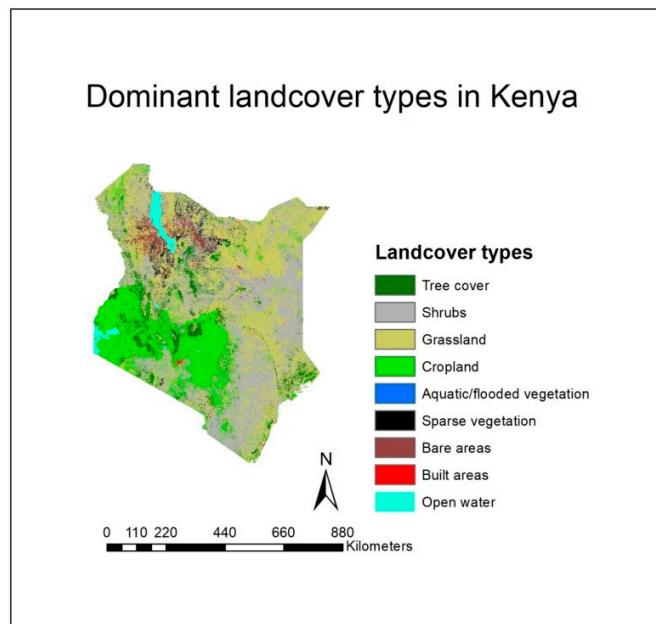

Figure S4: Landcover map of Kenya
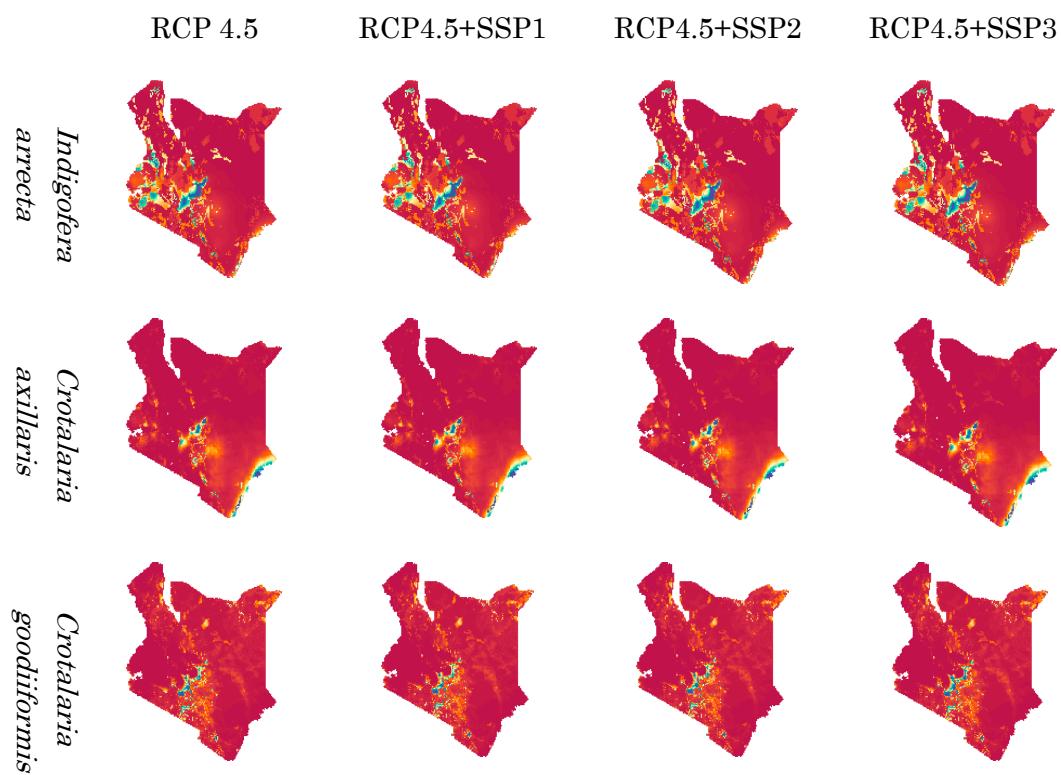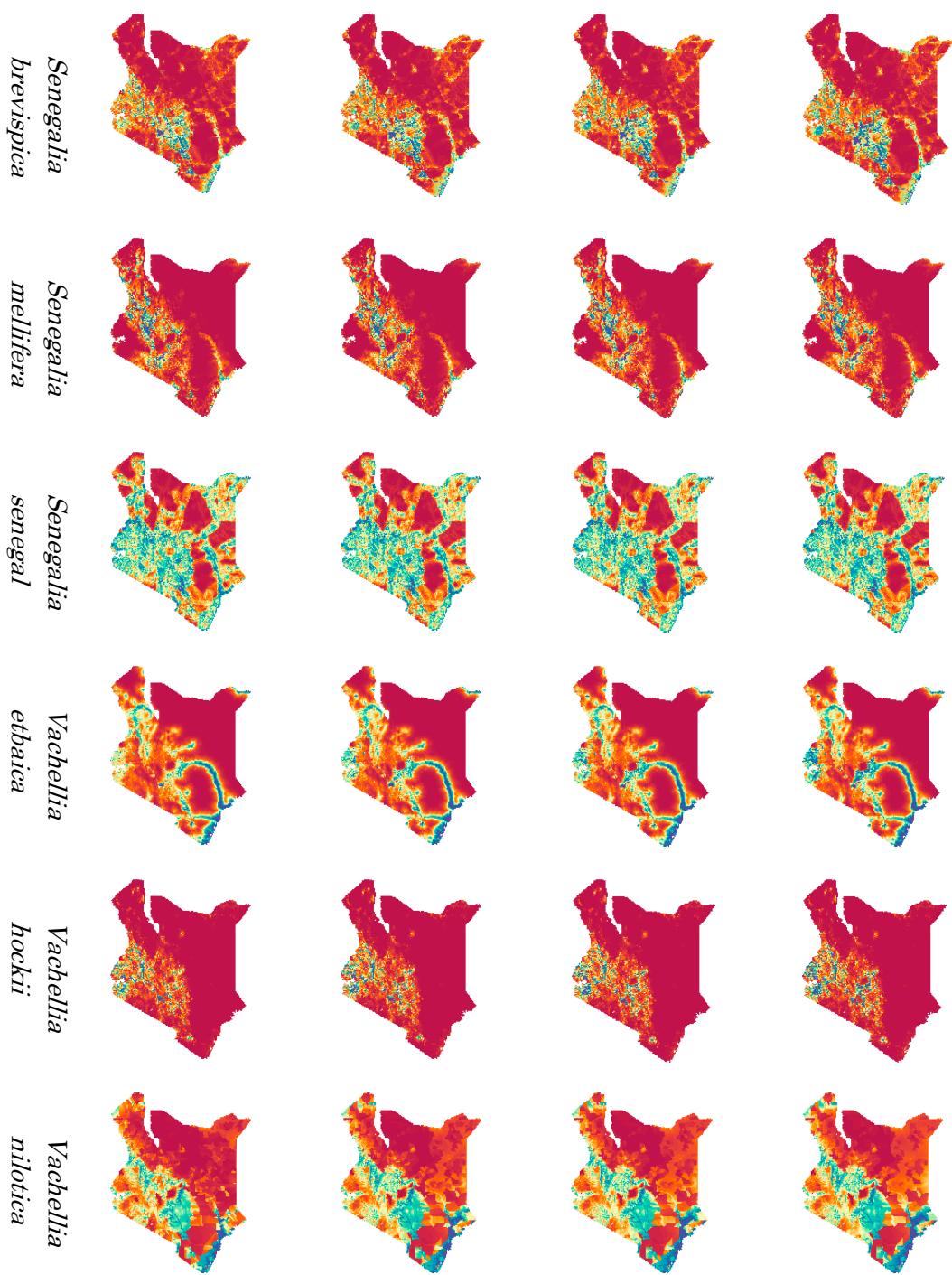
Figure S5: Projected occurrence probability of 9 species by MaxEnt in 2050 under RCP 4.5 and 3 SSP scenarios.