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# Suitability of key Central American agroforestry species under future climates: an atlas

**Kauê de Sousa, Maarten van Zonneveld,  
Pablo Imbach, Fernando Casanoves,  
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<http://www.worldagroforestry.org/atlas-central-america>

# Climate change atlas: modelling details

- 54 important shade species in coffee and cocoa species in Central America
  - 24 fruit, 24 timber, 8 soil fertility improving species
- Climate change projections for 2050s for [Representative Concentration Pathways](#) RCP 4.5 (intermediate) and RCP 8.5 (highest) emission scenarios
- [Ensemble suitability modelling](#) with [BiodiversityR](#) open-source software
- Species mapped as suitable if a minimum of 12 out of 17 downscaled Global Circulation Models predicted species presence

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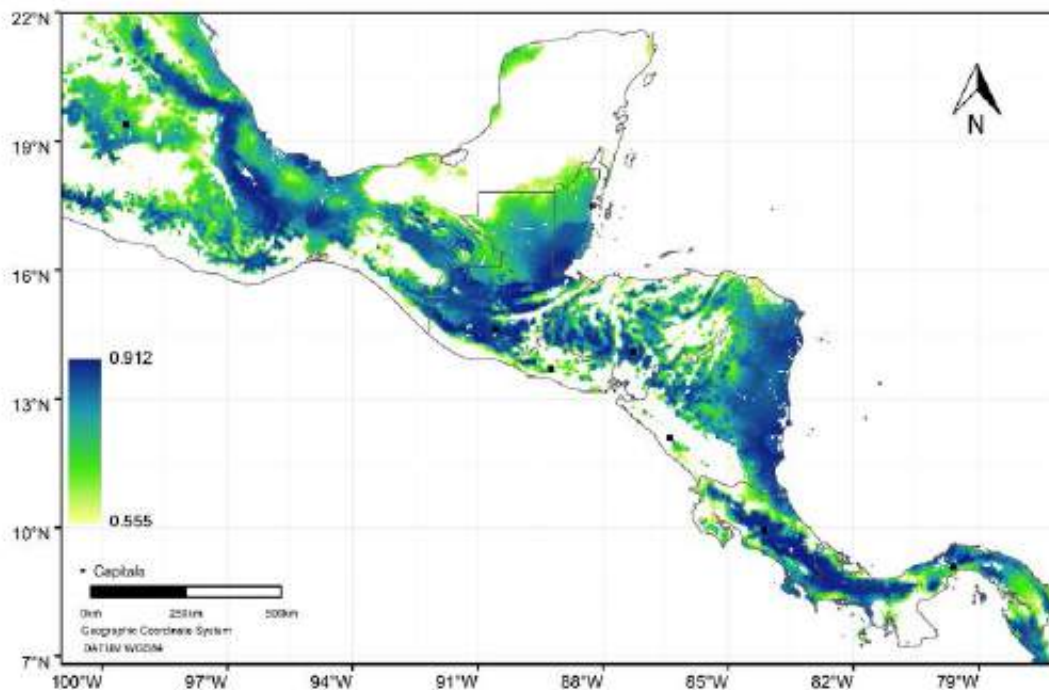
*Persea americana* Mill.

Family:  
Lauraceae  
Vernacular names:  
Aguacate

Whole plant attributes		Uses		Reproductive attributes		Stress tolerance	
Growth form	Tree	Commercial timber	No	Reproductive system	Monoecious cross-pollinating	Drought	Moderate, yes depending on cultivar
Plant height (m)	11 (5 – 20)	Timber uses <sup>1</sup>	CL, MB, PS, AR	Pollination vector	Insects	Flooding	Low
Spinescence	No	Firewood	No	Weight 1000 seeds (kg)*	15.31 (9.95 – 20.67)	Frost	High in Mexican types, low in others
N fixer	No	Fruit	Yes	Seed storage type	Recalcitrant	Shade	No
Wood density (g cm <sup>-3</sup> )	0.62 (0.52 – 0.78)	Forage	Yes	Seed dormancy	No	Salinity	High in West-Indian types, low in others
Leaf phenology	Deciduous	Other uses	Cosméticos	Seed dispersal	* Domesticated, human mediated	Fire	No

<sup>1</sup> SM= Suitable for Saw Mill; CG= Engineering and Structural Construction; CL= Light Construction; MB= Furniture; HF= Farm Tools; PS= Flooring; DT= Railway Sleepers; CH= Veneer; AR= Handicrafts

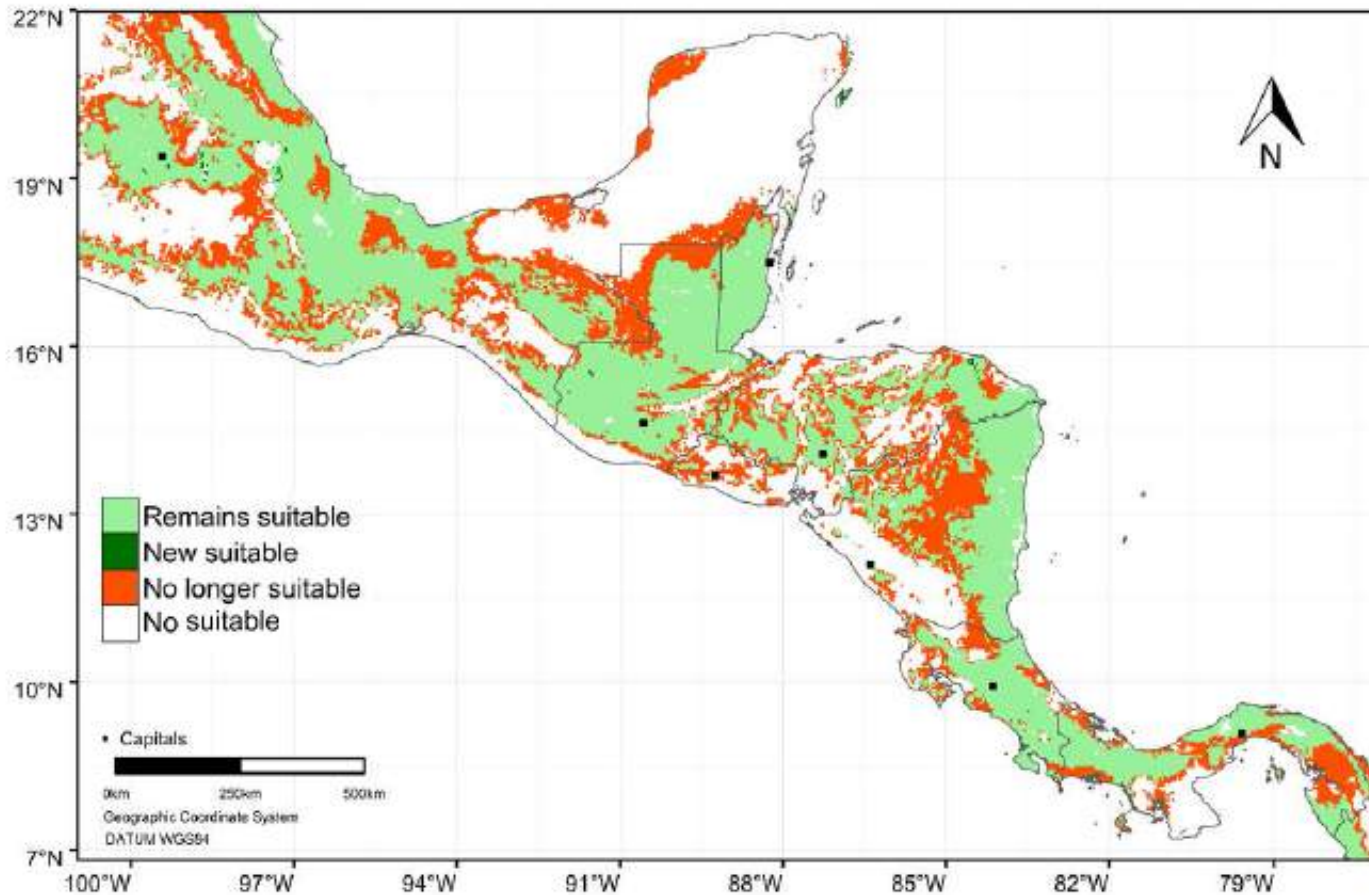
Species suitable areas under current climate



\* Areas in white in the map, indicate areas where the species is not suitable.

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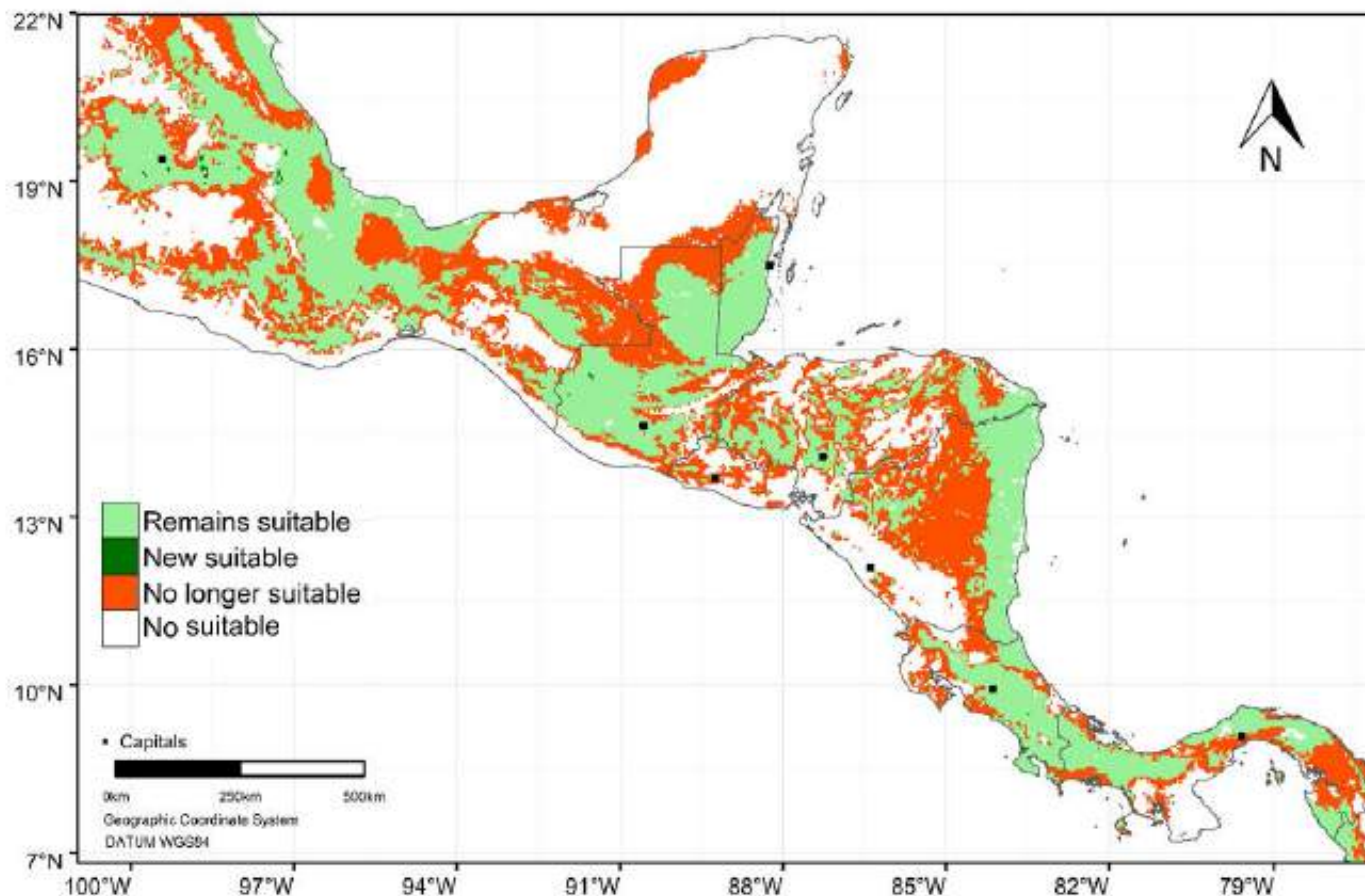
## Suitability changes in year 2050 - scenario RCP4.5



Zone	Current distribution per zone (km <sup>2</sup> )	Remains suitable	Potential new habitat	No longer suitable	Net change
Dry forest	67,032	61%	0%	39%	-39%
Rain forest	102,444	66%	0%	34%	-34%
Whole region	169,476	64%	0%	36%	-36%

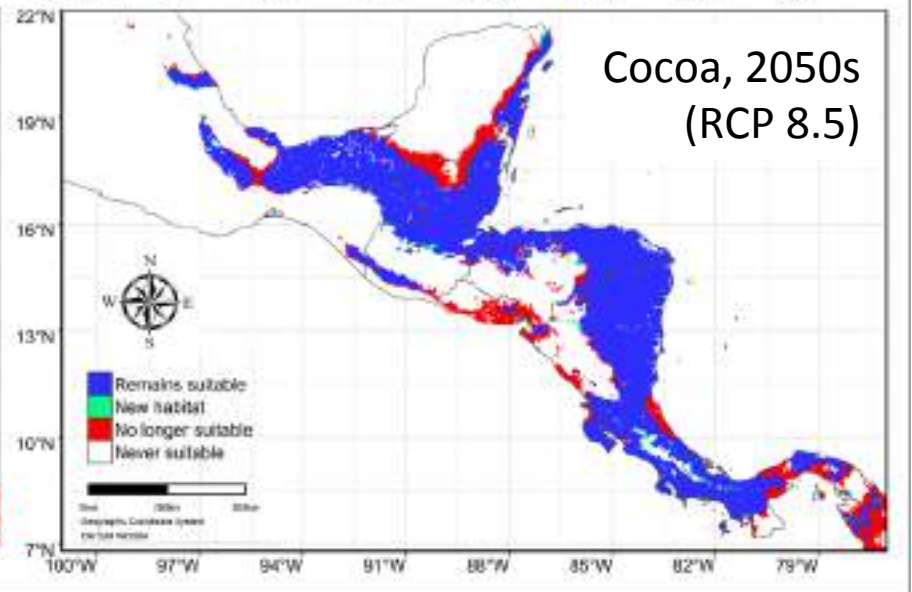
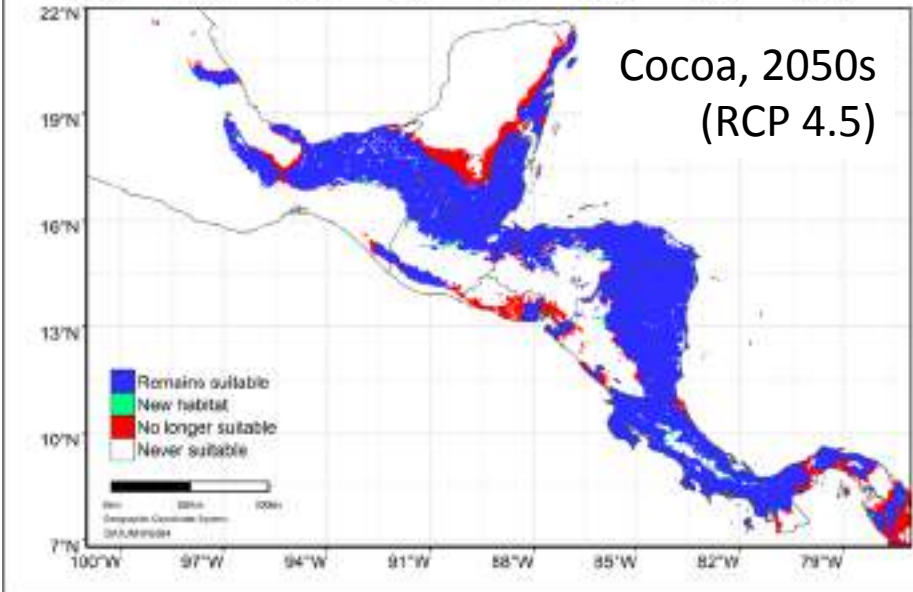
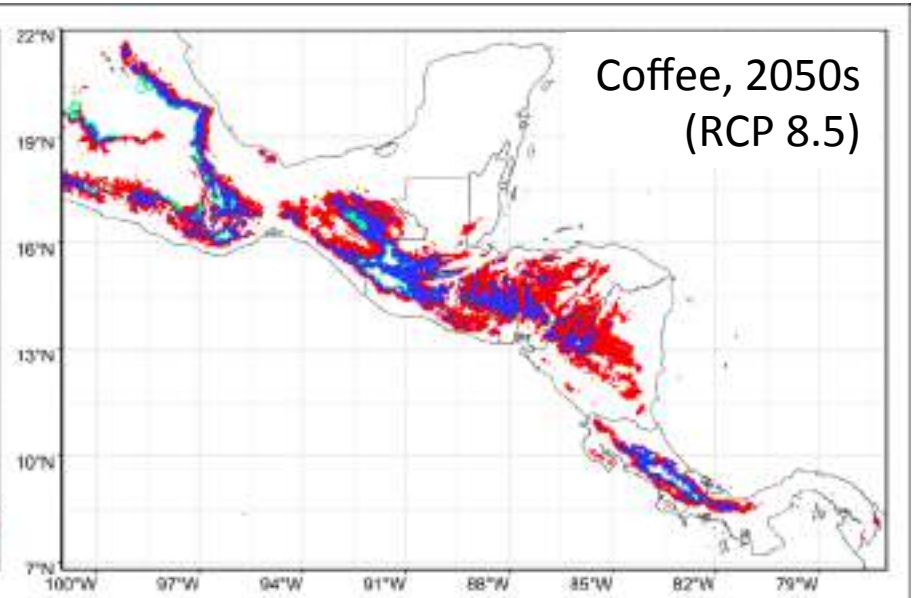
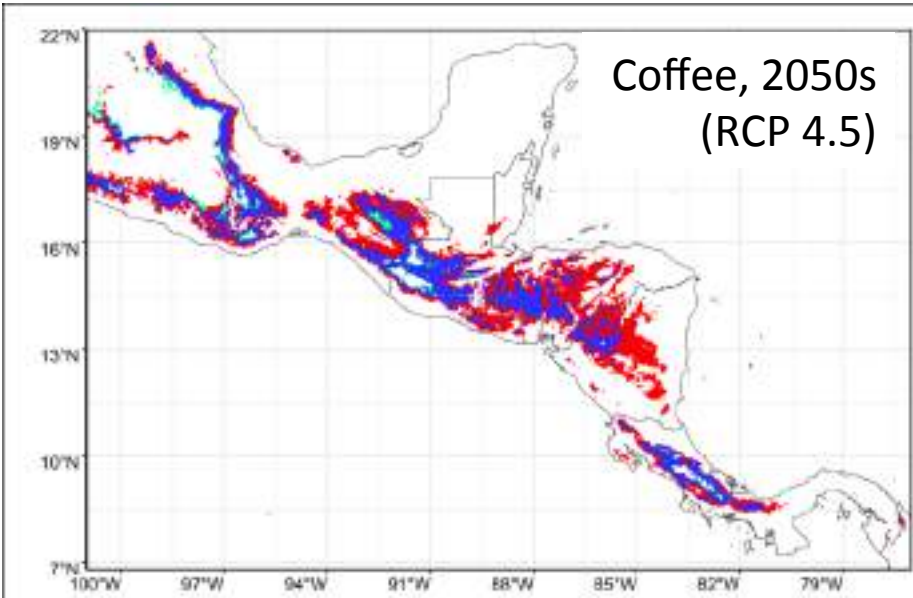
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## Cambios de aptitud al año 2050 - escenario RCP 8.5



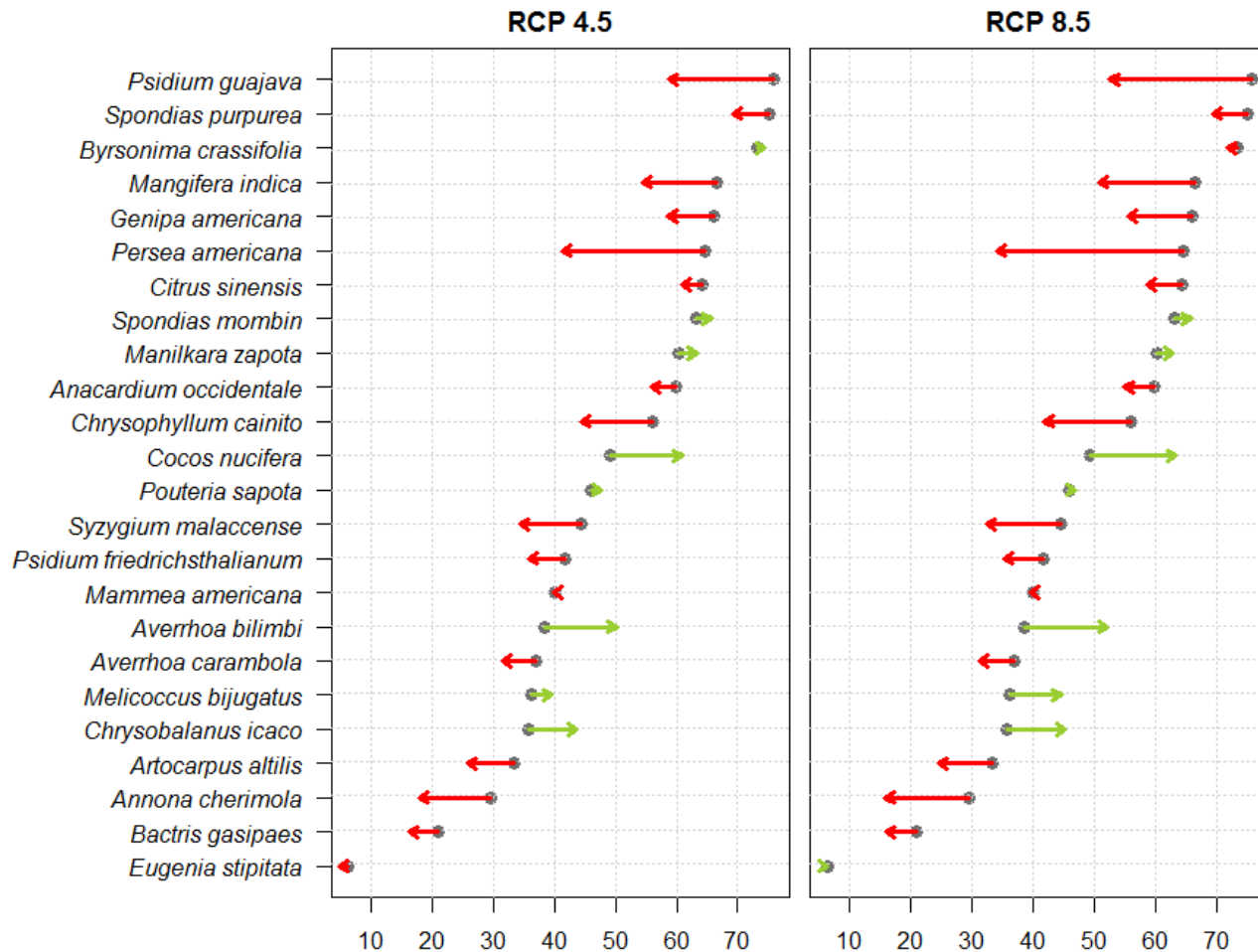
Zone	Current distribution per zone (km <sup>2</sup> )	Remains suitable	Potential new habitat	No longer suitable	Net change
Dry forest	67,032	52%	0%	48%	-48%
Rain forest	102,444	53%	0%	47%	-47%
Whole region	169,476	53%	0%	47%	-47%

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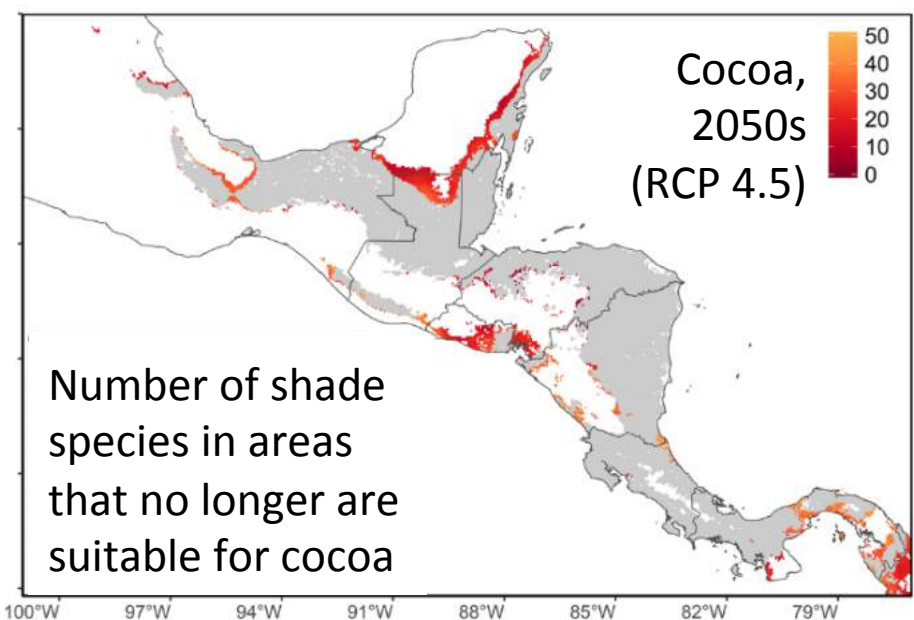
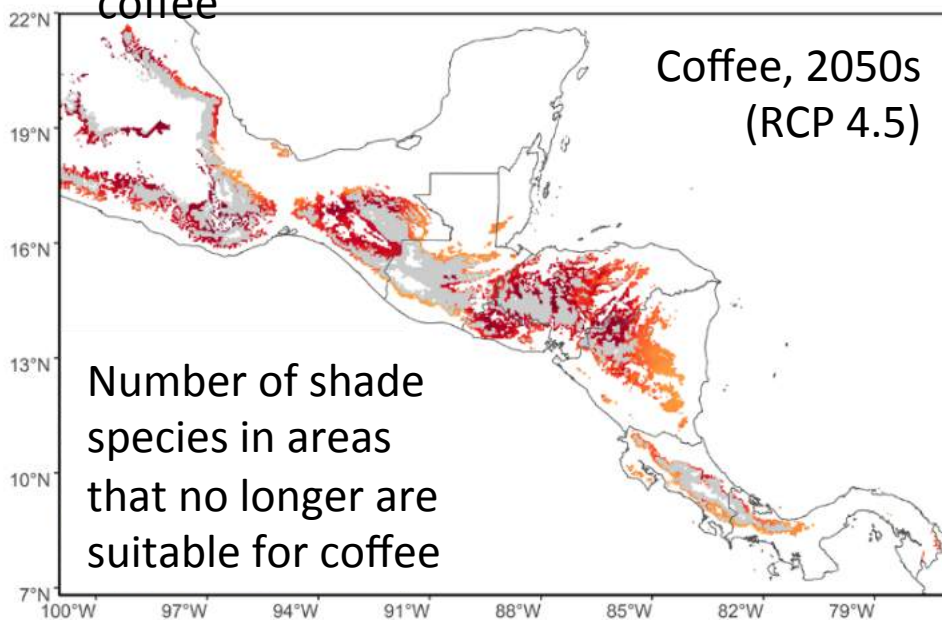
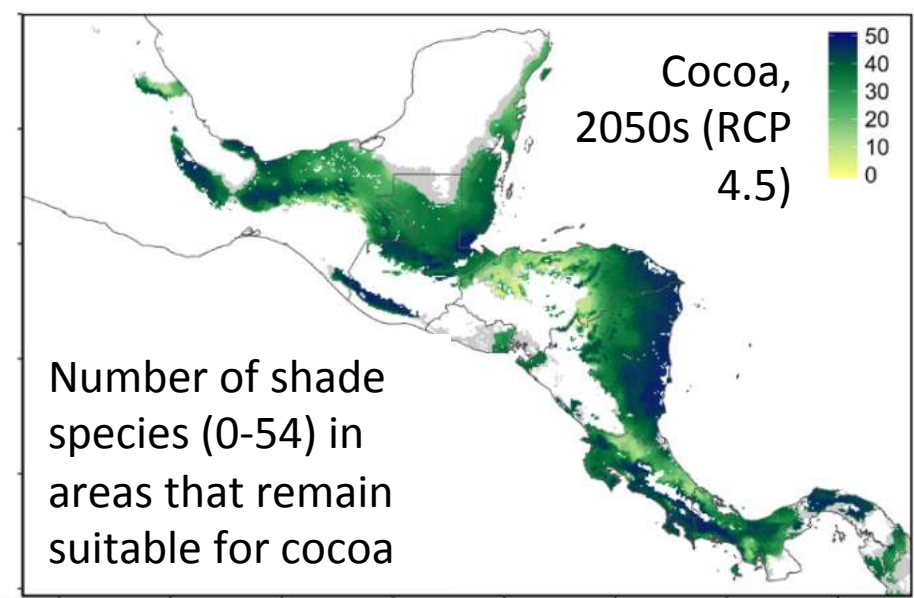
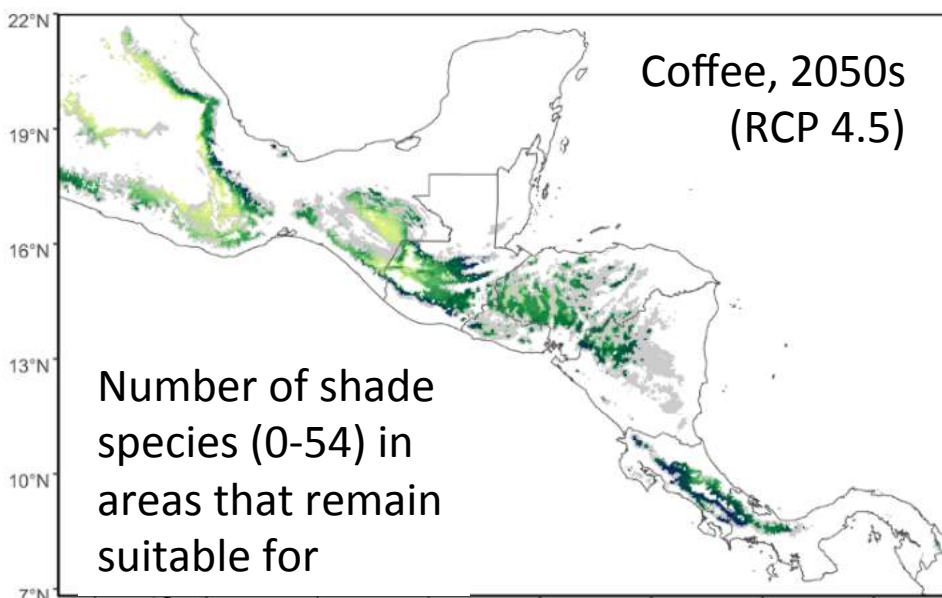


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# Fruit tree species: changes in habitat



<http://www.worldagroforestry.org/atlas-central-america>



<http://www.worldagroforestry.org/atlas-central-america>



# Some other tools for forest landscape restoration

<http://www.worldagroforestry.org/output/tree-seeds-farmers-toolkit-and-reference-source>

[http://www.vegetationmap4africa.org/Vegetation\\_map.html](http://www.vegetationmap4africa.org/Vegetation_map.html)

<https://play.google.com/store/apps/details?id=com.icraf.gsl.africatreefinder>

<http://www.worldagroforestry.org/products/switchboard>

## Food tree portfolios

**Vegetation type:** Lake Victoria drier peripheral semi-evergreen Guineo-Congolian rain forest (Code: F1)

**Fact sheet:** [Click here](#) for a description and species list for this vegetation type

**Species Details**

You Selected: **Warburgia ugandensis (pre)**

Origin: Indigenous

Local Names

Name	Language
East African green wood, Kenya	English
Greenheart	
Mukusumbe	Uganda
Munyia	Burundi
Balwegwa	Uganda
Mudha	Rwanda
Mulimbuzi	Rwanda
Mufumani	Rwanda

Description

**Description:**  
An evergreen tree to 15 m with a dense leafy canopy. BARK: rough brown to red, cracked into rectangular scales. LEAVES: shiny dark green above, much lighter green below, edge wavy to 10 cm long. FLOWERS: inconspicuous green-white. FRUIT: round to egg-shaped, to 5 cm long on short stalks, green to purple with a waxy white surface. Several flat heart-shaped seeds inside a pulp.

Ecology



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The World Agroforestry Centre  
United Nations Avenue, Gigiri  
P.O Box 30677 Nairobi, 00100, Kenya  
Phone: +254 20 722 4000  
Fax: +254 20 722 4001  
Email: [icraf@cgiar.org](mailto:icraf@cgiar.org)  
Web: [www.worldagroforestry.org](http://www.worldagroforestry.org)



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