

## Supplementary Material

**Tab. S1** - Allometric equations used for calculating AGB in this study. (DBH): Diameter at breast height; (HEIGHT): tree height; (WD): wood density.

Author of equation	Type of forest	Biological form / DBH	Allometric equation
Guyot (2011)	Semi-evergreen forest	Tree / DBH <10 cm	$=((\text{EXP}((1.3636 \cdot \text{LN}(\text{DAP}))+1.615 \cdot \text{LN}(\text{HEIGHT}))-2.9267))/1000$
Cairns (2003) modified by Urquiza-Haas et al. (2007)	Semi-evergreen forest	Tree / DBH $\geq$ 10 cm	$=((\text{EXP}(-2.173+(0.868 \cdot \text{LN}(\text{DBH}^2) \cdot \text{HEIGHT}))+0.0939/2) \cdot (\text{WD}/0.7)))/1000$
Chave et al., (2003)	Low Flooded forest, semi-deciduous forest and semi-evergreen forest	Liana / DBH $\geq$ 10 cm	$=\text{EXP} (0.049 + 2.053 \cdot \text{LN} (\text{DBH}))/1000$
Frangi & Lugo (1985)	Low Flooded Forest, semi-deciduous forest and semi-evergreen forest	Palm / DBH $\geq$ 10 cm	$=(-4.51 + (7.7 \cdot \text{HEIGHT}))/1000$

**Tab. S2** - Landscape structure metrics used in this study.

Landscape metrics	Equation	Description
Patch density_ <i>PD</i>	$PD = \frac{N}{A} (10,000) (100)$	<p>PD equals the number of patches in the landscape, divided by total landscape area (m<sup>2</sup>), multiplied by 10,000 and 100 (to convert to 100 hectares).</p> <p>Measure the density of fragments in the landscape. High values indicate a higher density of fragments and vice versa. It is a measure of landscape configuration.</p>
Edge density_ <i>ED</i>	$ED = \frac{E}{A} (10,000)$	<p>ED equals the sum of the lengths (m) of all edge segments in the landscape, divided by the total landscape area (m<sup>2</sup>), multiplied by 10,000 (to convert to hectares).</p> <p>Edge density is a metric that measures the density of edges within a landscape. It can be calculated at the class level for one type of coverage or at the level of the entire landscape considering all the coverage. Low levels of ED correspond to high clustering values (the tendency to be more clustered, contagion) and vice versa. It is a measure of landscape configuration.</p>
Total Edge Contrast index_ <i>TECI</i>	$TECI = \frac{\sum_{k=1}^m (e_{ij} \cdot d_{ik})}{\sum_{k=1}^m e_{ik}^*} (100)$	<p>TECI equals the sum of the lengths (m) of each edge segment involving the corresponding patch type multiplied by the corresponding contrast weight, divided by the sum of the lengths (m) of all edge segments involving the same type, multiplied by 100 (to convert to a percentage).</p> <p>The edge contrast index indicates the mean edge contrast for all fragments of a coverage type within the landscape. High border contrast, such as a forest adjacent to an urban land cover patch, suggests that the ecological effects of a shared patch border may be significant. In contrast, similar adjacent patches will likely create a border with minimal ecological effects, eg, adjacent forest and wetland patches. High contrast values indicate higher contrast and vice versa. It is a configuration measure.</p>
Landscape percentage_ <i>PLAND</i>	$PLAND = p_i = \frac{\sum_{j=1}^n a_j}{A} (100)$	<p>PLAND is the percentage the landscape comprised of the corresponding patch type/class.</p> <p>The percentage occupied by a type of coverage within the landscape is the most elementary metric in the study of landscape patterns. The percentage changes over time give information about the increase and decrease of the areas of a certain type of coverage. PLAND approaches 0 when the coverage type decreases its area and approaches 100 when it dominates the total landscape. % It is a measure of landscape composition.</p>

**Tab. S3** - Determination coefficients of all regression model for AGB and species richness of small, large and all trees at different grain and extent in a tropical dry forest landscape in Yucatan Peninsula.

Response Variable	Size of trees	Grain size (m <sup>2</sup> )	Extent (km <sup>2</sup> )	R <sup>2</sup>
AGB	Small	50	1	0.21
		50	5	0.21
		50	10	0.27
		200	1	0.13
		200	5	0.07
		200	10	0.09
		500	1	0.08
		500	5	0.09
		500	10	0.11
	Large	50	1	0.30
		50	5	0.29
		50	10	0.28
		200	1	0.38
		200	5	0.40
		200	10	0.42
		500	1	0.37
		500	5	0.41
		500	10	0.43
	All	50	1	0.24
		50	5	0.22
		50	10	0.23
		200	1	0.35
		200	5	0.37
		200	10	0.38
		500	1	0.34
		500	5	0.38
		500	10	0.39
Species richness	Small	50	1	0.16
		50	5	0.15
		50	10	0.15
		200	1	0.14
		200	5	0.15
		200	10	0.14
		500	1	0.14
		500	5	0.14
		500	10	0.14
	Large	50	1	0.27
		50	5	0.26
		50	10	0.26
		200	1	0.25
		200	5	0.27
		200	10	0.29
		500	1	0.27
		500	5	0.31
		500	10	0.30
All	50	1	0.16	
	50	5	0.11	

Reyes-Palomeque G, Dupuy JM, Portillo-Quintero CA, Andrade-Torres JL, Tun-Dzul FJ, Hernández-Stefanoni JL (2023). **Scale dependency of the effects of landscape structure and stand age on species richness and aboveground biomass of tropical dry forests**  
iForest – Biogeosciences and Forestry – doi: [10.3832/ifor4239-016](https://doi.org/10.3832/ifor4239-016)

<b>Response Variable</b>	<b>Size of trees</b>	<b>Grain size (m<sup>2</sup>)</b>	<b>Extent (km<sup>2</sup>)</b>	<b>R<sup>2</sup></b>
Species richness	All	50	10	0.14
		200	1	0.13
		200	5	0.09
		200	10	0.11
		500	1	0.12
		500	5	0.09
		500	10	0.14